Remedial Action Plan (RAP)

Fairchild Republic Aircraft; Old Sump Site
(aka: Old Recharge Basin)
Broad Hollow Rd. and East Carmans Rd.
East Farmingdale, New York 11735
Site No. 152004

January 16, 2026

Prepared for:

Acadia Republic Farmingdale, LLC

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Certifications

I, David Kaiser, certify that I am currently a NYS registered professional engineer and that this Remedial Action Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

I certify that all information and statements in this certification are true. I understand that a false statement made herein is punishable as Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.



David Kaiser, P.E.	January 16, 2026	
NYS Professional Engineer # 097317	Date	Signature

It is a violation of Article 145 of New York State Education Law for any person to alter this document in any way without the express written verification of adoption by any New York State licensed engineer in accordance with Section 7209(2), Article 145, New York State Education Law.

1. Introduction

Roux Environmental Engineering and Geology, D.P.C. (Roux) on behalf of Acadia Republic Farmingdale, LLC (Acadia), has prepared this Remedial Action Plan (RAP) for the Fairchild Republic Aircraft; Old Sump Site (aka: Old Recharge Basin) located in East Farmingdale, New York (hereinafter referred to as the "Site"). The Site is currently in the New York State (NYS) Inactive Hazardous Waste Disposal Site Remedial Program, Site No. 152004, which is administered by New York State Department of Environmental Conservation (NYSDEC). The Site is separated into the southern portion (i.e., location of the former Old Recharge Basin), which is regulated by the NYSDEC; and the northern portion (i.e., location of the Former Johnson property), which is not regulated by the NYSDEC.

Acadia entered into an Order on Consent with the NYSDEC on July 24, 2014, to remediate the Site and a Record of Decision was issued on March 30, 2015 (2015 ROD). A figure showing the Site location and boundaries of this Site is provided in Figure 1. The 2015 ROD is provided in Appendix A. This RAP has been prepared at NYSDEC request, to provide procedures that will be followed in accordance with the NYSDEC-approved Site Management Plan (SMP) dated February 2016 (Appendix A), during Site redevelopment activities. The remainder of the RAP discusses the Site background, proposed redevelopment, and steps that will be followed throughout the remedial action / redevelopment activities as they relate to environmental requirements for the Site.

1.2 Site Location and Background

The Site is located in East Farmingdale, Suffolk County, New York and is identified as Section 049.00 Block 02.00 and Lots 007.000, 008.000, 010.000, 011.000 and 014.000 on the Town of Babylon Tax Map (see Figure 2). The Site is an approximately 13-acre area and is bounded by vacant property and Conklin Street to the north, commercial buildings to the south, State Route 110 to the east, and East Carmans Road to the west (see Figure 2 – Site Parcel Map). The Brandt Airflex Superfund site (Site No. 152183) lies 500 feet north of and hydraulically upgradient to the Site.

The Site of a former sand mining operation that was later converted to a stormwater recharge basin (basin) and wastewater/cooling water repository. The basin was used by the New York State Department of Transportation (NYSDOT) to collect storm water runoff, and by Fairchild Republic (Fairchild) for runoff and disposal of up to 2 million gallons per day of non-contact cooling water and treated wastewater from the Fairchild Main Plant Site (Site No. 152130). Fairchild stopped discharging to the basin in 1983 when it constructed a new recharge basin on the east side of Route 110. The Fairchild Main Plant Site produced sludge from metal precipitation alodining, anodizing, chemical milling and wash water paint spray booths. In response to a State Pollutant Discharge Elimination System (SPDES) permit violation in 1981, the Suffolk County Department of Health Services (SCDHS) required a comprehensive study of the basin. On August 11, 1982, Fairchild entered into a Consent Agreement with SCDHS to study the basin and five investigations followed between 1982 and 1989. These investigations included the collection of bottom sediment, surface water, and groundwater samples for laboratory analysis. The first two investigations were conducted between June and October 1982 by York Wastewater Consultants; the remaining three investigations were completed between October 1983 and 1989 by Geraghty & Miller. Based on the investigations, basin sediment was found to contain elevated concentrations of volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs) and total metals, but the leaching potential of the sediments was determined to be very low. Surface water samples indicated the presences of VOCs and metals. Based on the results of these five investigations, the Site was first listed on the Registry of

Inactive Hazardous Waste Disposal Sites (Registry) as Class 2 in August 1989. A Remedial Investigation (RI) and a supplemental RI, completed on the Site in 1992 and 1993, respectively, by Eder Associates, on behalf of Fairchild, found that basin bottom sediments contained elevated levels of total chromium, polynuclear aromatic hydrocarbons (PAHs) and PCBs. The Site was not found to be impacting groundwater, the Record of Decision in 1996 did not require from the DEC ROD active remediation and instead selected fencing of the Site and institutional controls as the remedy to prevent potential exposure to the bottom sediments. In 1997, the NYSDEC executed an Order on Consent with Fairchild, allowing Fairchild the option to fill in the recharge basin with acceptable alternative grading material and soils from demolition of their Main Plant Site. The Site was delisted in 1997 with the expectation that filling the basin would result in the contamination being encapsulated approximately 30 feet below grade. The filling, completed in 1998, was problematic and created new concerns of potential exposure to contamination. During filling activities, denser fill material and concrete debris displaced the contaminated bottom sediments, resulting in an apparent upwelling of PCBs and metals contamination to the surface and shallow subsurface soils. Four trenches were dug to contain the displaced material and allowed to dry out, followed by re-burying of the material. A subsurface investigation, which is described in Section 1.5, was completed in June 2002 by MAC Consultants, Inc., on behalf of Mairoll Inc., to delineate bottom sediment confined and re-buried during closure of the basin.

The Site was re-listed on the Registry in April 2010 with the filling of the recharge basin resulting in a changed condition and the need for a new characterization of the Site to assure remedial goals had been achieved. Acadia acquired the Site in 2013 and entered into a settlement Order on Consent with the NYSDEC in July of 2014. The NYSDEC, then reinvestigated the Site (see Section 1.5).

1.2 Current Surrounding Site Usage

The properties surrounding the Site primarily include light industrial, commercial, and residential properties. The properties immediately south of the Site include commercial properties; the properties immediately north of the Site include light industrial properties; the properties immediately east of the Site include commercial properties; and the properties to the west of the Site include fire department and residential properties. The Site is currently abutted by the properties summarized below:

Abutting Properties			
Direction	**Tenant**	**Address**	**Operations**
North	--	Conklin Street	Local Roadway
North (beyond Conklin Street)	Multiple light industrial facilities	-	-
Northeast	Gas Station	1350 Broadhollow Road	Gas Station
East	Commercial Properties and Broadhollow Road	1282 - 1296 Broadhollow Road, Broadhollow Road	Sundown Ski, Tri-State Seafood, Designers Choice Furniture Dinettes and Stools

			Inc., Suntek Pools & Spas, Local Roadway
East (beyond Broadhollow Road	Airport Plaza and Republic Airport	1001 Broadhollow Road, 1000 Conklin Street	Movie theater, hardware store, liquor store, restaurants and airport
South	Commercial Properties	1230 Broadhollow Road, 83 – 107 E. Carmans Road,	-
West	-	E. Carmans Street	Local Roadway
West (beyond Carmans Road)	Residential houses	Multiple houses along E. Carmans Street and Birch Avenue. East Farmingdale Volunteer Fire Department along E. Carmans Street	Residential houses and Volunteer Fire Department
Southwest	Commercial Properties	57 E. Carmans Road	Tile, Kitchen. Bath Expo, Auto Parts and Machine Shop, JD & Son Signs and Awnings

1.2.1 Sensitive Receptors and Ecological Areas

The Phase I prepared by CNS Management Corporation dated December 3, 2012 (Phase I) for the Site did not identify any sensitive receptors in proximity to the Site. The Phase I identified forty-three (43) wells within a mile radius of the subject property, one of which is utilized for federal public water supply.

1.2.2 Other Known Contaminated Sites

Several known or suspected groundwater contamination sources upgradient of the Site are listed below:

- East Farmingdale Fire Department
    - 0.055 miles northwest of the Site
    - Benzene, toluene, ethylbenzene, xylene (BTEX) groundwater contamination
- Kenmark Textile
    - 0.091 miles west-northwest of the Site
    - Heavy metals, cyanide, phenols and VOCs in industrial wastewater groundwater contamination

- Brandt Airflex
    - 0.060 miles northwest of the Site
    - Trichloroethene (TCE) and tetrachloroethene (PCE) contamination in both soil and groundwater
- Target Rock
    - 0.430 miles north of the Site
    - 1,1,1-Trichloroethane (TCA) and PCE contaminated wastewater

1.3 Proposed Redevelopment

The planned redevelopement at the Site consists of three proposed buildings ranging is size from 7,000 square feet (ft^2) to 33,000 ft^2, with the remainder of the Site being covered as parking and landscaped areas. The redevelopment plans are included as Appendix B.

1.4 Physical and Geologic Setting

The Site consists of a vacant lot with concrete debris and soil stockpiles including an approximate 25,000 cubic yard stockpile of petroleum contaminated soil (PCS), a/k/a beneficial use determination (BUD) soil pile. It is currently zoned for light industrial use. The northern portion of the Site is within the Republic Airport's runway protection zone, which restricts building height, and the amount of personnel allowed to occupy the Site at one time.

Geologically, the Site lies on a gently sloping glacial outwash plain and is underlain by three major units: Upper Glacial deposits, Magothy Formation, and Raritan Formation. These units together are approximately 1,300 feet thick and lie on a bedrock surface. The subsurface geology includes fine to coarse brown sand and gravel, and a layer of fine to medium sand with silt and clay lenses. The upper 30 feet contains solid waste from a former demolition site.

The Site is underlain by the Upper Glacial, Magothy, and Lloyd aquifers, designated by United States Environmental Protection Agency (USEPA) as sole source aquifers. Based on subsurface investigations completed by others at the Site, depth to groundwater at the Site ranges from 20 to 30 feet below land surface (ft bls), and groundwater flows generally to the south with recharge occurring to the north.

1.5 Previous Investigations

Multiple investigations have been performed at the Site, which have identified three areas of concern for soil including a PCB impacted area, chromium impacted area and Site-wide semivolatile organic compound (SVOC) impacts. These areas are shown on figures in Appendix C. Previous investigation reports described in this section are provided in Appendix A.

Old Recharge Basin Final Remediation Investigation Report dated September 1995, prepared by Eder Associates

Based on the Old Recharge Basin Final Remediation Investigation Report dated September 1995, prepared by Eder Associates (Eder), Eder indicated there were five environmental investigations conducted at the Site between October 1983 and 1989, which included the collection of bottom sediment, surface water, and groundwater samples for laboratory analysis. The first two investigations were conducted between June and October 1982 by York Wastewater Consultants; the remaining three investigations were completed between October 1983 and 1989 by Geraghty & Miller. Based on the investigations, basin sediment was found to contain elevated concentrations of VOCs, semivolatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs) and total metals, but the leaching potential of the sediments was determined to be very low. Surface water samples indicated the presences of VOCs and metals.

Eder, on behalf of Fairchild, conducted a remedial investigation in June 1992, in accordance with the NYSDEC-approved Work Plan for the Remedial Investigation/Feasibility Study of Old Recharge Basin dated April 1992 prepared by Geraghty & Miller, to determine the nature and extent of contamination at the Site, and to provide data for the evaluation of cleanup alternatives. As part of the investigation, Eder installed 11 groundwater monitoring wells, collected seven surface soil samples and collected two rounds of groundwater and surface water samples. In response to NYSDEC's June 1993 request for additional data, supplemental RI work was implemented by Eder in September 1993.

The results of the remedial investigation and supplemental investigation were included in the Final Remediation Investigation Report dated September 1995, prepared by Eder (see Appendix A). Results of the investigations identified VOCs and metals in groundwater that exceeded NYSDEC standards. However, based on the results from the soil, surface water and groundwater samples, Eder indicated the onsite contamination could not be fully attributed to Fairchild since they ceased discharging into the basin in 1983.

Surface Soil

During the 1992/1995 remedial investigation, surface soil samples were collected at three locations on-site at the request of NYSDEC and Nassau County Department of Health. The samples were collected from zero to six inches below grade. VOCs were found at very low concentrations, which the validator attributed to the blanks or to concentrations below the method detection limits. Polycyclic aromatic hydrocarbons (PAHs) and PCBs were found at concentrations above ambient levels at sample location ORB-1. Concentrations of arsenic, beryllium, cadmium, chromium, copper, iron, lead, mercury, nickel, and zinc exceeded NYSDEC-recommended soil cleanup levels at that time (The Soil Chemistry of Hazardous Materials, Dragun, Jr., Ph.D., 1988 and NYSDEC Memorandum: Determination of Soil Cleanup Levels, November 16, 1992). Concentrations of copper, lead, mercury, silver and zinc exceeded ambient levels. All metals, except mercury, where concentrations exceed the ambient level, were regulated by SPDES permits.

PCBs were found in the soil sample collected at ORB-4 at a concentration of 0.16 parts per million (ppm) which was below the New York State Commercial Use Soil Cleanup Objectives (CUSCOs) of 1 ppm. PCBs were not found in the other soil samples. Since these soil samples were taken 15 feet away from ORB-1, where PCBs were previously found, Eder concluded the distribution of PCBs in surface soil did not appear to be extensive.

Groundwater

Two rounds of groundwater samples were collected during the investigation from 11 new and 15 existing monitoring wells in the vicinity of the ORB. Results of the groundwater samples indicated VOCs were detected above groundwater standards, consisting primarily of 1,1,1-Trichloroethane (1,1,1-TCA), 1,1-Dichoroethene (1,1-DCE), 1,1-Dichloroethane (1,1-DCA), 1,2-Dichloroethene (1,2-DCE), TCE, PCE, and Acetone. The highest concentration was from 1,1,1-TCA with a range of 548 micrograms per liter (ug/L) to 585 ug/L. All the additional detected VOCs ranged from concentrations of 5 to 52 ppb. Eder stated that there were known or suspected sources of chlorinated solvent contamination up-gradient to the Site, which are currently under investigation by the NYSDEC.

Metals, including iron, manganese, and sodium, were detected at concentrations in groundwater samples exceeding NYS groundwater standards, but were similar to regional levels of these metals. Total chromium and lead concentrations were found to exceed NYS groundwater standards at monitoring well clusters 6, 10, and well MW-12S, but Eder attributed these exceedances to off-site sources near the western portion of the Site. Dissolved chromium, lead, and arsenic levels were detected below NYS groundwater standards. Antimony and dissolved total antimony were both detected above groundwater standards (3 ug/L) in 4 of 55 samples with dissolved concentrations varying between 20.6 ug/L and 26.1 ug/L.

Three pesticides, beta-benzene hexachloride (B-BHC), Dieldrin and 4,4'-DDD, were detected above groundwater standards specified as non-detect. Dieldrin, alpha and gamma chlordane were also detected marginally in exceedance of the groundwater standard of 0.1 ug/L. Eder proposed that these exceedances were due to an off-site source due to the detection of these compounds downgradient and side-gradient to the Site.

Surface Water

The surface water analytical results were compared to NYSDEC surface water and groundwater standards. The groundwater standards comparison was included because the ORB is not connected to any other surface water body and was not legally used for recreation or as a potable water supply. At the time of the investigation in 1992, the ORB was receiving water from precipitation and local surface runoff and was hydraulically connected to the groundwater. All VOCs, SVOCs, PCBs, and pesticides were found at concentrations below the NYS groundwater standards.

Two metals, iron and manganese, were detected at concentrations exceeded NYS groundwater standards with maximum concentrations of 2,955 ug/L and 1,948 ug/L, respectively, which is in exceedance of the groundwater standard for iron and manganese (combined) of 500 ug/L. Concentrations of dissolved iron in all samples were below NYS groundwater standards. The maximum concentration of dissolved manganese was 596 ug/L at surface water sample, SW-4, compared to a standard of 300 ug/L. Total antimony was found in 3 of the 12 first round surface water samples above the NYS standard of 3 ug/L at concentrations ranging from 21.4 ug/L – 33.8 ug/L (estimated). Total antimony concentrations in the second sampling round were below the NYS standard. In the first sampling round, total cobalt was detected at an estimated concentration of 11.1 ug/L at SW-3, but below the standard of 5 ug/L in the second round of sampling.

Basin Sediments

Sediment samples, including subsurface samples of native soil, were collected were collected by Eder at 16 locations during the investigation. At the time of the RI, the North and South Ponds were separated by a land bridge, which was thought to have restricted the migration of soil particles floating in the water between the ponds. VOCs were detected in the South Pond at locations B-1 through B-8 except B-4 and B-5. B-1 indicated levels of 1,2-dichlorothene and PCE at levels marginally in exceedance of groundwater standards. The samples collected in the North Pond, B-9 through B-16 had more VOCs detected than in the South Pond.

Higher concentrations of SVOCs and PCBs were also detected in the North Pond than the South Pond, which was similar to the VOC results.

High metals concentrations relative to native soils were found in the sediment soils with Cyanide being detected in 23 of the 36 soil/sediment samples collected from the North and South Ponds. Despite the high detected metals concentrations, the metals were found to be in stable condition as indicated by EP toxicity tests.

Bottom Sediment Investigation Report dated August 2002 prepared by MAC Consultants, Inc.

In accordance with the NYSDEC approval, the ORB was filled with fill from the demolition of the adjacent Main Plant Site. However, the filling, completed in 1998, was problematic and during filling activities, denser fill material and concrete debris displaced the contaminated bottom sediments, resulting in an apparent upwelling of PCBs and metals contamination to the surface and shallow subsurface soils. The upwelled sediment was confined by surrounding it with an earthen berm to prevent spreading the sediment over a wider area. The sediment was placed in trenched and allowed to dry before being buried beneath clean sand and gravel fill. On August 25, 1997, prior to burying the upwelled sediment, MAC Consultants, Inc (MAC) collected two soil samples and one water sample. The analytical results indicated elevated concentrations of metals, PCBs, and SVOCs. The NYSDEC agreed to bury the sediments onsite.

In June 2002, MAC Consultants, Inc (MAC), on behalf of Mairoll Inc., performed a remedial investigation to delineate the upwelled bottom sediments that were confined and re-buried during closure of the basin. This investigation primarily focused on characterizing the subsurface soils with soil, including an area of buried chromium impacted soil, and soil vapor sampling. No groundwater sampling was conducted during this investigation.

Buried Chromium Soil

Soils containing elevated levels of chromium were buried beneath a berm along the western boundary of the site. Twenty-eight borings were drilled in the vicinity of the buried chromium soil to delineate locations and depths of total chromium in the soil. MAC collected three soil samples per boring (total of 83 samples) for laboratory analysis of total chromium at the 0 – 4 foot, 4 – 8 foot, and 8 – 12 foot intervals. Based on the sample results, no samples collected at the 0 – 4 foot depth interval exceeded eastern USA background levels, while 21 samples collected at the other intervals exceeded background levels ranging in concentrations from 46 milligrams per kilogram (mg/kg) in sample BC-24 4-8 ft to 1,219 mg/kg in sample BC-25 8-12 ft. Ten of the highest detected levels of chromium were tested for toxicity characteristic leaching procedure (TCLP) chromium and were all below the USEPA leachability standard. Note that the NYSDEC

CUSCO for hexavalent and trivalent chromium is 400 ppm and 1,500 ppm respectively. The unrestricted use soil cleanup objective (UUSCO) for hexavalent and trivalent chromium is 1 ppm and 30 ppm, respectively.

Basin Sediment

MAC collected 45 soil samples from the bottom sediment borings and analyzed them for VOCs, SVOCs, and metals. No VOCs were detected except of acetone, which is a common laboratory contaminant, at a maximum concentration if 0.023 mg/kg, below the UUSCO of 0.05 mg/kg.

Thirty eight of the 45 soil samples exceeded the NYSDEC soil cleanup guidelines for one or more SVOC. The primary SVOCs detected exceeding NYSDEC soil cleanup guidelines were benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, and benzo(a)pyrene. MAC indicated, these compounds are petroleum hydrocarbons most commonly found in asphalt material, which was encountered in a majority of the borings. The presence and concentration of these compounds was consistent with soil samples collected by Eder in October 1992.

Ten borings (11 samples) had metals detected at concentrations exceeding Eastern USA background levels, including samples collected from bottom sediment borings BS-25 at 12 to 16 feet below grade and BS-27 at 8 to 12 feet below grade, which had elevated concentrations of cadmium, chromium, copper, nickel, and zinc exceeding Eastern USA background levels. No samples collected from the 0 – 4 foot interval exceeded the Eastern USA background levels.

MAC also collected 67 soil samples from the bottom sediment and soil and analyzed them for PCBs. PCBs were found in exceedance of CUSCOs in 33 samples with the highest detection of 260 mg/kg collected at BS-27 from the 8-12 ft sampling interval. The presence of PCBs in these soil samples can be associated with the buried bottom sediment material that was encountered in the area where bottom sediment had been buried. No soil samples collected from the 0 – 4 foot interval contained PCBs above the NYSDEC cleanup value for surface soils (1 mg/kg).

Soil Vapor

A soil gas survey was performed by MAC to address the potential presence of VOCs in the soil gas at the Site. A total of 13 soil gas points were installed throughout the Site and samples were collected approximately 6 feet below ground surface. Thirteen air samples were collected from the soil gas locations (one in each grid) and submitted for laboratory analysis of VOCs using USEPA Method TO14. Based on the soil gas survey results, PCE was detected at a concentration of 16.9 micrograms per cubic meter (ug/m^3) at soil gas point SG-1 located in the northwestern portion of the Site. Additional soil gas survey samples detected trace amounts of TCE, PCE, cis-1,2-dichloroethene, and 1,2,4-trimethylbenzene.

June-July 2014 Remedial Investigation Summary Report dated October 29, 2014 prepared by EAR

On behalf of the NYSDEC, a RI was completed in 2014 by Environmental Assessment and Remediations (EAR). As described in the June-July 2014 Remedial Investigation Summary Report dated October 29, 2014 prepared by EAR (EAR RI Report - Appendix A), The scope of work detailed in the EAR RI Report included the advancement of 43 soil borings within the PCB impacted area and 18 general (Site-wide) soil borings; collection of three soil samples from the BUD soil stockpile; advancement of 12 soil borings within the chromium impacted area; the installations and sampling of four groundwater monitoring wells and sampling of two existing groundwater monitoring wells.

The soil quality results from samples collected in the PCB impacted area indicated that PCBs were detected at concentrations above NYSDEC Part 375 UUSCOs and Commercial Use SCOs (CUSCOs) at depth intervals ranging from 4-8 ft bls, 12-16 ft bls and 28-32 ft bls. Chromium was also detected at concentrations above NYSDEC Part 375 UUSCOs from the 28-32 ft bls interval at two locations. The soil quality results for the general Site-wide soil sampling indicated that SVOCs, metals and PCBs were detected at concentrations above UUSCOs and/or CUSCOs. The soil quality results of the BUD stockpile sampling indicated that SVOCs and metals (chromium, lead and zinc) were detected at concentrations above the UUSCOs and CUSCOs in the 14-18 ft bls interval. The soil quality results from samples collected in the chromium impacted area indicated that metals (including chromium, lead, mercury and silver) were detected at concentrations exceeding UUSCOs. The groundwater quality results indicated that a VOC, PCE, was detected in one groundwater sample (MW-3) at a concentration marginally above NYSDEC Ambient Water Quality Standards and Guidance Values (AWQSGV). Naturally occurring metals (iron, manganese and sodium) were also detected in multiple wells at concentrations above NYSDEC AWQSGV. Groundwater was not found to be impacted by Site-related contamination.

As indicated in the 2015 ROD, VOC contamination found in groundwater at the Site is associated with an off-Site source. The extent of on-Site groundwater VOC contamination as well as associated human exposure assessments and abatement actions will be addressed separately by the NYSDEC as part of the remedial program for the Brandt Airflex Superfund site (Site No. 152183). As indicated in the 2015 ROD, Site groundwater was not impacted by Site contaminants of concern. Also, the 2015 ROD determined that the selected remedy for the Site to be a Cover System with the imposition of Institutional Controls in the form of an Environmental Easement.

As described in the 2015 ROD, approximately 25,000 cubic yards of petroleum contaminated soil (BUD soil pile) has been stockpiled on the Site since approximately 1999. In August 2003, the NYSDEC issued a BUD approving the on-Site use of this soil pile as parking lot subbase material for an anticipated commercial redevelopment of the Site. A BUD extension was issued by NYSDEC on April 7, 2021, and the BUD will expire on April 7, 2026 (Appendix D).

Additionally, NYSDEC developed a Proposed Remedial Action Plan (PRAP), dated February 2015, which evaluated the remedial alternatives for the Site. The NYSDEC, in consultation with the New York State Department of Health (NYSDOH), selected Alternative 3 of the PRAP, which included Engineering Controls in the form of a Cover System, imposition of Institutional Controls, and Site Management Plan for the Site. The February 2015 PRAP is provided in Appendix A.

2. Description of Remedial Action Plan

The following Remedial Action has been developed for the Site in accordance with the NYSDEC February 2015 PRAP and NYSDEC-approved February 2016 SMP. Specifically, this RAP describes measures to be undertaken during Site redevelopment related to management of soil/fill materials and installation of Engineering Controls (passive sub-slab depressurization system installations and Cover System). Upon completion of the Remedial Action, Roux will submit a P.E.-certified Remedial Action Report (RAR) to the NYSDEC detailing the implementation and completion of the remedy.

2.1 Remedial Action Objectives

The Remedial Action Objectives (RAOs) for the Site as listed in the ROD dated March 30, 2015, are as follows:

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.

2.2 Soil Excavations and Management

Excavation activities during the planned redevelopment will result in soil removal at the Site. Soil/fill excavation and disturbance will occur throughout the Site, as shown in the Site Redevelopment Plan provided in Appendix B. Soil will also be excavated for installation of building foundations, pile caps, grade beams, site features and utilities.

During construction, excluding the chromium and PCB impacted areas and the BUD soil pile, existing stockpiles and soil excavated throughout the southern portion of the Site will be either taken offsite for disposal, under proper manifesting procedures, or will be reused throughout this portion of the Site beneath the Site Cover. Existing stockpiles and soil excavated from the northern portion of the Site (Former Johnson Property) will either be taken offsite for disposal, under proper manifesting procedures or reused in the northern portion of the Site. Existing stockpiles (excluding the BUD soil pile) and soil excavated from the southern portion of the Site will not be reused on the northern portion of the Site and vice versa.

Site Redevelopment Plans, particularly the Cut/Fill Analysis (provided in Appendix B), currently estimate a net import fill in the northern portion of the Site of 1,130 cubic yards (CY) and a net cut export in the southern portion of the Site of 19,010 CY for offsite removal and disposal at a facility permitted to accept the material. These totals include the transfer of 11,340 CY of soil from the BUD pile from the southern portion of the Site to the northern portion of the Site.

Soil reuse procedures are discussed in detail in Section 4.3.8.

2.3 Engineering Controls

Engineering Controls will be employed at the Site to address residual contamination remaining at the Site following completion of construction activities. The Site's Engineering Control (EC) System will consist of a

Cover System across the entire Site. Future buildings will also be constructed with passive sub-slab depressurization systems (SSDSs) and vapor barriers as an additional construction element (passive SSDSs and vapor barriers are not considered ECs).

As indicated in the February 2016 SMP and detailed in Section 2.3.1.1 below, following the installation of the SSDSs and building envelope, a soil vapor intrusion investigation will be completed to evaluate the need, if any, to convert the passive SSDSs to active SSDSs.

2.3.1 Sub-Slab Depressurization System (Construction Element)

Due to the known presence of soil contamination at the Site and the possibility of soil vapor intrusion, the potential migration of soil vapor into the proposed building(s) will be mitigated with a combination of the building slab, a passive SSDS, and a vapor barrier, which will become a permanent construction element.

The proposed passive SSDS, for each building, is comprised of a network of 4-inch diameter perforated polyvinyl chloride (PVC) pipe laterals under the building slab to collect potential soil vapors present under the slab. This network of perforated pipes is connected to a 4-inch solid PVC header pipe and then connected to a 4-inch PVC riser pipe routed to the roof. At the roof, the riser will be finished above the roof line with a wind driven turbine to discharge any sub-slab soil vapor accumulated within the system. Sub-slab soil vapor monitoring points will also be installed in each building slab to collect sub-slab soil vapor samples and to monitor vacuum influence if the systems are ever converted from passive to active SSDSs. A conceptual design of the SSDS for each building is provided on Drawings 1 through 3.

2.3.1.1 Post Construction Soil Vapor Intrusion Investigation

Following the completion of each building envelope but before interior improvements (i.e., carpeting, flooring) are installed, a post-construction soil vapor intrusion investigation will be completed. One round of indoor air and sub-slab soil vapor samples (from the monitoring points installed within the concrete slabs) will be collected within each building to evaluate the need for an active SSDS upgrade. A confirmation indoor air and sub-slab soil vapor sampling round will be completed following the completion of the buildings' interior improvements but prior to occupancy, to confirm initial sample results. The indoor air/sub-slab soil vapor sample results will be compared to the Soil Vapor/Indoor Air Matrices of the NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York dated October 2006 (GESVI) updated 2024. If data from the initial indoor air samples are within the monitor/mitigate concentration range, as described in NYSDOH GESVI and an active SSDS operation(s) is deemed necessary by the NYSDEC, the risers will be retrofitted with an appropriately sized blower. A SVI Sampling Workplan will be provided to the NYSDEC prior to sampling for review. The SVI sampling will be conducted during the heating season. If construction completion falls outside of the heating season, the sampling will be completed prior to occupancy and will need to be repeated in the heating season. The NYSDEC/NYSDOH will be notified prior to sampling.

Proposed sub-slab soil vapor and indoor air sample locations will be collocated near the locations of the monitoring points as shown on Drawings 1 through 3, and will be outlined in the SVI Workplan. Sub-slab soil vapor and indoor air samples will be collected at each proposed location, over an 8-hour sample period and analyzed for VOCs using USEPA Method TO-15. Co-located samples will be centrally located with each building away from building footers and other ground/slab penetrations. A letter report will be prepared and submitted to the NYSDEC/NYSDOH documenting the post-construction soil vapor intrusion investigation and sampling results. In addition, the letter report will include an evaluation of the need for upgrading the SSDSs to active operation.

2.3.2 Vapor Barrier (Construction Element)

Although not an engineering control, the construction element of a vapor barrier will be installed under each new building. The sub-slab vapor barrier will be a minimum 20-mil vapor barrier made of high-density polyethylene that is resistant to puncturing and has high tensile strength. The permeance of the vapor barrier will be compliant with ASTM E 154 Sections 8, 11, 12, and 13. The vapor barrier will not deteriorate, decompose, or degrade below concrete slabs when buried and has an indefinite life expectancy.

The proposed vapor barrier for the buildings slab-on-grade construction will be Cetco VI-20 or Stego Wrap 20-mil Vapor Barrier as manufactured by Stego Industries, LLC, or Yellow Guard 20-mil Vapor Barrier as manufactured by Poly-America or approved equal. Manufacturer's specifications for the vapor barrier are provided as Appendix E.

All vapor barriers will be installed in accordance with Manufacturer's recommendations and depending on foundation construction methods including, but not limited to, recommended overlapping distance, seam installation, seam products, subbase layer preparation and material.

2.3.3 Cover System

Exposure to remaining contamination at the Site will be prevented by a Cover System placed over the Site as part of redevelopment. This Cover System, which is an EC, will be comprised of a minimum of 12 inches of clean soil, asphalt pavement, concrete-covered sidewalks, and concrete building slabs. The previously approved Cover System that was described in detail in the August 2015 Site-Wide Cover Design Plan, which was approved by NYSDEC on August 18, 2015, has been updated for the current development plan. The updated Site-Wide Cover Design Plan for the current redevelopment is provided in Figure 3.

3. Remedial Action Program

The following section describes the Remedial Action program.

3.1 Governing Documents

The applicable documents governing the remedial action are described below.

3.1.1 Green and Sustainable Remediation and Climate Resiliency

Green remediation principles and techniques will be implemented to the extent feasible in the site management of the remedy as per DER-31. The major green remediation components are as follows:

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gas and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste; and
- Additionally, to incorporate green remediation principles and techniques to the extent feasible in the future development at this site, any future on-site buildings shall be constructed, at a minimum, to meet the 2020 Energy Conservation Construction Code of New York (or most recent edition) to improve energy efficiency as an element of construction.

As part of the site management program, to promote implementation of green and sustainable remediation principles, an environmental footprint analysis will be completed. The environmental footprint analysis will be completed using an accepted environmental footprint analysis calculator such as SEFA (Spreadsheets for Environmental Footprint Analysis, USEPA), SiteWise™ (available in the Sustainable Remediation Forum [SURF] library) or similar NYSDEC accepted tool. Water consumption, greenhouse gas emissions, renewable and non-renewable energy use, waste reduction and material use will be estimated, and goals for the project related to these green and sustainable remediation metrics, as well as for minimizing community impacts, protecting habitats and natural and cultural resources, and promoting environmental justice, will be established for the site management activities, as appropriate. Further, progress with respect to green and sustainable remediation metrics will be tracked, and reported in periodic reports, as part of the site management program, and opportunities to further reduce the environmental footprint of the project will be identified as appropriate.

Additionally, the site management program will include an evaluation of the impact of climate change on the project site and the engineering controls. Potential vulnerabilities associated with extreme weather events (e.g., hurricanes, lightning, heat stress and drought), flooding, and sea level rise will be identified, and the site management program will include measures to minimize the impact of potential identified vulnerabilities.

3.1.2 Site-Specific Health and Safety Plan (HASP)

The Site-specific HASP including the Community Air Monitoring Plan (CAMP) is included in Appendix F. All remedial work performed under this plan will be in full compliance with governmental requirements, including Site and worker safety requirements mandated by Federal OSHA.

Acadia and associated parties preparing the remedial documents submitted to the State and those performing the construction work are completely responsible for the preparation of an appropriate Health and Safety Plan and for the appropriate performance of work according to that plan and applicable laws.

The Site-specific HASP and requirements defined in this RAP pertain to all remedial and invasive work performed at the Site until the completion of the Remedial Action.

The Site Safety Coordinator will be determined prior to implementation of the Remedial Action.

Though not anticipated, if required, confined space entry will comply with all OSHA requirements to address the potential risk posed by combustible and toxic gases.

3.1.3 Quality Assurance Project Plan (QAPP)

The Quality Assurance Project Plan (QAPP, Appendix F) includes all procedures to be followed for sampling and analysis during the Remedial Action. The QAPP includes all requirements outlined in DER-10 Section 2.4.

3.1.4 Construction Quality Assurance Plan (CQAP)

Quality assurance/quality control procedures for all construction activities associated implementation of the Remedial Action construction are established in the Construction Quality Assurance Plan (CQAP), which is included in this section of the RAP. The CQAP describes the Site-specific construction quality assurance and control measures that will be performed during remediation that will be implemented at the Site during implementation of the RAP. The CQAP includes a program for construction observation and testing to verify performance of the remedial construction in accordance with the RAP.

3.1.4.1 Project Organization/Personnel

The implementation of the Remedial Action construction will be sequenced based on construction requirements, environmental considerations, and logistic limitations posed by the size of the Site and proximity of adjacent structures. The project team is comprised of the Owner (Acadia), contractors, and consultants specializing in one or more critical aspects of the project. It is understood by the project team that close coordination and proper sequencing of all activities occurring on the Site will be crucial to the success of the remediation. The project team and associated responsibilities are as follows. If changes are made to the project team, the CQAP will be amended.

Company	Project Role	Name (title)	Contact Info (email or phone)
Acadia Republic Farmingdale, LLC	Owner	Josh Bissinger	jbissinger@acadiarealty.com (914) 288-3390
TBD	General Contractor	TBD	TBD

TBD	Soil Remedial Contractor	TBD	TBD
Roux	Environmental Consultant	Jeff Wills, P.G. (Project Principal)	jwills@rouxinc.com (631) 232-2600
		David Kaiser, P.E. (Remedial Engineer)	dkaiser@rouxinc.com (631) 232-2600
		(Field Team Leader)	TBD
TBD	Surveying Firm	TBD	TBD
Pace Labs	Environmental Laboratory	Jennifer Byrnes (Project Manager)	Jennifer.Byrnes@pacelabs.com (508) 898-9220

3.1.4.2 General Contractor (to be determined)

The General Contractor will be responsible for the quality assurance of all the tasks being implemented. The General Contractor will work closely with the construction contractors and will confirm that all components of the Site activities are conducted according to the requirements of the RAP. The General Contractor will be responsible for verifying that the daily Site construction activities are in compliance with all of the safety requirements and regulations governing the Site activity; however, each subcontractor is responsible for the health and safety of their own personnel.

3.1.4.3 Roux Environmental Engineering and Geology, D.P.C. – RAP and Environmental Monitoring Compliance

Roux will coordinate all Site activities being implemented to achieve the remedial objectives defined in the RAP and will act as the SSO. Roux will provide continual review of all quality control measures implemented by the contractors to ensure compliance with the Site's remedial objectives and the Site-specific HASP. As such, Roux will provide oversight services for the duration of the remedial/construction activities.

Roux will implement the CAMP. CAMP monitoring data will be reported daily to the SSO and will be maintained onsite. Action level exceedances will be reported to the SSO, Acadia project manager and appropriate communication and action taken. All CAMP monitoring records will be included in the overall RAR that will be submitted to the NYSDEC and NYSDOH and will include all CAMP data collected, daily monitoring station location maps, and copies of the action limit reports (if any). If an action limit report is generated due to VOC exceedances, the NYSDEC and NYSDOH will be notified within 24 hours of the exceedance. Action limit exceedances for dust, if any, will be discussed in the daily report. A brief summary of CAMP activities, including any action limit reports generated, will be provided in the daily report.

All on-Site quality control personnel identified in the CQAP will provide daily briefings and/or reports to Roux onsite personnel, identifying the tasks completed, the remedial measures achieved, and any other issues of concern. Additionally, Mr. David Kaiser the "Remedial Engineer", a professional engineer licensed in the State of New York, will be responsible for certifying that the remediation construction was completed in substantial conformance with the approved RAP and/or any NYSDEC-approved field changes.

The soil Remedial Contractor is responsible for the excavation of portions of the Site to the required depths, coordination with the General Contractor for disposal of the contaminated excavated materials, contaminated construction and demolition debris and all other contaminated wastes generated, transportation and disposal of non-contaminated construction and demolition debris (if any), and decontamination of equipment. The primary environmental obligations of the soil Remedial Contractor include safely managing all excavated materials, preventing the contaminated Site soils from leaving the Site, and decontaminating equipment, as necessary.

3.1.4.4 Soil Remedial Contractor (to be determined)

The soil Remedial Contractor is responsible for the excavation of portions of the Site to the required depths, coordination with the General Contractor for disposal of the contaminated excavated materials, contaminated construction and demolition debris and all other contaminated wastes generated, transportation and disposal of non-contaminated construction and demolition debris (if any), and decontamination of equipment. The primary environmental obligations of the soil Remedial Contractor include safely managing all excavated materials, preventing the contaminated Site soils from leaving the Site, and decontaminating equipment, as necessary.

3.1.4.5 Environmental Laboratory

Pace Analytical (Pace) will be utilized for all remediation construction-related analytical requirements. Pace is a NYSDOH ELAP certified laboratory. All results will be reported in electronic data deliverables (EDDs) prepared in accordance with NYSDEC requirements (ASP Category B). Formal laboratory qualifications and QA/QC information packages for Pace and any other analytical laboratories proposed for the project will be submitted to the NYSDEC, if requested.

3.1.4.6 Survey Firm (to be determined)

A NYS-licensed surveying firm will be contracted by Acadia or General Contractor to provide lines, grades, boundaries, benchmarks, topographic surveys, as-built drawings, and any other survey work required for the proper execution and documentation of the work as required by the RAP.

3.1.4.7 Waste Disposal Facility

Waste from the Site will be transported to appropriately permitted waste disposal facilities. If any is generated, non-impacted construction debris will be transported to a registered construction and demolition disposal facility.

3.1.4.8 Waste Transporter and Disposal Facility Qualifications

As required, a qualifications package will be provided by each vendor contracted to transport waste from the Site to the designated soil disposal facilities and each designated disposal facility. The package shall include the following:

- Proof of insurance and all current necessary waste transport permits for the waste type(s) being transported.
- Letters of Commitment or other appropriate documentation from all waste haulers and from all transfer, treatment, storage and disposal facilities to be used for the project. The letters of commitment shall specifically identify the types and quantities of waste that the facility will be able to accept, the permit numbers for all facilities at which the waste will be accepted and all waste characterization requirements, if additional to waste characterization samples already collected. In the event that a facility (such as a privately-owned treatment works) is prohibited from issuing a

letter of commitment without a sample of the waste, a conditional-type letter will be acceptable. Such a conditional letter shall specifically state what types and quantities of waste the facility will accept.

- For each waste hauler:
  - Name and federal and state identification numbers, as applicable.
  - Address.
  - Name of responsible contact for the hauler.
  - Telephone number for the contact.
  - List of types and sizes of all transport vehicles and equipment to be used.
  - A description of proposed transportation route, method and procedures for hauling waste material, including type of vehicles that will be used for each type of waste.
  - Copies of any and all necessary permits and authorizations for each type of waste transported.
- For each transfer, treatment, storage and disposal facility, the Contractor shall submit the following information:
  - Facility name and federal and state identification numbers.
  - Facility location.
  - Name of responsible contact for the facility.
  - Telephone number for contact.
  - Signed letter of agreement to accept waste.
  - Unit of measure utilized at facility for costing purposes.
  - Copies of all permits, licenses, letters of approval, and other authorizations to operate, held by the proposed facility as they pertain to receipt, and management of waste derived from this Contract.

3.1.5 Remedial Action Schedule

Commencement of the Remedial Action / Site development is still to be determined. A formal schedule will be provided to the NYSDEC when determined by Acadia.

3.1.6 Work Hours & Site Security

All work will be performed during typical hours of operation (7 am to 5 pm), which conforms with local rules and regulations. Security for the work, equipment, materials, supplies, facilities, personnel, and incidentals will be provided throughout the performance of the work at the Site. The Site will continue to be fully fenced throughout redevelopment and remedial activities. This fencing will be maintained throughout the remedial construction work. Temporary fencing and barricades will be used to delineate and secure areas of ongoing remediation activities. Site security personnel will be employed as needed.

3.1.7 Mobilization

1. Mobilization and Site preparation activities include:
2. Mobilization of equipment to the work area.
3. Traffic control measures.
4. Work zone demarcation.
5. Set-up of decontamination facilities.

6. Installation of temporary facilities.
7. Installation of perimeter and interior air monitoring systems.

3.1.8 Monitoring Well Decommissioning

Existing groundwater monitoring wells will be properly decommissioned in accordance with NYSDEC policy CP-43.

3.1.9 Erosion and Sedimentation Controls

Catch basin inlets within the Site will be protected to prevent disturbed soil from entering and any soil spilled on the sidewalk or street immediately adjacent to the Site will be promptly removed and the sidewalk or street will be cleaned. Since the area of disturbance exceeds one acre, a stormwater pollution prevention plan (SWPPP) is required.

3.1.10 Utility Marker and Easement Layout

Acadia and its contractors are solely responsible for the identification of utilities that might be affected by work under the RAP and implementation of all required, appropriate, or necessary health and safety measures during performance of work under this RAP. Acadia and its contractors are solely responsible for safe execution of all invasive and other work performed under this RAP. Acadia and its contractors must obtain any local, State or Federal permits or approvals pertinent to such work that may be required to perform work under this RAP. Approval of this RAP by NYSDEC does not constitute satisfaction of these requirements.

The presence of utilities and easements on the Site has been investigated by the Remedial Engineer. It has been determined that no risk or impediment to the planned work under this RAP is posed by utilities or easements on the Site.

3.1.11 Demobilization

The Demobilization plan will address:

- Restoration of areas that may have been disturbed to accommodate support areas (e.g., staging areas, decontamination areas, storage areas, temporary water management area[s], and access area);
- Removal of temporary access areas (whether on-Site or off-Site) and restoration of disturbed access areas to pre-remediation conditions;
- Removal of sediment and erosion control measures and disposal of materials in accordance with acceptable rules and regulations;
- Equipment decontamination; and
- General refuse disposal.

3.2 Reporting

All daily reports, described below, will be included in the RAR.

3.2.1 Daily Reports

Daily reports will be submitted to NYSDEC and NYSDOH Project Managers by the end of each day following the reporting period and will include:

- An update of progress made during the reporting day;
- Locations of work and quantities of material imported and exported from the Site;
- References to alpha-numeric map for Site activities;
- A summary of any and all complaints with relevant details (names, phone numbers);
- A summary of CAMP finding, including excursions; and
- An explanation of notable Site conditions.

Daily reports are not intended to be the mode of communication for notification to the NYSDEC of emergencies (accident, spill), requests for changes to the RAP or other sensitive or time critical information; however, such conditions must also be included in the daily reports. Emergency conditions and changes to the RAP will be addressed directly to NYSDEC Project Manager via personal communication.

Daily Reports will include a description of daily activities that identifies work areas. These reports will include a summary of air sampling results, odor and dust problems, if any, and corrective actions, and all complaints received from the public, if any.

3.2.2 Other Reporting

Photographs will be taken of all remedial activities and submitted to NYSDEC in daily reports. Photographs will illustrate all the remedial program elements and will be of acceptable quality. Representative photographs of the Site prior to any Remedial Actions will be provided. Representative photographs will be provided of each contaminant source, source area and Site structures before, during and after remediation. Photographs will be included in the daily reports as needed, and a comprehensive collection of photographs, in the form of a photographic log, will be included in the RAR.

Site record keeping for all remedial work will be appropriately documented. These records will be maintained on-Site at all times during the project and be available for inspection by NYSDEC and NYSDOH staff.

3.2.3 Deviations from the Remedial Action Plan

Deviations from the RAP will be reported to NYSDEC for approval and fully explained in the RAR. At a minimum, this section in the RAR should include the following:

- Reasons for deviating from the approved RAP;
- Approval process to be followed for changes/editions to the RAP; and
- Effect of the deviations on overall remedy.

4. Remedial Action: Material Removal From Site

A Construction Contractor will perform soil/fill excavation activities during the redevelopment process. Prior to the start of any intrusive activities, utility clearance will be performed at the Site. It will be the responsibility of the Construction Contractor's Site Superintendent (Site Superintendent) to handle the proper soil management and disposal of all soil/fill excavated from the Site at appropriate offsite disposal facilities. The main elements included in the soil management are described in further detail below.

4.1 Remedial Performance Evaluation (Post Excavation End-Point Sampling)

Post excavation end-point sampling and reporting will be conducted in accordance with the DER-10 and the QAPP and is discussed in the sections below.

4.1.1 End-Point Sampling Frequency

End-point soil samples will be collected to verify compliance with SCOs. End-point excavation bottom samples will be collected at a frequency of one sample per 900 square feet of excavation bottom and side-wall samples will be collected at a frequency of one sample per 30 liner feet of excavation in accordance with NYSDEC DER-10 Section 5.4 as shown on Figure 4. The end-point samples will be analyzed for PCBs, SVOCs and metals.

The end-point bottom and sidewall soil sample results will be compared to the contaminants of concern (PCBs, SVOCs and metals) for CUSCOs and Protection of Groundwater SCOs (PGWSCOs) to document the remaining contamination that will be left in place. Remaining exceedances will be included in the Remedial Action Report.

4.1.2 Methodology

Each sample will be inspected for visual evidence of contamination (i.e., staining or odors) and field screened for VOCs using a portable photoionization detector (PID). If samples are free from visual evidence of contamination and PID indicates soil is not contaminated, the sample will be sent to a lab. Soil samples to be submitted for analysis will be placed into laboratory-supplied sample jars and transported to the laboratory in an iced container under chain-of-custody procedures. Laboratory analysis will be performed by a NYSDOH ELAP-approved laboratory.

4.1.3 Reporting of Results

The laboratory will report analytical results for post-excavation confirmation samples in ASP Category B deliverable packages. EDDs in the required NYSDEC format will also be provided by the laboratory.

All post-excavation confirmation sample data generated for the Remedial Action will be logged in a database and organized to facilitate data review and evaluation. The electronic dataset will include the data flags provided in accordance with USEPA Laboratory Data Validation Functional Guidelines for Evaluating Organic Analysis and Inorganic Analyses, as well as additional comments of the data review for ASP/CLP analyses. The data flags include such items as: 1) concentration below required detection limit; 2) estimated concentration due to poor recovery below required detection limit; 3) estimated concentration due to poor spike recovery; and 4) concentration of chemical also found in laboratory blank.

4.1.4 QA/QC

Quality control (QC) samples serve as checks on both the sampling and measurements systems and assist in determining the overall data quality with regard to representation, accuracy, and precision. The QAPP, included as Appendix F to this RAP, describes QA/QC procedures and sampling for the project.

4.1.5 Data Usability Summary Report

A Data Usability Summary Report (DUSR) will be prepared to evaluate the post-excavation confirmation samples by a party independent from the laboratory performing the analysis in accordance with Appendix 2B of DER-10. The QAPP, included as Appendix F to this RAP, describes the DUSR to be prepared for the project.

4.2 Estimated Material Removal Quantities

The estimated quantity of soil/fill to be removed from the Site is 19,010 CY. The estimated quantity of soil to be imported into the Site for backfill and cover soil is 1,130 CY. The estimated quantity of soil to be reused/relocated on Site is 11,340 CY.

4.3 Soil/Materials Management Plan

The following sections provide the Soil/Material Management Plan (SoMP) to be implemented during the Remedial Action, as necessary.

4.3.1 Soil Screening Methods

Visual, olfactory, and PID soil screening and assessment will be performed by a qualified environmental professional or experienced field engineer/geologist under the direction of the Remedial Engineer during all remedial and development excavations into known or potentially contaminated material. Soil screening will be performed regardless of when the invasive work is done and will include all excavation and invasive work performed during the remedy.

All primary contaminant sources (including but not limited to tanks and hotspots) identified during Site Characterization and Remedial Action will be surveyed by a surveyor licensed to practice in the State of New York. This information will be provided on maps in the RAR.

4.3.2 Stockpile Methods

Excavated materials may be temporarily staged onsite in lined and covered piles until they can be loaded into lined and covered trucks or roll off containers and transported to the designated disposal facilities under proper manifesting procedures offsite disposal. If used, roll off containers will be sealed or covered with secure fitting tarps. Damaged covers or tarps will be promptly replaced.

Soil stockpiles, if generated, will be continuously encircled with a berm and/or silt fence. Hay bales will be used as needed near catch basins, surface waters and other discharge points. Stockpiles will be kept covered when not in use with appropriately anchored tarps.

4.3.3 Management of Excavated Soil Material

During the course of redevelopment/remedial work at the Site, it is anticipated that any excavated material not being reused on Site, in accordance with the BUD and February 2016 SMP, will be sampled for waste

characterization purposes prior to being disposed offsite, as necessary based on disposal facility requirements. The Site Superintendent will coordinate with the disposal facility prior to construction. If temporary stockpiling becomes necessary, the procedures to be followed for temporary stockpiling are described below. Observed impacted (visual or olfactory) material will be placed on and covered with polyethylene (poly) sheeting with a minimum thickness of 12 mils. These stockpiles will be covered in order to limit precipitation from contacting the material and to avoid the generation of dust. Covered stockpiles will be inspected daily to ensure that there has not been any damage to the poly sheeting and that the stockpile is still adequately covered.

4.3.4 Odor Control Plan

This odor control plan is capable of controlling emissions of nuisance odors off-Site. Specific odor control methods to be used on a routine basis will include limiting open excavation areas and covering excavated soil. If nuisance odors are identified, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of all other complaints about the project. Implementation of all odor controls, including the halt of work, will be the responsibility of the Remedial Engineer, who is responsible for certifying the RAR.

All necessary means will be employed to prevent on- and off-Site nuisances. At a minimum, procedures will include: (a) limiting the area of open excavations; (b) shrouding open excavations with tarps and other covers; and (c) using foams to cover exposed odorous soils, if any. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: (d) use of chemical odorants in spray or misting systems; and, (e) use of staff to monitor odors in surrounding neighborhoods.

Where odor nuisances have developed during remedial work and cannot be corrected, or where the release of nuisance odors cannot otherwise be avoided due to on-Site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering excavation and handling areas under tented containment structures equipped with appropriate air venting/filtering systems.

4.3.5 Dust Control

Routine dust suppression methods will be employed by the Site Superintendent throughout the construction project. The Site Superintendent will maintain all excavations, stockpiles (if any), access roads/ramps, and all other work areas to minimize dust that would cause a hazard or nuisance to others. The Site Superintendent will implement necessary measures to control particulates including, but not limited to, one or more of the following measures:

1. Applying water on the access roads/ramps;
2. Misting equipment and excavation faces;
3. Spraying water (using atomizer) on buckets during excavation and dumping;
4. Hauling materials in tarped or watertight containers;
5. Reducing speed of vehicles moving through areas of the Site;
6. Covering excavated areas and material after excavation activity ceases; and
7. Stopping work.

The Site Superintendent will make provisions to have an adequate amount of water and appropriate equipment to disperse water onsite at all times.

4.3.6 Community Air Monitoring Plan

CAMP is provided in Appendix F. Real-time air monitoring for VOCs and particulate levels at the perimeter of the exclusion zone or work area will be performed by Roux as part of the CAMP. Continuous monitoring will be performed for all ground intrusive activities and during the handling of contaminated or potentially contaminated media. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pit excavation or trenching, and the installation of soil borings or monitoring wells. CAMP results will be submitted to the NYSDEC and NYSDOH in daily reports while ground-intrusive and soil handing activities are taking place. Additionally, the NYSDEC and NYSDOH will be notified of monitoring results which exceed the action levels set by the CAMP, including the duration and actions taken in response to any such exceedance. These notifications will be provided to the NYSDEC and NYSDOH as soon as possible, within one business day.

Periodic monitoring for VOCs will be performed during non-intrusive activities such as the collection of soil or the collection of groundwater samples from existing monitoring wells. Periodic monitoring during sample collection, for instance, will consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. Depending upon the proximity of potentially exposed individuals, continuous monitoring may be performed during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence. Exceedances of action levels observed during performance of the CAMP will be included in a daily reports and included in the RAR.

4.3.6.1 VOC Monitoring, Response Levels, and Actions

VOCs will be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis during invasive work. Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work will be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment will be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment will be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total VOCs at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities will resume with continued monitoring.
- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities will resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less – but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.
- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities will be shutdown.

All 15-minute readings will be recorded and be available for NYSDEC personnel to review and will be summarized in the DCR and included in the RAR. Instantaneous readings, if any, used for decision purposes will also be recorded.

4.3.6.2 Particulate Monitoring, Response Levels and Actions

Particulate concentrations will be monitored continuously at the upwind and downwind perimeters of the exclusion zone or work area on a continuous basis during invasive work. The particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work will continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work will be stopped, and a re-evaluation of activities initiated. Work will resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

All 15-minute readings will be recorded and be available for NYSDEC personnel to review and summarized in the daily reports and included in the RAR. Instantaneous readings, if any, used for decision purposes will also be recorded.

4.3.7 Transportation and Disposal of Soils

The Construction Contractor will secure approvals for disposal of soil/fill at a permitted facility in accordance with federal, state, and local regulations. The soil/fill will be loaded into trucks and transported to an approved offsite disposal facility. The soil/fill will be shipped by a licensed hauler in accordance with all applicable federal, state, and local regulations. Each shipment will be transported under the appropriate waste manifest/bill of lading or other appropriate documentation based upon pre-characterization results. All disposal documentation, including waste profiles, disposal facility approvals and manifests/bills of lading will be submitted to Roux for inclusion in the RAR. A truck wash station will be constructed, and a hose will be used to wash down truck tires and beds prior to departing the Site. No materials are to be tracked off-site and wash water must remain on-site. Before any transport vehicle leaves the Site, the sides and wheels will be inspected. If any soil/fill is observed on the wheels or body of the truck, they will be removed using a shovel, broom, and/or other hand tools in a designated vehicle cleaning area discussed in Section 4.3.9. This will reduce the potential for disposal trucks to spread Site-derived material onto the public streets.

Waste characterization will be performed for off-Site disposal in a manner suitable to the receiving facility and in conformance with applicable permits. Sampling and analytical methods, sampling frequency, analytical results and QA/QC will be reported in the RAR. All data available for soil/material to be disposed of at a given facility must be submitted to the disposal facility with suitable explanation prior to shipment and receipt.

4.3.8 Soil Reuse

Soil/fill excavation and disturbance will occur throughout the Site, as shown in the Site Redevelopment Plan provided in Appendix B and as discussed in Section 2.2. During construction, excluding the chromium and PCB impacted areas and the BUD soil pile, existing stockpiles and soil excavated throughout the southern portion of the Site will be either taken offsite for disposal, under proper manifesting procedures, or will be reused throughout this portion of the Site beneath the Site Cover. Existing stockpiles and soil excavated from the northern portion of the Site (Former Johnson Property) will either be taken offsite for disposal, under proper manifesting procedures or reused in the northern portion of the Site. Existing stockpiles (excluding the BUD soil pile) and soil excavated from the southern portion of the Site will not be reused on the northern portion of the Site and vice versa.

All soil excavated within the chromium impacted area, located in the southern portion of the Site, in an area along the western Site boundary, will either be taken offsite under proper manifesting procedures, for disposal at an approved and permitted facility that can accept the waste or will be reused within the footprint of the chromium impacted area beneath the required Site Cover.

All soil excavated within the PCB impacted area, located in the southern portion of the Site in an area immediately east of the existing BUD soil pile, will either be taken offsite under proper manifesting procedures, for disposal at an approved and permitted facility that can accept the waste, or the soil will be reused within the footprint of the PCB impacted area beneath the required Site Cover.

The BUD soil pile will be reused throughout the Site (both southern and northern portions) as a subbase layer, up to 24-inches in thickness, beneath pavement or pavement system components. Any BUD soil pile material that cannot be reused will be disposed of offsite.

If all soil containing contamination cannot (or will not) be removed from the Site as part of remedial activities, the portions of the Site that will be landscaped or covered with grass (i.e. all areas not covered by future concrete slabs or pavements) will be finished with a minimum of 12 inches of NYSDEC approved clean fill/topsoil imported to the Site from an approved facility/source in accordance with Section 4.9 of this RAP. A demarcation barrier would also be installed to identify the base of the clean fill and top of existing Site soils exceeding CUSCOs.

4.3.9 Spill Prevention and Control

The following sections describe procedures to be followed to prevent onsite spills and contingency measures in the event that an onsite spill occurs.

4.3.9.1 General

A major spill is not anticipated at the Site, but the potential for a spill exists. The most probable spill events associated with this scope of work include hydraulic fluid spills from heavy equipment, fuel spills from equipment or machinery, and soil/fill spilled during transportation. Spill impacted materials will be properly removed and disposed of following waste characterization sampling and endpoint sampling will be conducted if necessary.

Heavy equipment typically contains 30 gallons or less of hydraulic fluid and/or fuel. If a leak occurs, the equipment will immediately be shut down to minimize hydraulic fluid leaks and repaired prior to re-use. The spill will be contained to the extent possible using a bucket and/or oil absorbent pads.

In general, soil/fill spilled during transportation will be collected and returned to the truck for proper disposal. Surfaces impacted as a result of any spill shall be cleaned as soon as possible.

4.3.9.2 Spill Prevention

In an effort to keep the potential of spills to a minimum and maintain a constant state of readiness to address a spill or release, the following inspections will be performed by the Construction Contractor's Site Superintendent or the Site Health and Safety Officer (SHSO):

- Onsite Materials Handling – Used to account for material (including fuel and soil/fill) quantity and proper methods of storage to help reduce the chance of a spill or release.
- Safety Equipment Inspections – Used to account for the quantity, location, and working condition of safety equipment onsite. Safety equipment and supplies will be kept accessible and in good working order.

Any discrepancies or inadequacies discovered as a result of these inspections will be corrected immediately.

4.3.9.3 Spill Response

Should a spill of any type occur, it will be immediately reported to the Site Superintendent. The Site Superintendent will then notify the SHSO, Owner's Representative and Construction Contractor's Corporate Safety Supervisor and Owner, who will then contact the appropriate regulatory agencies.

Potential spills for this project are anticipated to be secured and cleaned up by Site personnel who are trained in spill response, where appropriate. Unauthorized personnel will be prohibited from entering all spill cleanup areas. The Site Superintendent and/or SHSO must evaluate the extent of the hazard(s) and, if available, utilize engineering controls and proper safety equipment to contain the spill until the appropriate emergency response personnel arrive onsite, if necessary.

The following is a list of actions that should be taken in the event of a spill:

- Account for Site personnel and make proper notifications.
- Evaluate the hazard(s), identify the source of the discharge, and stop the spill or leak, if safe.
- Exclude any source of ignition from the spilled material if flammable.
- Isolate and contain the spill in the smallest area possible.
- Keep personnel upwind of the spill area. Evaluate potential vapor and dust hazards and implement appropriate suppression operations.
- Prohibit personnel from contacting unidentified spilled materials.
- Notify the Owner's Representative and Construction Manager.

The spill control equipment will be located in a construction trailer or office located at or near the Site. The exact location of the trailer or office has not yet been determined. The spill control equipment will consist of buckets, absorbent pads, oil dry, and/or sand.

If there is a spill offsite on the public roadway, it is the responsibility of the Waste Transportation Contractor to notify the proper authorities. Vehicles transporting materials offsite will have 24-hour emergency contact information included on the Waste Manifest/Bill of Lading. In the case of an offsite spill, the transporter will

immediately notify their designated spill response Contractor, SHSO and the Owner's Representative and Site Superintendent.

4.3.10 Vehicle Cleaning Area-Stabilized Construction Entrances

One or more temporary truck wash stations/stabilized construction entrances will be constructed to clean disposal trucks and other vehicles prior to leaving the Site. The truck wash station will be constructed, and a hose will be used to wash down truck tires and beds prior to departing the Site. No materials are to be tracked off-site and wash water must remain on-site. This area will reduce the amount of soil/fill that disposal trucks and other vehicles spread onto the public roadway. The truck wash station/stabilized construction entrance will be constructed of gravel and will be of sufficient size to prevent vehicles from spreading fill/soils onto the public roads and/or previously excavated areas of the Site where all fill has been removed. Before any disposal truck or other vehicle leaves the Site, the sides and wheels will be inspected. If any soil/fill are observed on the wheels or body of the truck, they will be removed using a shovel, broom, and/or other hand tools in the designated vehicle cleaning area. This will reduce the potential for disposal trucks to spread Site-derived material onto the public streets.

4.3.11 Personnel and Equipment Cleaning Areas

All personnel working in the soil/fill will clean themselves prior to leaving the Site. In addition, all equipment used for excavation and other earthwork activities (i.e., excavators, bulldozers, backhoes, etc.), which comes in contact with the soil/fill, shall be cleaned at the vehicle cleaning area prior to:

- Crossing into areas of the Site where no soil/fill is present;
- Handling clean fill/topsoil; and
- Leaving the Site.

No equipment will be allowed to leave the Site prior to the SHSO or Site Superintendent's verification that the equipment was properly cleaned.

4.3.12 Stormwater Pollution Prevention

Catch basin inlets immediately adjacent to the work areas will be protected to prevent disturbed soil being loaded into roll off containers or trucks. Any soil spilled on the sidewalk or street immediately adjacent to the Site will be promptly removed and the street and sidewalks will be cleaned. Since the area of disturbance exceeds one acre, a SWPPP is required. Erosion and sediment control measures identified in this RAP shall be observed to ensure that they are operating correctly.

4.3.13 Contingency Plan

If underground storage tanks (USTs) or other previously unidentified contaminant sources are found during on-Site remedial excavation or development related construction, sampling will be performed on product, sediment and surrounding soils, etc. Chemical analytical work will be for full scan parameters (TAL metals; TCL volatiles and semi-volatiles, TCL pesticides and PCBs). These analyses will not be limited to STARS parameters where tanks are identified without prior approval by NYSDEC. Analyses will not be otherwise limited without NYSDEC approval.

Identification of unknown or unexpected contaminated media identified by screening during invasive Site work will be promptly communicated by phone to NYSDEC's Project Manager. These findings will be also included in daily and periodic electronic media reports.

Screening for unexpected conditions will be performed by the Construction Contractor during all excavation and other earth moving activities (not including the activities related to "clean" fill brought on-Site). This screening will include the following:

1. Visual inspection for evidence of grossly contaminated soil (i.e., visibly identifiable free-phase or otherwise readily detectable free-phase or residual product.); and
2. Periodic screening for organic vapors with a PID.

The following procedures will be followed if unexpected conditions are encountered. The material encountered will be:

- Excavated within the limits of the proposed excavation;
- Stockpiled separately from other materials in accordance with the temporary stockpiling requirements outlined above;
- Sampled for waste characterization parameters for disposal purposes; and
- Disposed of appropriately offsite.

If intact or damaged buried drums or tanks are encountered, the Site Superintendent will notify the SHSO, Acadia's Representative and Construction Manager who will contact the proper regulatory agencies.

In general, the Construction Contractor will be responsible for notifying the Acadia's Representative who will then notify the NYSDEC, and any other applicable regulatory agency of the unexpected conditions encountered. If encountered, any previously unidentified tanks and associated appurtenances, drums, and/or petroleum-impacted soils will be properly removed in accordance with all applicable regulations after following the aforementioned procedures. All equipment used will be cleaned in accordance with the appropriate vehicle/equipment cleaning procedures.

4.3.14 Procedures for Imported Material

Any imported material (fill/soil) should come from an approved source. No fill material will be brought on-Site without NYSDEC approval of a Request to Import/Reuse Fill or Soil form. The imported material will be segregated at the source/facility and samples will be collected by qualified environmental personnel and will be in compliance with provisions in the NYSDEC-approved February 2016 SMP prior to receipt at the Site. A Request to Import/Reuse Fill or Soil form will be prepared and submitted to the NYSDEC allowing a minimum of 5 business days for review. Material from industrial sites, spill sites, or other environmental remediation sites or potentially contaminated sites will not be imported to the Site. Solid waste will not be imported onto the Site. In accordance with the QAPP (Appendix G), all imported soils will meet the backfill and cover soil quality standards established in 6NYCRR 375-6.7(d). All imported fill/soil will meet the lower of the protection of groundwater or the protection of public health soil cleanup objectives presented in Table 6.8(b) of the latest revision of Part 375.

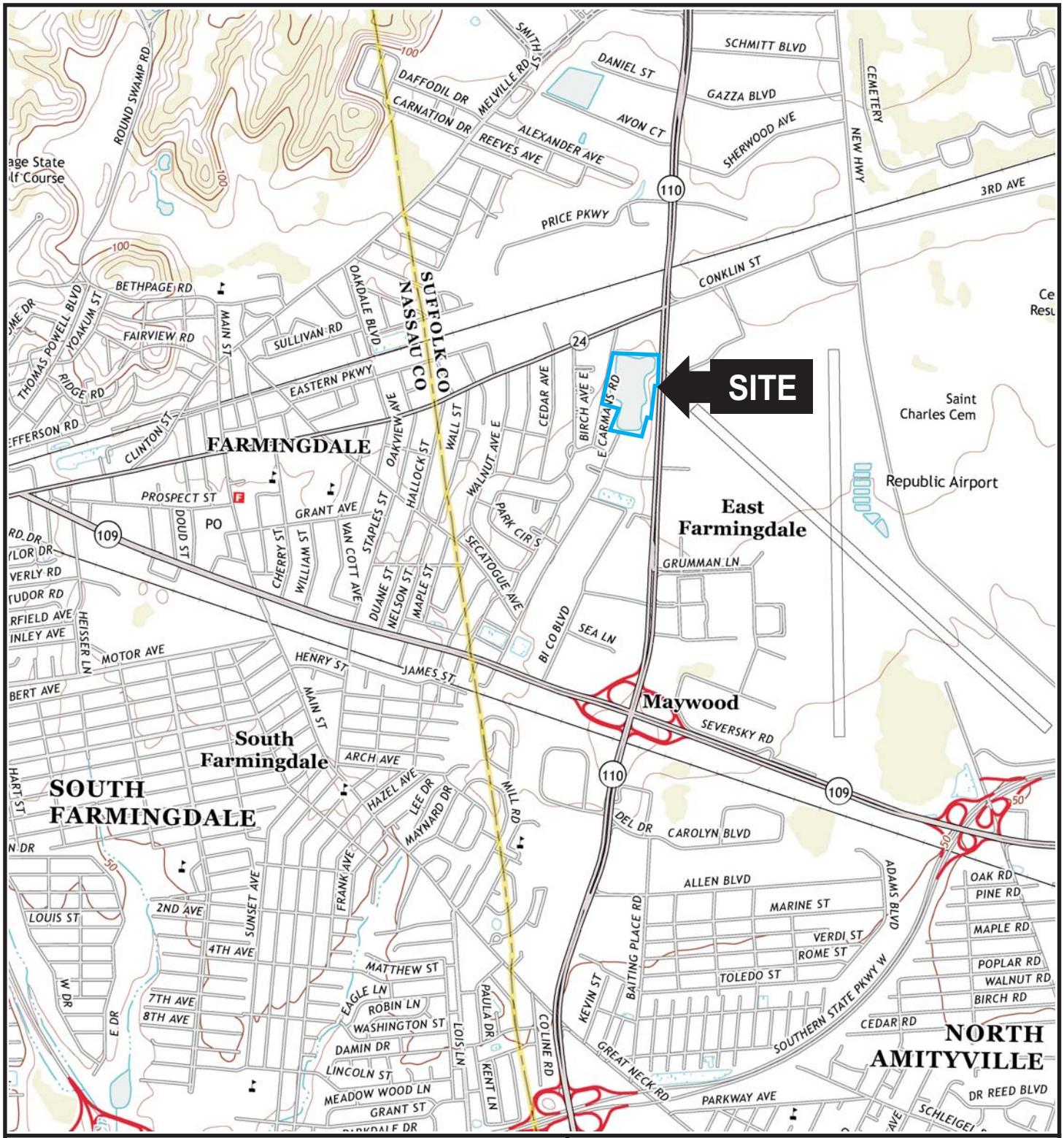
5. Remedial Action Report

Following completion of the Remedial Action described in this RAP, a RAR will be prepared and submitted for review. The RAR will include a summary of all remedial activities performed at the Site, including any deviations from this RAP that resulted from unknown on-Site conditions. Summaries of all soil testing, disposal efforts, and results of laboratory testing will be additionally included in the RAR to confirm all remedial goals have been met to the satisfaction of NYSDEC and Acadia. Also included in the RAR will be:

- All Lab Reports associated with Confirmation sampling efforts.
- DUSR relating to all post excavation end-point sampling efforts.
- Final soil excavation and disposal tracking quantities, including copies of all disposal and trucking manifests.
- Soil Import requests for all backfill used to bring the Site back to grade.
- Copies of all Site monitoring reports including daily walkthrough inspection reports, and daily CAMP summary reports.
- As-Built plans of the Site Cover System (EC) and passive SSDSs (construction element).

FIGURES

1. Site Location
2. Existing Conditions
3. Site-Wide Cover Design Plan
4. Endpoint Sampling Map
5. Tax Parcel Map with Inferred Groundwater Flow Direction
6. Commercial SCO Soil Exceedances
7. Site Map with Groundwater Wells
8. CF-1 Proposed Industrial Uses



QUADRANGLE LOCATION



SOURCE:
USGS; 2013, AMITYVILLE, NY
7.5 Minute Topographic Quadrangle

N

0 2000’

Title:

SITE LOCATION MAP

FAIRCHILD REPUBLIC AIRPORT; OLD SUMP SITE
EAST FARMINGDALE, NEW YORK

Prepared for:

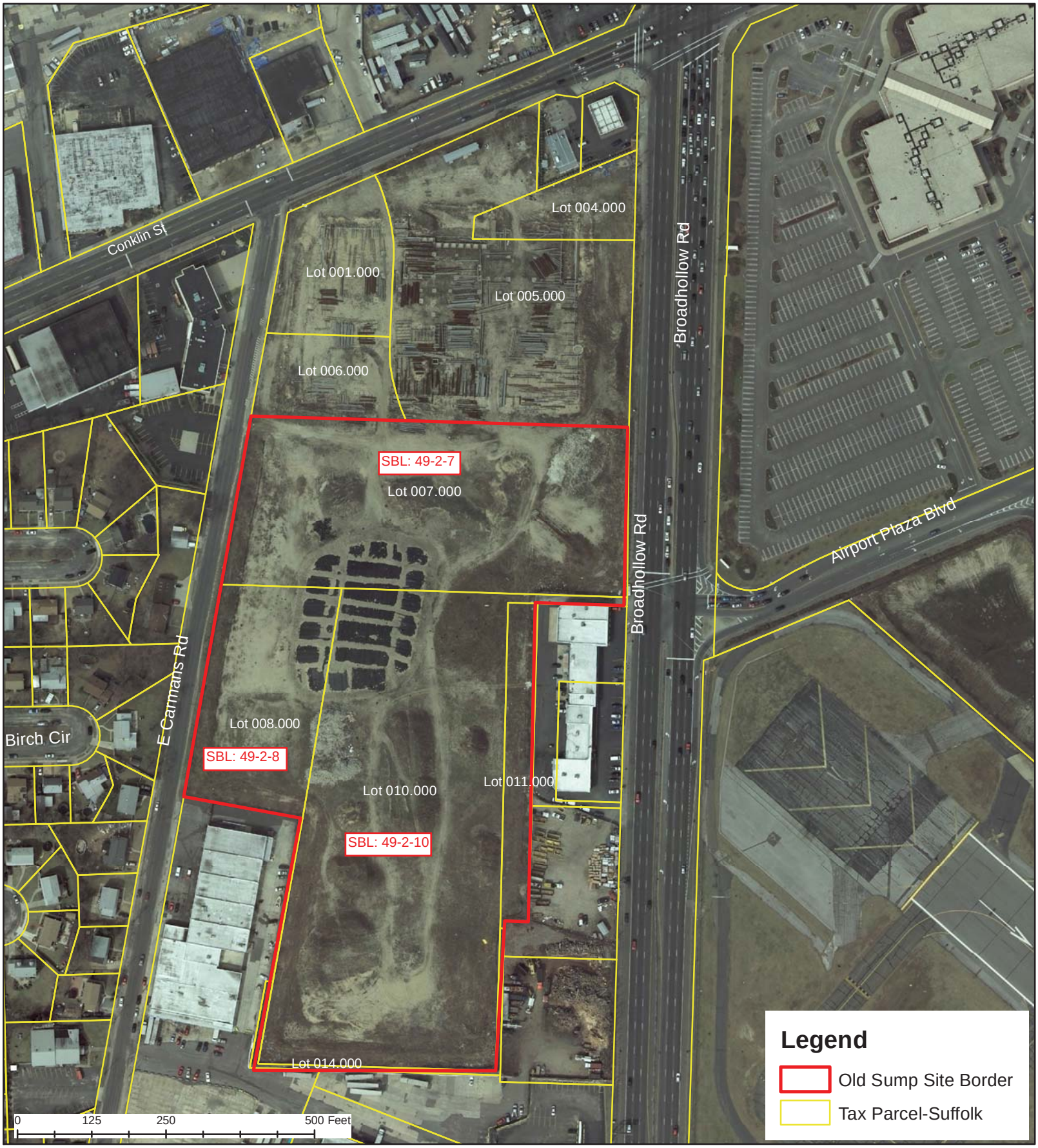
ACADIA REPUBLIC FARMINGDALE, LLC

ROUX

ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled by: J.W.	Date: 31JUL15	FIGURE
Prepared by: J.A.D.	Scale: AS SHOWN	1
Project Mgr.: J.W.	Project No.: 2422.0001Y000	
File: 2422.0001Y104.01.CDR		

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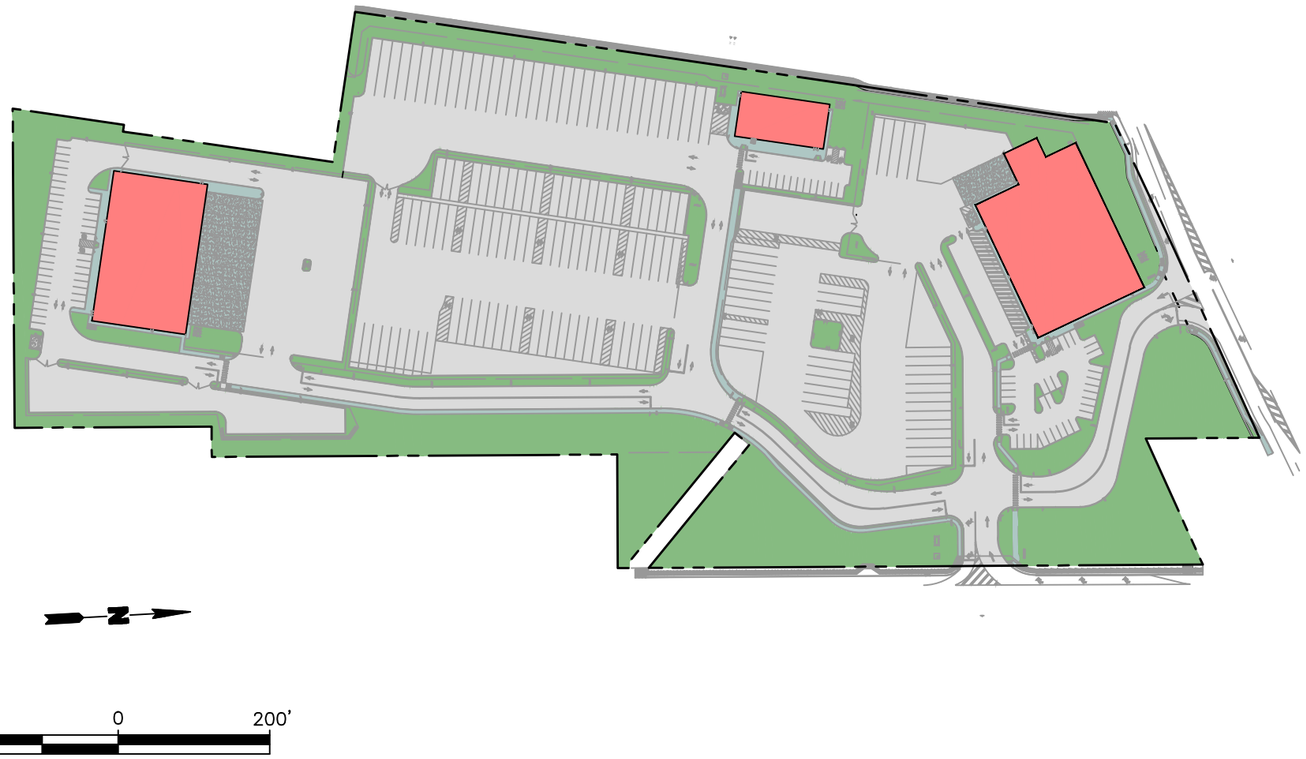


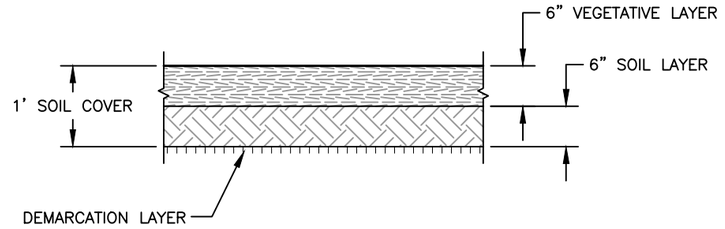


Fairchild Old Sump Site (class 2) Site No. 152004
Broad Hollow Rd (Rt 110) E. Farmingdale, NY 11530
Town of Babylon, Suffolk County, New York

Figure 2: Tax Parcel Map

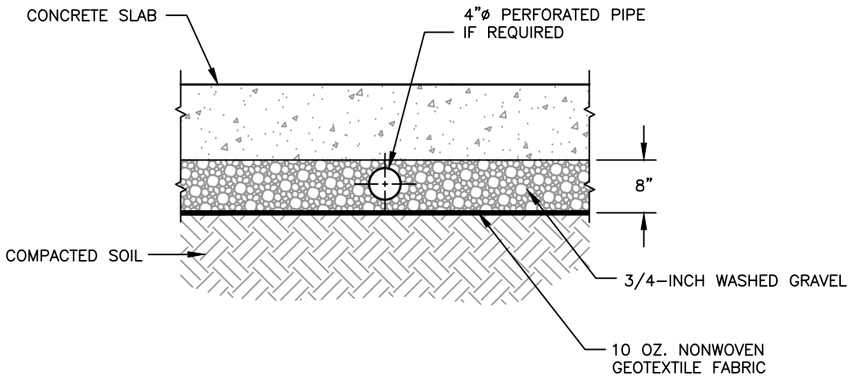
Created by: RKC
4/10/14





SOIL COVER/DEMARCATION LAYER DETAIL

SCALE: NOT TO SCALE



SUB-SLAB DEPRESSURIZATION SYSTEM - PIPE DETAIL

SCALE: NOT TO SCALE

LEGEND

- SITE BOUNDARY
- BUILDING/RETAIL AREA
- PAVING/ASPHALT AREA
- LANDSCAPING AREA
- CONCRETE SIDEWALK/WALKWAY

DEVELOPMENT PROGRAM

AREA CALCULATIONS: 830,617 SF (OVERALL AFTER DEDICATION)

IMPERVIOUS: 81,381 SF (STANDARD DUTY PAVEMENT)

402,099 SF (HEAVY DUTY PAVEMENT)

16,200 SF (CONC. LOADING PADS)

65,000 SF (BUILDINGS)

27,334 SF (MISC. CONCRETE CURB & SIDEWALKS)

PERVIOUS: 238,603 SF (LANDSCAPING)

Title:

SITE-WIDE COVER SYSTEM DESIGN PLAN

FAIRCHILD REPUBLIC AIRCRAFT; OLD SUMP

Prepared for:

ACADIA REPUBLIC FARMINGDALE, LLC

ROUX

Compiled by: D.K.	Date: 6/12/2025	FIGURE
Prepared by: G.M.	Scale: AS SHOWN	3
Project Mgr: J.W.	Project: 2422.0001Y000	
File: 2422.0001Y110.02.DWG		

V:\CAD\PROJECTS\2422Y\0001Y\110\2422.0001Y110.02.DWG GMILTON

APPROXIMATE CIS AREA= 730.61 CY (FILL)*
(*INCLUDED IN SOUTH LOT TOTALS)

EAST CARMANS ROAD
(50' WIDE)
(TOWN OF BABYLON R.O.W.)
(TWO WAY TRAFFIC)

CONKLIN STREET
(A.K.A. NYS ROUTE 24)
(100' WIDE)
(TWO WAY TRAFFIC)

TENANT A
PROPOSED
BUILDING

TENANT B
PROPOSED
BUILDING

TENANT C
PROPOSED
BUILDING

11,344.33 CY (BUD PILE)
(Moved to North Lot)

APPROXIMATE PCB AREA= 1,059.20 CY (FILL)*
(*INCLUDED IN SOUTH LOT TOTALS)

SOUTH LOT AREA=
18,155.66 CY (CUT) - 11,344.33 CY (BUD PILE)= 6,811.33 CY (CUT)
Approximate Building Slabs, Leaching Galley Structures, Concrete Loading Pads, Additional Drainage and Sanitary Structures / Piping = 12,200.43 CY (Cut)
6,811.33 CY (Cut) + 12,200.43 CY (Cut) = **Net 19,011.76 CY (CUT)**

NORTH LOT AREA=
18,108.07 CY (Fill) - 11,344.33 CY (BUD pile) = 6,763.74 CY (Fill)
Approximate Building Slabs, Leaching Galley Structures, Concrete Loading Pads, Additional Drainage and Sanitary Structures / Piping = 5,634.75 CY (Cut)
6,763.74 CY (Fill) - 5,634.75 CY (Cut) = **Net 1,128.99 CY (Fill)**

BROAD HOLLOW ROAD
(A.K.A. NYS ROUTE 110)
(140' WIDE)

KEY

- SIDEWALL ENDPOINT SAMPLE LOCATION
- BOTTOM ENDPOINT SAMPLE LOCATION

Surface Elevation Data

Min. Elev.	Max. Elev.	Color
Cut		
-19.00	-17.00	
-17.00	-15.00	
-15.00	-13.00	
-13.00	-11.00	
-11.00	-9.00	
-9.00	-7.00	
-7.00	-5.00	
Cut		
-5.00	-3.00	
-3.00	0.00	
Fill		
0.00	2.00	
2.00	4.00	
4.00	6.00	
6.00	8.00	
8.00	10.00	
10.00	11.00	

LEGEND

- PROPERTY LINE FOR SOUTHERN (REGULATED) PORTION OF SITE
- EXISTING STOCKPILES TO BE LEVELED TO GRADE
- AREA NOT TO BE DISTURBED DURING EXCAVATION/ GRADING

NOTE:

End-point soil samples will be collected from the southern portion of the Site to verify compliance with SCOs. End-point excavation bottom samples will be collected at a frequency of one sample per 900 square feet of excavation bottom and side-wall samples will be collected at a frequency of one sample per 30 liner feet of excavation in accordance with NYSDEC DER-10 Section 5.4. The end-point samples will be analyzed for PCBs, SVOCs and metals. End-Point samples will not be collected beneath existing stockpiles that are to be leveled to grade, as shown.

60' 0 60'

Title:

ENDPOINT SAMPLING PLAN

FAIRCHILD REPUBLIC AIRCRAFT; OLD SUMP

Prepared for:

ACADIA REPUBLIC FARMINGDALE, LLC

ROUX

Compiled by: D.K.	Date: 1/16/2026	FIGURE
Prepared by: G.M.	Scale: AS SHOWN	4
Project Mgr: J.W.	Project: 2422.0001Y000	
File: 2422.0001Y110.03.DWG		

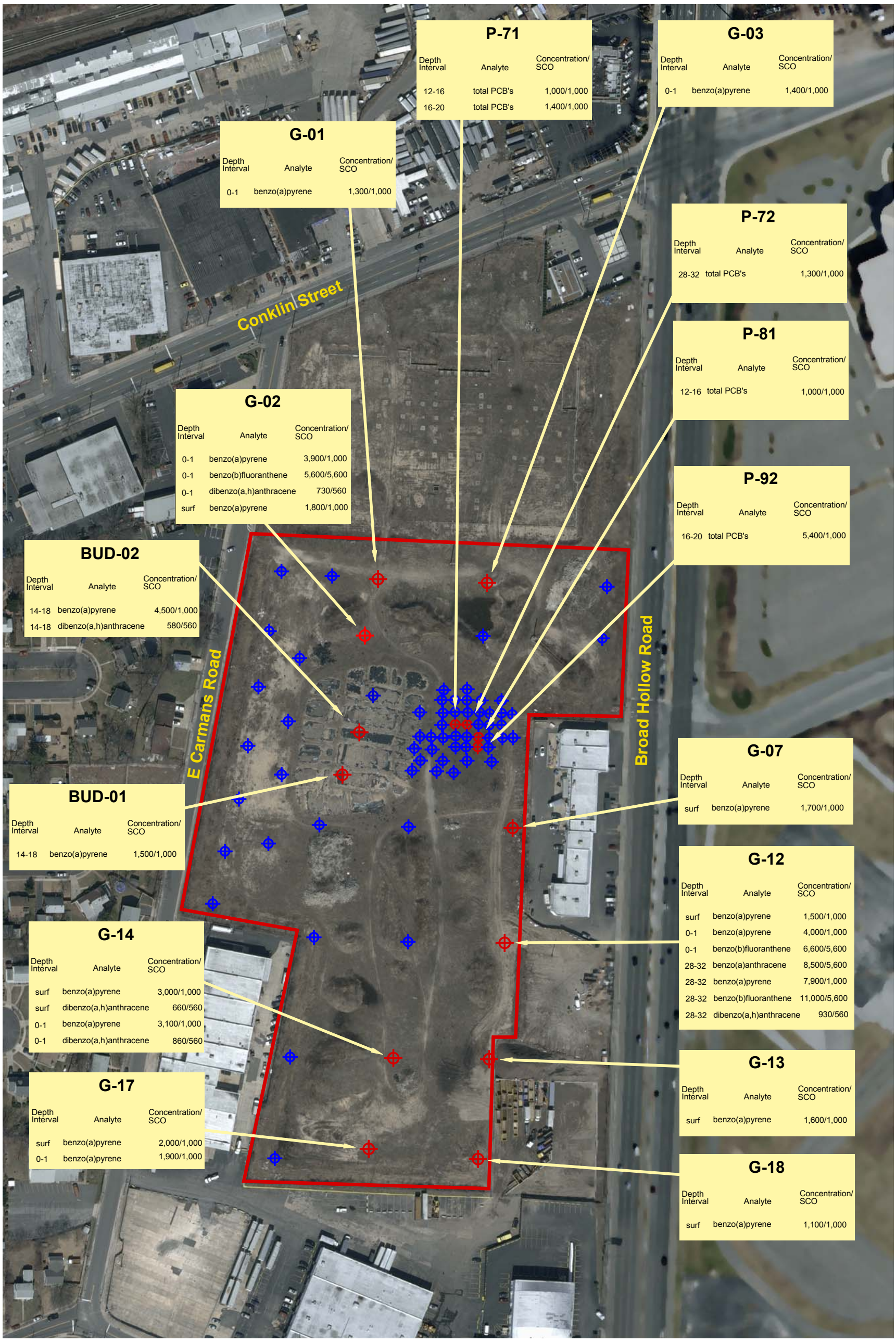




Fairchild Old Sump Site (class 2) Site No. 152004
Broad Hollow Rd (Rt 110) E. Farmingdale, NY 11530
Town of Babylon, Suffolk County, New York

Figure 5: Tax Parcel Map with Inferred Groundwater Flow Direction

Created by: RKC
4/10/14



P-71

Depth Interval	Analyte	Concentration/ SCO
12-16	total PCB's	1,000/1,000
16-20	total PCB's	1,400/1,000

G-03

Depth Interval	Analyte	Concentration/ SCO
0-1	benzo(a)pyrene	1,400/1,000

G-01

Depth Interval	Analyte	Concentration/ SCO
0-1	benzo(a)pyrene	1,300/1,000

P-72

Depth Interval	Analyte	Concentration/ SCO
28-32	total PCB's	1,300/1,000

P-81

Depth Interval	Analyte	Concentration/ SCO
12-16	total PCB's	1,000/1,000

G-02

Depth Interval	Analyte	Concentration/ SCO
0-1	benzo(a)pyrene	3,900/1,000
0-1	benzo(b)fluoranthene	5,600/5,600
0-1	dibenzo(a,h)anthracene	730/560
surf	benzo(a)pyrene	1,800/1,000

P-92

Depth Interval	Analyte	Concentration/ SCO
16-20	total PCB's	5,400/1,000

BUD-02

Depth Interval	Analyte	Concentration/ SCO
14-18	benzo(a)pyrene	4,500/1,000
14-18	dibenzo(a,h)anthracene	580/560

G-07

Depth Interval	Analyte	Concentration/ SCO
surf	benzo(a)pyrene	1,700/1,000

BUD-01

Depth Interval	Analyte	Concentration/ SCO
14-18	benzo(a)pyrene	1,500/1,000

G-12

Depth Interval	Analyte	Concentration/ SCO
surf	benzo(a)pyrene	1,500/1,000
0-1	benzo(a)pyrene	4,000/1,000
0-1	benzo(b)fluoranthene	6,600/5,600
28-32	benzo(a)anthracene	8,500/5,600
28-32	benzo(a)pyrene	7,900/1,000
28-32	benzo(b)fluoranthene	11,000/5,600
28-32	dibenzo(a,h)anthracene	930/560

G-14

Depth Interval	Analyte	Concentration/ SCO
surf	benzo(a)pyrene	3,000/1,000
surf	dibenzo(a,h)anthracene	660/560
0-1	benzo(a)pyrene	3,100/1,000
0-1	dibenzo(a,h)anthracene	860/560

G-13

Depth Interval	Analyte	Concentration/ SCO
surf	benzo(a)pyrene	1,600/1,000

G-17

Depth Interval	Analyte	Concentration/ SCO
surf	benzo(a)pyrene	2,000/1,000
0-1	benzo(a)pyrene	1,900/1,000

G-18

Depth Interval	Analyte	Concentration/ SCO
surf	benzo(a)pyrene	1,100/1,000

⊕ - Soil Sampling Location w/ Commercial SCO Exceedance

⊕ - Soil Sampling Location

All concentrations reported in ug/Kg

Depth intervals provided in feet below grade surface

All analyses by Test America, Inc.

0 175

SCALE IN FEET

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

225 Atlantic Avenue
Patchogue, New York 11772
Tel (631) 447-6400
Fax (631) 447-6497
Email Info@Enviro-Asmnt.com
www.Enviro-Asmnt.com

Figure 6

Commercial SCO Exceedances

June-July 2014 Remedial Investigation

6 NYCRR 375-6.8 Commercial Use Soil Cleanup Objectives

Fairchild Republic Aircraft; Old Sump
Broad Hollow Road
East Farmingdale, NY
Site No.152004



0 175
SCALE IN FEET

Legend

MW-1 - **Well ID Labels**

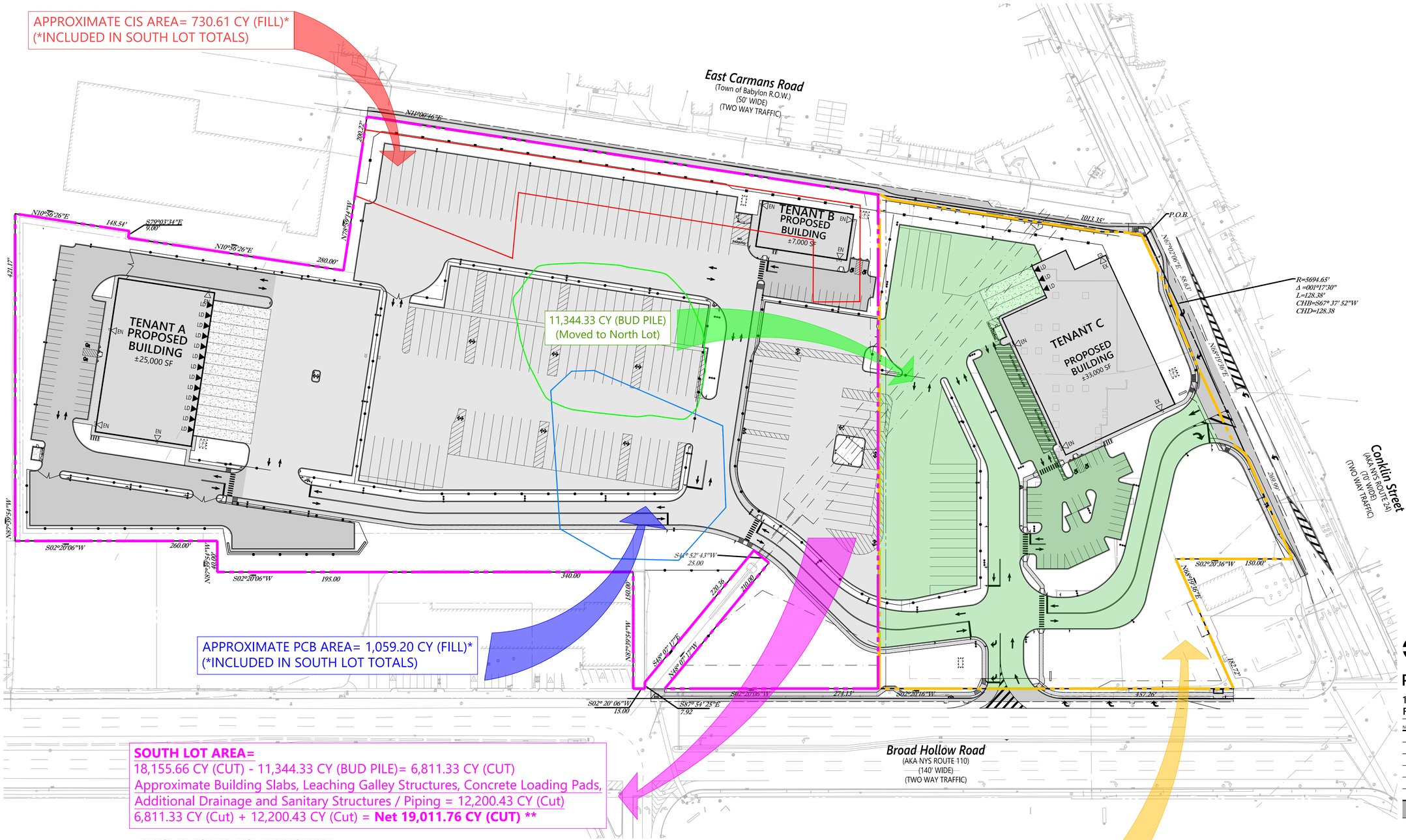
- **Surveyed Well Locations**

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS
225 Atlantic Avenue
Patchogue, New York 11772
Tel (631) 447-6400
Fax (631) 447-6497
Email Info@Enviro-Asmnt.com
www.Enviro-Asmnt.com

Figure 7
Site Map

Fairchild Republic Aircraft; Old Sump
Broad Hollow Road
East Farmingdale, NY
Site No.152004

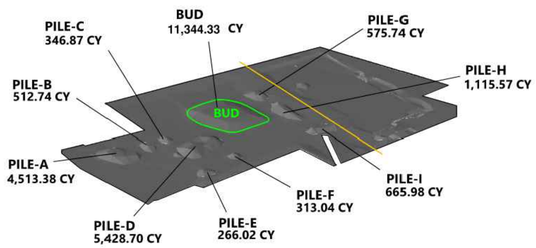
APPROXIMATE CIS AREA= 730.61 CY (FILL)*
(*INCLUDED IN SOUTH LOT TOTALS)



APPROXIMATE PCB AREA= 1,059.20 CY (FILL)*
(*INCLUDED IN SOUTH LOT TOTALS)

SOUTH LOT AREA=
18,155.66 CY (CUT) - 11,344.33 CY (BUD PILE)= 6,811.33 CY (CUT)
Approximate Building Slabs, Leaching Galley Structures, Concrete Loading Pads, Additional Drainage and Sanitary Structures / Piping = 12,200.43 CY (Cut)
6,811.33 CY (Cut) + 12,200.43 CY (Cut) = **Net 19,011.76 CY (CUT) ****

EXISTING PILES REMOVAL



BUD Pile=11,344.33 cy

Additional piles on South Side=13,738.04 cy
**(included in South Lot cut number)

NORTH LOT AREA=
18,108.07 CY (Fill) - 11,344.33 CY (BUD pile) = 6,763.74 CY (Fill)
Approximate Building Slabs, Leaching Galley Structures, Concrete Loading Pads, Additional Drainage and Sanitary Structures / Piping = 5,634.75 CY (Cut)
6,763.74 CY (Fill) - 5,634.75 CY (Cut) = **Net 1,128.99 CY (Fill)**

AREA CALCULATIONS:
830,617 SF (OVERALL AFTER DEDICATION)

IMPERVIOUS:

81,381 SF	(STANDARD DUTY PAVEMENT)
402,099 SF	(HEAVY DUTY PAVEMENT)
16,200 SF	(CONC. LOADING PADS)
65,000 SF	(BUILDINGS)
27,334 SF	(MISC. CONCRETE CURB & SIDEWALKS)

PERVIOUS:

238,603 SF	(LANDSCAPING)

vhb.com
vhb
Engineering, Surveying, Landscape Architecture and Geology, PC
100 Motor Parkway
Suite 350
Hauppauge, NY 11788
631.787.3400

0 30 60 120Feet

Proposed Industrial Uses

1330 Broadhollow Road
Farmingdale, NY 11735

No.	Revision	Date	Appvd.

CS | Checked by: CR

Date
June 2, 2025

Not Approved for Construction

Cut/Fill Analysis

Drawing Number
FIGURE 8 CF-1

Sheet 1 of 2

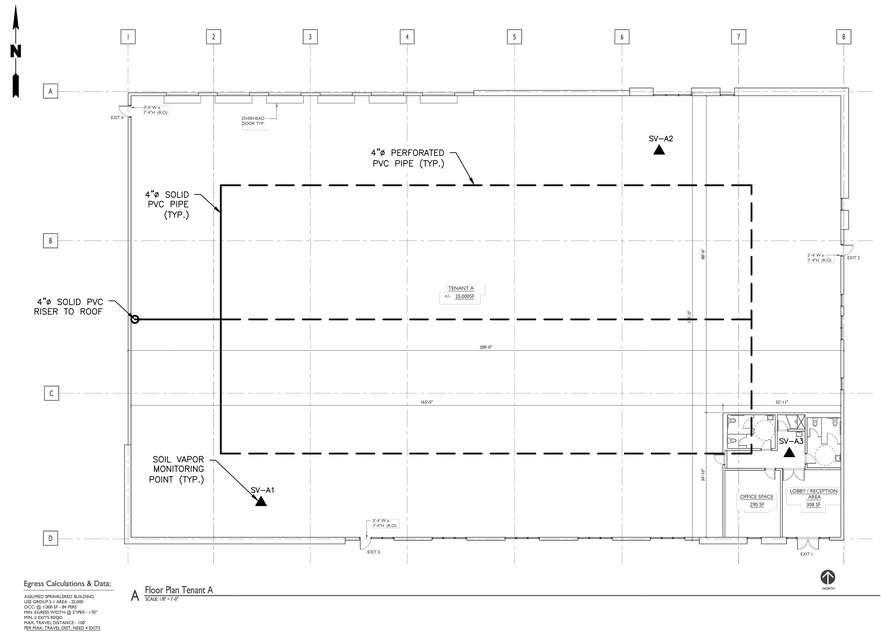
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Project Number
20760.02

Saved Monday, June 2, 2025 11:28:13 AM CSULLIVAN Plotted Monday, June 2, 2025 11:30:56 AM Christopher Sullivan

DRAWINGS

1. Sub-Slab Depressurization System Plan and Details – Building A
2. Sub-Slab Depressurization System Plan and Details – Building B
3. Sub-Slab Depressurization System Plan and Details – Building C



Egress Calculations & Data:

ASSUMED SPRINKLERED BUILDING
OCC. @ 1/100 SF - BUSINESS
OCC. @ 1/30 SF - BH RISE
MIN. EGRESS WIDTH @ 3'/REA - 170'
PROV. 3 EXITS REQD.
MAX. COMMON PATH OF TRAVEL - 100'
PER MAX. TRAVEL DIST. NEED 4 EXITS

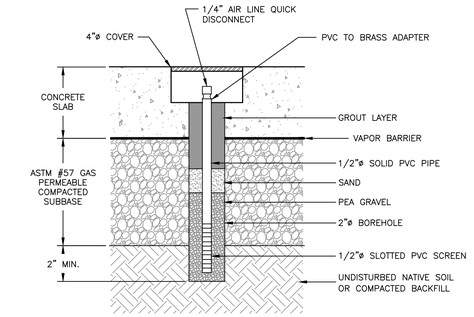
A Floor Plan Tenant A
SCALE: 1/8" = 1'-0"

PLAN VIEW
SCALE: 1" = 20'

20' 0 20'

SUB-SLAB DEPRESSURIZATION SYSTEM NOTES

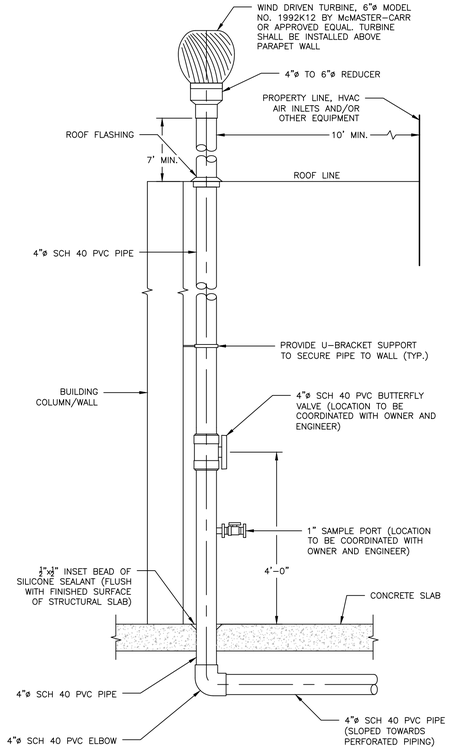
1. CONTRACTOR SHALL COORDINATE WITH PLUMBING, MECHANICAL, CIVIL AND ELECTRICAL CONTRACTORS FOR ALL UTILITY CROSSINGS.
2. THE HEADER/PERFORATED PIPE MAY BE ROUTED AROUND OR UNDERNEATH ANY UTILITY LINES (SEWER, WATER, GAS), AS REQUIRED AND AS APPROVED BY THE ENGINEER.
3. ALL PENETRATIONS THROUGH THE SLAB ON GRADE (SOG) SHALL BE SEALED USING SILICONE BASED WATERPROOF SEALANT OR APPROVED EQUAL.
4. REFER TO ARCHITECT DETAILS FOR SPECIFICATIONS REGARDING VAPOR BARRIER OR APPROVED EQUAL.
5. THIS SUB-SLAB DEPRESSURIZATION SYSTEM WAS DESIGNED TO MINIMIZE FOUNDATION CROSSINGS. FIELD VERIFICATION OF LOCATIONS SHOULD BE MADE TO ENSURE CROSSINGS ARE MINIMIZED.
6. ENGINEERED COMPOSITE COVER SHALL CONSIST OF CONCRETE BUILDING SLAB WITH A MINIMUM THICKNESS OF 4-INCHES, AND AN 8-INCH ASTM #57 GAS PERMEABLE STONE SUBBASE WILL BE PLACED BENEATH ALL SLAB ON GRADE AREAS.
7. VAPOR BARRIER SYSTEM SHALL CONSIST OF 20-MIL CLASS A VAPOR BARRIER, AS APPROVED BY THE ENGINEER, BELOW THE SLAB THROUGHOUT THE FULL BUILDING AREA. ALL SEAMS WILL BE TAPED. VAPOR BARRIER WILL BE SEALED ALONG BUILDING PERIMETER AS PER MANUFACTURER RECOMMENDATIONS.
8. CONTRACTOR SHALL PROVIDE A MINIMUM OF 4" COVER OVER TOP OF PVC PIPING TO PROTECT FROM DAMAGE.



NOTE

DEPICTED LOCATIONS OF SOIL VAPOR MONITORING POINTS ARE APPROXIMATE AND SHALL BE COORDINATED AND CONFIRMED WITH THE CONTRACTOR AND ROUX PRIOR TO CONSTRUCTION.

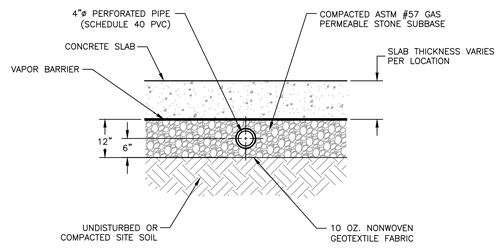
1 SOIL VAPOR MONITORING POINT DETAIL
SCALE: NOT TO SCALE



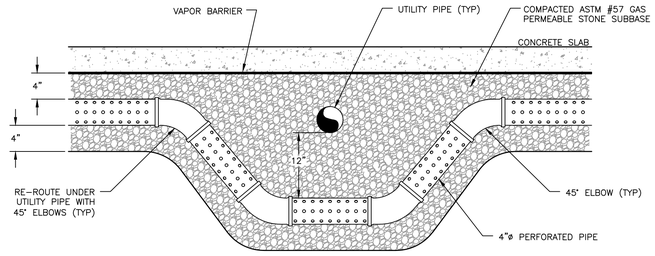
NOTE:

PROVIDE FIRESTOPPING AT EACH FLOOR LEVEL IN ACCORDANCE WITH TOWN CODE.

3 RISER DETAIL
SCALE: NOT TO SCALE



2 SUB-SLAB DEPRESSURIZATION SYSTEM PIPE DETAIL
SCALE: NOT TO SCALE



4 TYPICAL UTILITY PIPE CROSSING
SCALE: NOT TO SCALE

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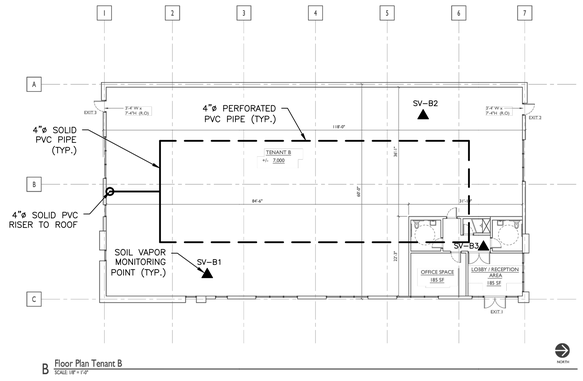
PROJECT NAME:
PROPOSED BROAD HOLLOW COMMONS
950 CONKLIN STREET, FARMINGDALE, NY 11735

PROJECT FOR:
ACADIA REPUBLIC FARMINGDALE, LLC
411 THEODORE FREMD AVE, RYE, NY 10580

TITLE:
SUB-SLAB DEPRESSURIZATION SYSTEM PLAN AND DETAILS BUILDING A

DRAWING NO.
1
DRAWING 1 OF 3

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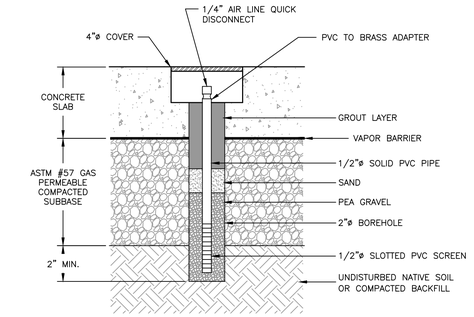
B Floor Plan Tenant B
SCALE: 1/8" = 1'-0"

Egress Calculations & Data:

ASSUMED SPRINKLERED BUILDING
USE GROUP S-1 AREA - 7,500
OCC. @ 1,500 SF - 24 PPDQ
MIN. EGRESS WIDTH @ 2 PPL/IN - 48"
MIN. 2 EXITS REQD.
MAX. TRAVEL DISTANCE = 150'
PER MAX. TRAVEL DIST. NEED 2 EXITS

PLAN VIEW
SCALE: 1" = 20'

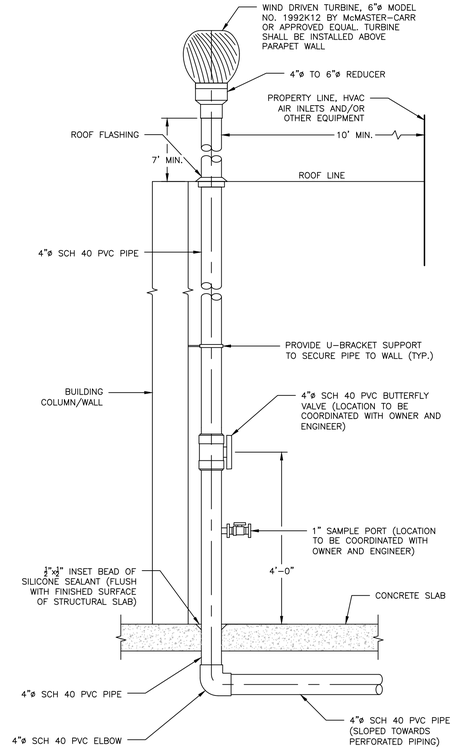
20' 0 20'



NOTE

DEPICTED LOCATIONS OF SOIL VAPOR MONITORING POINTS ARE APPROXIMATE AND SHALL BE COORDINATED AND CONFIRMED WITH THE CONTRACTOR AND ROUX PRIOR TO CONSTRUCTION.

1 SOIL VAPOR MONITORING POINT DETAIL
SCALE: NOT TO SCALE



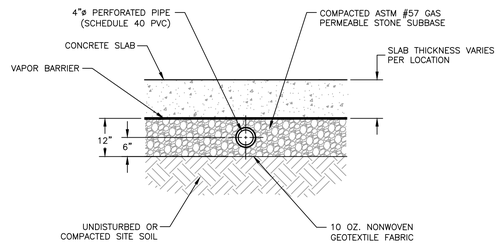
NOTE:

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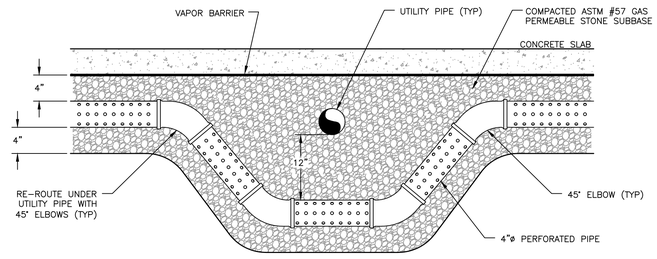
3 RISER DETAIL
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SUB-SLAB DEPRESSURIZATION SYSTEM NOTES

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4. REFER TO ARCHITECT DETAILS FOR SPECIFICATIONS REGARDING VAPOR BARRIER OR APPROVED EQUAL.
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2 SUB-SLAB DEPRESSURIZATION SYSTEM PIPE DETAIL
SCALE: NOT TO SCALE



4 TYPICAL UTILITY PIPE CROSSING
SCALE: NOT TO SCALE

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(631) 232-2600

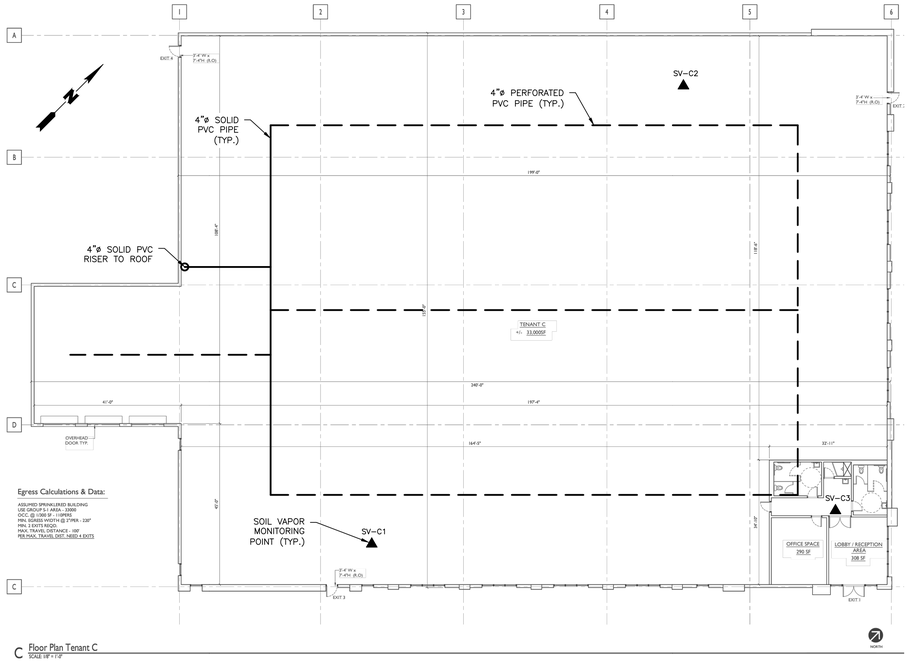
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TITLE:
SUB-SLAB DEPRESSURIZATION SYSTEM PLAN AND DETAILS BUILDING B

DRAWING NO.
2
DRAWING 2 OF 3

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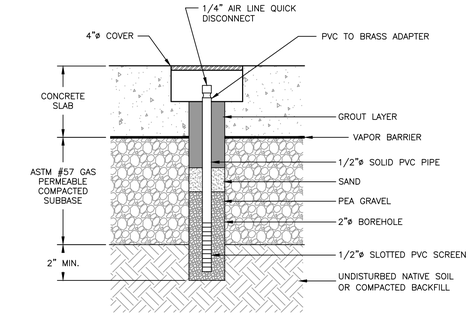
C Floor Plan Tenant C
SCALE: 1/8" = 1'-0"

PLAN VIEW
SCALE: 1" = 20'

20' 0 20'

SUB-SLAB DEPRESSURIZATION SYSTEM NOTES

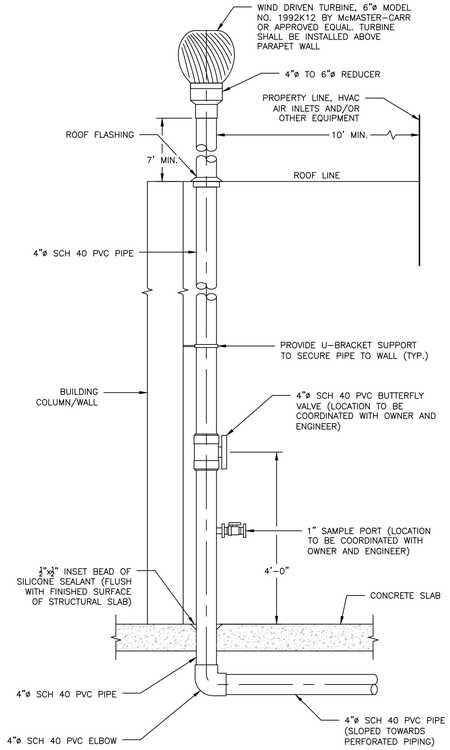
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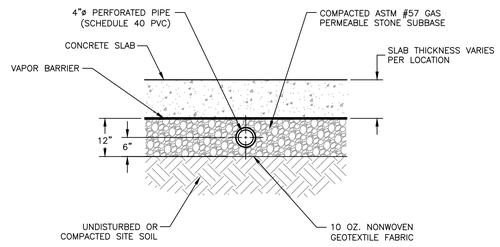
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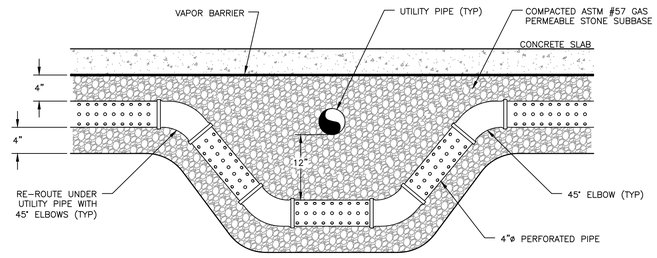
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3 RISER DETAIL
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2 SUB-SLAB DEPRESSURIZATION SYSTEM PIPE DETAIL
SCALE: NOT TO SCALE



4 TYPICAL UTILITY PIPE CROSSING
SCALE: NOT TO SCALE

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411 THEODORE FREMD AVE, RYE, NY 10580

TITLE:
SUB-SLAB DEPRESSURIZATION SYSTEM PLAN AND DETAILS BUILDING C

DRAWING NO.
3
DRAWING 3 OF 3

APPENDICES

A. Environmental Reports
B. Proposed Redevelopment Plan
C. Impacted Soil Areas
D. Beneficial Use Determination Extension
E. Vapor Barrier Specifications
F. Site-Specific Health and Safety Plan and Community Air Monitoring Plan
G. Quality Assurance Project Plan

APPENDIX A

Environmental Reports

FAIRCHILD INDUSTRIES, INC.

EAST FARMINGDALE, NEW YORK

OLD RECHARGE BASIN
FINAL REMEDIATION INVESTIGATION REPORT

PROJECT #961-6.2

SEPTEMBER 1995



Office Location:
EDER ASSOCIATES
480 Forest Avenue
Locust Valley, New York 11560

Office Contact:
Carol Graff
Mark Ryvkin
(516) 671-8440

Offices in New York, Wisconsin, Michigan, Georgia, Florida and New Jersey

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GLOSSARY

ACO	Administrative Consent Order
C&D	Construction and Demolition
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CLP	Contract Laboratory Program
DMR	Discharge Monitoring Report
EP	Extraction Procedure
FS	Feasibility Study
HRS	Hazard Ranking Score
MGD	Million Gallons Per Day
NRB	New Recharge Basin
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSDEC ASPCLP	New York State Department of Environmental Conservation Analytical Services Protocol Contract Laboratory Program
NYSDEC DFW	New York State Department of Environmental Conservation Division of Fish and Wildlife
NYSDOT	New York State Department of Transportation
ORB	Old Recharge Basin
PCBs	Polychlorinated Biphenyls
POTW	Publicly Owned Treatment Work
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
SCDHS	Suffolk County Department of Health Services
SPDES	State Pollution Discharge Elimination System
STP	Sewage Treatment Plant
TAL	Target Analyte List
TCL	Target Compound List
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VOCs	Volatile Organic Compounds
WWTP	Wastewater Treatment Plant

Chemical Compounds

BTEX	Benzene, toluene, ethylbenzene, and xylene
1,1-DCE	1,1-Dichloroethene
1,1-DCA	1,1-Dichloroethane
1,2-DCE	1,2-Dichloroethene
B-BHC	Beta-benzene hexachloride
4,4-DDD	Dichlorodiphenyldichloroethane
4,4-DDE	Dichlorodiphenyldicchloroethylene
PCE	Tetrachloroethylene
1,1,1-TCA	1,1,1-Trichloroethane

Units

mg/l	milligrams per liter
µg/kg	micrograms per kilogram
µg/l	micrograms per liter
ft/day	feet per day
gpm	gallons per minute

EXECUTIVE SUMMARY

Fairchild Industries, Inc. (Fairchild) submitted a Work Plan for the Remedial Investigation (RI)/Feasibility Study of the Old Recharge Basin to the New York State Department of Environmental Conservation (NYSDEC) in April 1992. The Work Plan was approved by NYSDEC and the RI commenced in June 1992. Fairchild retained Eder Associates (Eder) to carry out the RI, and this report presents the investigation data and findings. Groundwater contamination downgradient of the ORB will be discussed in the Main Plant RI.

The site is New York State Inactive Hazardous Waste Site number 152004, referred to as the Old Recharge Basin (ORB). The ORB is located in western Suffolk County on the west side of Route 110, south of Conklin Street (Route 24) in East Farmingdale, New York. The site is separated from the former Fairchild plant by Route 110 (Broadhollow Road), and is surrounded by commercial property. Currently the ORB is owned jointly by Fairchild and the State of New York. There are several NYSDEC listed inactive hazardous waste sites hydraulically upgradient (north-northwest) of the ORB.

The ORB encompasses approximately 10.5 acres and is situated on an approximately 13.2 acre site which is surrounded by a chain link fence with a locked gate. The ORB currently consists of two ponds (referred to as the North Pond and South Pond) separated by a land bridge. At one time, ownership was shared by Fairchild, the New York State Department of Transportation (NYSDOT), and Picone Brothers Inc., all of whom had separate discharges to the ORB. Fairchild's discharge pipe was on the eastern bank of the North Pond; the NYSDOT surface water discharge pipe was located on the northeastern bank of the North Pond; and the Picone discharge pipe was located on the western bank of the southernmost extension of the South Pond. Fairchild first acquired ownership of part of the ORB in 1940 when a predecessor, Republic Aviation Corporation, purchased five acres from New York

State. Previously, Republic was permitted to discharge drainage water from the plant to the ORB and extract water from the ORB for cooling purposes. Other facilities, including Picone and Eaton AIL Division (now occupied by Telephonics Corporation), discharged wastewater of unknown composition to the ORB for an undetermined period.

Fairchild began discharging non-contact cooling water and treated wastewater to the ORB in about 1940. A permit to discharge to the ORB was issued by the New York Department of Health on January 13, 1941. Fairchild had a State Pollution Discharge Elimination System (SPDES) permit for discharges to the ORB from 1949 to 1983. The Suffolk County Department of Health Services (SCDHS) ordered that all discharges to the ORB be eliminated in September 1981 because of flooding. Thereafter, Fairchild diverted treated industrial wastewater to the sanitary sewer system but continued to discharge non-contact cooling water and stormwater runoff to the ORB until all Fairchild's discharges were diverted to a new recharge basin east of Route 110 in November 1983. From November 1983 to 1987, the only discharges to the ORB were stormwater runoff from Eaton AIL Division located south of the plant on the east side of Route 110, and stormwater runoff from the northwest end of Republic Airport and a northwest corner parking area at the former Fairchild plant east of Route 110. The discharge pipe was sealed on the east side of Route 110 in 1987. The only point discharge to the ORB since April 1987 has been stormwater from Route 110 where runoff leaks through a manhole into a sewer pipe leading to the ORB.

New York State began discharging stormwater runoff from Route 110 and Conklin Street into the ORB in the 1950s. Most of this discharge was eliminated in 1963 because the ORB flooded due to increased stormwater discharge and the accumulation of low-permeability sediments retarded infiltration.

Five environmental investigations were conducted previously at the site by York Wastewater Consultants and Geraghty & Miller. The studies concluded that the groundwater flow direction was south-southeasterly, the ORB was not a source of the metals found in the

groundwater, ORB sediment contained elevated concentrations of volatile organic compounds (VOCs), semivolatile compounds, polychlorinated biphenyls (PCBs) and total metals but the leaching potential of the sediments was determined to be very low. Surface water samples indicated the presences of VOCs and metals.

NYSDEC and SCDHS files identify several known or suspected groundwater contamination sources upgradient of the ORB, including the East Farmingdale Fire Department facility at the corner of Carmans Road, the NYSDEC inactive waste sites: the Kenmark Textile site (site (152032) and the Target Rock site (site 152119) and the Brand & Airflex site being investigated by the SCDHS.

Fairchild averaged two million gallons per day of water discharged to the ORB. The discharge included non-contact cooling water, air conditioning water, treated wastewater, and stormwater. A review of analytical data collected at the ORB shows an average concentration of trichloroethylene (TCE) and tetrachloroethylene (PCE) of 15 micrograms per liter (µg/l). VOCs in this discharge cannot be substantiated, as VOCs were not monitored or tested frequently prior to 1982, but as the plant operations were the same, these averages are indicative of historic Fairchild discharges.

During the RI and supplemental RI, eleven monitoring wells were installed, seven surface soil samples were collected, hydrological data were measured, two rounds of groundwater and surface water samples were collected and analyzed, groundwater samples from monitoring wells were collected and analyzed, and a fish and wildlife impact assessment was conducted.

The RI summary and conclusions are as follows:

Site Background

- Historical aerial photographs show that the ORB was once littered with potentially contaminated debris, drums and tires. Drums were stored in the northwest corner.

- All public water supply wells within a three mile radius of the site and all wells within a one mile radius of the site were inventoried. The closest downgradient active supply well is approximately 7,000 feet southeast of the site.

- Groundwater movement is to the south-east, which is in agreement with the regional groundwater flow direction. Groundwater flow velocity is estimated at 1 to 1.5 feet per day. The groundwater flow direction at the ORB does not significantly change due to precipitation events.

- The ORB currently does not recharge the aquifer based on relative groundwater and surface water elevations, although it did function as a recharge basin in the past.

- Studies at the upgradient Kenmark Textile site found heavy metals, cyanide, phenols, and VOCs in industrial wastewater which was discharged to groundwater through leaching pits.

- Over 1400 gallons of TCA and PCE contaminated wastewater were released in 1983 at the upgradient Target Rock site. A plume originated at this site would reach the ORB in approximately 10 years based on the regional groundwater flow direction and an estimated groundwater flow velocity of 1-1.5 feet per day.

- A study by the SCDHS at Brandt Airflex, 150 feet upgradient of the ORB, found TCE (450 µg/kg) and PCE (30,000 µg/kg) in soil, and TCE (13,000 µg/l) and PCE (170,000 µg/l) in groundwater. Based on the groundwater flow rate of 1 to 1.5 feet/day, contaminated groundwater would migrate to the ORB in less than one year.

- Groundwater contamination was found at the East Farmingdale Fire Station. PCE was found at extremely high concentrations in groundwater (12,143 µg/l) in 1990. Contaminated groundwater migrating from the fire station would reach the ORB in less than one year, based on the groundwater flow rate of 1 to 1.5 feet/day.

Nature and Extent of Contamination

- Iron and manganese were the only surface water contaminants found in the ORB at concentrations exceeding NYS standards.

- VOCs, chromium, lead, pesticides and PCBs were detected in on-site groundwater at concentrations exceeding NYS groundwater standards, but they were detected at locations that indicate either one or more off-site sources, discharge to the ORB by Fairchild and others, or a combination of the above, based on the RI data.

- TCE, PCE and TCA concentrations at well cluster 6 increased by five to fifteen times from 1987 to 1993. Concentrations of VOCs should be higher in 1987 than in 1993 if the ORB was a contamination source considering that Fairchild's prior discharges ceased in 1983. These data clearly indicate that the past Fairchild's discharges could not be the only source and VOCs should be attributed to off-site sources.

- Monitoring well 10D is downgradient of cluster 6. TCE, PCE, and 1,2-DCE were found at monitoring well 10D, but not at the other downgradient wells. These VOCs can be attributed to off-site sources.

- Benzene was found in groundwater at upgradient wells 1S and 1D and downgradient well 12S in 1993 but was not detected in 1992. These data indicate that benzene is not associated with Fairchild discharges which terminated more than ten years ago.

- Concentrations of iron, manganese, and sodium at the ORB monitoring wells are above NYS groundwater standards, but are within the range of concentrations commonly found in Long Island groundwater.

- Elevated chromium and lead concentrations were found at well clusters 6, 10 and well MW-12S, which are sidegradient and downgradient of the western portion of the ORB. Lead and chromium concentrations were below NYS standards in all other downgradient wells. The spatial distribution of contamination in groundwater suggests a source from the western portion of the ORB and/or an off-site source such as the Kenmark Textiles or Target Rock sites.

- The groundwater flow velocity in the Upper Glacial Aquifer at the site is estimated as 1-1.5 feet/day. Heavy metals contamination migrates much more slowly based on physical and chemical characteristics of the contaminants and would be detected at downgradient wells if the ORB is a source. Analytical data at monitoring wells downgradient of the ORB show no heavy metal contamination that can be attributed to Fairchild.

- Concentrations of dissolved chromium, lead and arsenic were below NYS standards at all ORB wells. Metals are transported in groundwater in the dissolved phase and these data indicate that metals in the ORB sediment do not impact groundwater under the ORB.

- Concentrations of total chromium and lead were detected above NYS standard in 3 out of 26 monitoring wells. Arsenic was detected above NYS standard in 2 out of 26 monitoring wells. These concentrations are likely related to higher turbidity in the samples and are characteristic of local conditions.

- Pesticides were found in groundwater at several monitoring wells. They are not likely attributed to past Fairchild discharges since they were not used in Fairchild's manufacturing processes.

- PCBs were detected in groundwater at sidegradient cluster 6 and well MW-12S. Pesticides and PCBs were not detected at monitoring wells 6S, 6D, 4D, and 7S during the Phase II groundwater sampling in 1988. Alpha- and gamma-chlordane were found in 1988 at well 12S. If Fairchild's discharges were the source of contamination, the concentrations should be higher in 1988 than in 1993 considering that Fairchild's discharges ceased in 1983. These data indicate that this contamination is likely attributed to off-site sources. The source may be from an off-site source(s) or from PCB's in soil at the western portion of the ORB.

- PCBs found in soil and groundwater (Arochlor 1254), and sediments (Arochlor 1248 and 1254) at the ORB are of a different type than the PCBs used in most of the transformers at the Main Plant (Arochlor 1260 and 1242). These data indicate that PCB contamination found at the ORB is not associated with past Fairchild's discharges.

- PCB's were detected in surface soil at the western side of the ORB. The sampling results indicate that this contamination is of limited extent. The source of this contamination is unknown and could not be attributable to past Fairchild discharges. The Fairchild discharge pipe was located on the opposite (eastern) side of the ORB.

- VOCs, semivolatile organic compounds, metals and PCBs were found in the ORB sediments. The sediment contamination is stable and does not leach into surface water and groundwater as indicated by the surface water and groundwater analytical data. The EP toxicity test results confirm that metals in the sediments are stable.

Contaminant Fate and Transport

- The primary migration pathway for site contaminants is likely groundwater transport. The possibility of surface water transport by flooding is minimal, as the current water level in the ORB is 15 to 20 feet below grade. Contaminant migration through fugitive dust emission is greatly reduced by vegetation around the ORB.

- The RI groundwater data do not indicate significant concentrations of contaminants that can be attributed to past Fairchild discharges to the ORB.

- The fish and wildlife impact analysis indicates that the physical characteristics of the site and surrounding area do not support a significant ecological diversity or biomass. The ecological data indicate that there is no evidence of significant impact on fish and wildlife. Sediments in the north and south ponds were sampled in 1988 and metals, VOCs, and PCB concentrations in some of the samples exceed State generic aquatic life criteria. It is unlikely that these

contaminated sediments are a significant threat to the environment, since the ecological data indicate that the ORB does not support a significant aquatic population.

1.0 INTRODUCTION

Fairchild Industries, Inc. (Fairchild) retained Eder Associates (Eder) to conduct a Remedial Investigation (RI) of New York State Inactive Hazardous Waste Site number 152004, referred to as the Old Recharge Basin (ORB), in East Farmingdale, New York in 1992. The New York State Department of Environmental Conservation (NYSDEC) approved an RI work plan developed by Geraghty & Miller, and the work commenced in June, 1992. The RI included the inspection and repair of existing monitoring wells, the installation of additional monitoring wells, the collection and evaluation of hydrologic data, and the collection and analysis of two rounds of groundwater and surface water samples. Three surface samples were also collected in the vicinity of the ORB at the request of NYSDEC and the Nassau County Department of Health. A draft RI report was submitted to NYSDEC in May 1993.

NYSDEC requested additional information on the ORB at a meeting on June 29, 1993, and a work plan was approved in July 1993. The Supplemental Remedial Investigation Report was submitted in June 1994 and contained groundwater quality data from upgradient wells, surface soil sampling data, and a fish and wildlife impact analysis.

Eder responded to NYSDEC provided comments on RI and supplemental draft reports (May 20, 1994).

NYSDEC, at a meeting on August 29, 1994, raised the possibility that certain regional volatile organic compound (VOC) contamination in off-site groundwater may have been caused by Fairchild's discharges to the ORB. This issue was discussed in a report, Response to August 29, 1994 Meeting, submitted in October 1994.

This final RI report summarizes these three reports and incorporates responses to NYSDEC's comments.

1.1 Purpose of the Report

This report presents the results of the RI conducted at the ORB. The site has been listed in the New York State Registry of Inactive Hazardous Waste Disposal Sites since 1986 as site number 152004. Fairchild entered into an Administrative Consent Order (ACO) with the New York Department of Environmental Conservation (NYSDEC) in March 1992, under which Fairchild conducted a Remedial Investigation/Feasibility Study (RI/FS) at the ORB.

The objectives of the RI are: 1) to determine the nature and extent of contamination at the ORB; 2) to determine the extent of migration of contaminants; 3) to perform a baseline risk analysis to determine the potential threat to human health and the environment; and 4) to provide data for evaluation of cleanup alternatives in the FS. This report is organized in accord with the USEPA October 1988 Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA.

Section 1.0 presents introductory and background information on the site. Section 2.0 describes the physical characteristics of the study area. Data collection procedures and investigation results are discussed in Section 3.0. The nature and extent of contamination is discussed in Section 4.0. Section 5.0 discusses the possible fate and transport of contaminants detected at the site. The RI summary and conclusions are presented in Section 6.0.

These sections present a comprehensive summary of the data, the data evaluation and the conclusions reached during the RI. References are provided at the end of the report. Groundwater contamination downgradient of the ORB will be discussed in the Main Plant site RI.

1.2 Site Background

This section describes the site physiography and provides background information on site activities, previous studies, off-site sources and nature of discharges to the ORB.

1.2.1 Site Location and Description

The ORB is located on the west side of Route 110, south of Conklin Street (Route 24) in East Farmingdale, New York. The site is separated from the former Fairchild plant by Route 110 (Broadhollow Road) (see Figure 1), and is surrounded by commercial property with several residences across the street on the west side. There are several NYSDEC-listed inactive hazardous waste sites hydraulically upgradient (north-northwest) of the ORB.

The ORB covers approximately 10.5 acres of an approximately 13.2-acre parcel which is surrounded by chain link fence with a locked gate. The ORB consists of two ponds (referred to as the North Pond and South Pond) which are usually separated by a land bridge. Prior to 1983, the water level in the ponds was higher than the top of the land bridge. In the mid 1980s, as a result of the diversion of Fairchild's stormwater and non-contact cooling water to a new recharge basin, the water level in the ORB declined and the land bridge was exposed. The bottom of the ORB was reportedly about 65 feet below the land surface at its greatest depth which was prior to 1983. The ORB is hydraulically connected to groundwater which is approximately 30 feet below the surface. The only surface water that now enters the ORB is direct precipitation and local surface runoff.

1.2.2 Site History

The ORB is located on land that was previously farmland. The site was a sand mine in the 1930s, but the exact dates are unknown. Historical aerial photographs (Appendix A) show that the size and shape of the ORB changed during the sand mining period and again when

Route 110 was widened in 1951-1952. The southwestern portion of the pond, which once extended onto adjacent property to the west, is now mostly filled. Picone Corporation allegedly began dumping C&D debris, trees, tires, drums, and other waste at the south end of the ORB in 1964.

The aerial photos and surveyor's maps show the following changes in the shape of the ORB and evidence of dumping activities:

- 1944 - The ORB had an irregular shape with numerous islands in the southeast part. Sand mining activities and debris were evident.

- 1954 - Debris is located at the eastern part of the ORB adjacent to Route 110.

- 1959 - The ORB had a rounded shape with signs of landfilling on the east side.

- 1970 (April) - The ORB had a more rounded shape. The southwest corner had been backfilled and a large building was present on the fill. The basin perimeter was littered with drums and tires. The photos showed refuse along the west edge of the basin adjacent to Carmans Road. Drums were particularly noticeable in the northwest corner near the road. The photo showed a fence around much of the basin.

- 1970 (Sept.) - The photo showed debris at the southwest corner of the basin inside and outside the fence. The south part was littered along the boundary with what appeared to be unused concrete leaching rings. The photo shows construction equipment in the north part of the basin.

- 1970 (Nov.) - The southeast portion of the basin was backfilled. An island in the southern part shown on earlier photos was widened and connected to the

eastern edge to make a ramp. A significant part of the northeast corner appeared to have been cleared of debris.

- 1973 - The ramp and backfill area at the southwest corner were covered with water. There was no evident debris on the water surface. Some debris still littered the basin perimeter. There were no islands at the south part of the pond.

- 1976 - There were no noticeable changes since 1973.

- 1980 - There were no noticeable changes.

- 1983 - There were no noticeable changes.

The exact ownership history of the ORB is unclear. At one time, ownership was shared by Fairchild's predecessors, as well as by the New York State Department of Transportation (NYSDOT), and Picone, all of whom reportedly had separate discharges to the ORB. Deeds show that Independent Silk Dyeing Co. Inc. and Independent Textile Dyeing Co. Inc., both with former facilities on the Kenmark Textiles site, owned a portion of the ORB at one time. Fairchild's discharge pipe was on the eastern bank of the North Pond; the NYSDOT surface water discharge pipe was located on the northeastern bank of the North Pond; and the Picone discharge pipe was allegedly located on the western bank of the southernmost extension of the South Pond. Fairchild first acquired ownership of part of the ORB in about 1940 when a predecessor, Republic Aviation Corporation, purchased five acres from New York State. At that time, Republic was permitted to discharge drainage water from the plant to the ORB and extract water from the ORB for cooling purposes. Other facilities, including Picone and Eaton AIL Division (now occupied by Telephonics Corporation), allegedly discharged wastewater of unknown composition to the ORB for an undetermined period. A textile

dyeing facility north of Conklin Street may also have discharged wastewater to the ORB prior to 1963 based on underground utility maps and the Kenmark Textiles site history.

Fairchild began discharging non-contact cooling water, air conditioning water, treated wastewater, and stormwater to the ORB in late 1941. A permit to discharge sewage effluent from Fairchild's sewage disposal work to groundwater was issued by the New York Department of Health on January 13, 1941. From 1949 to 1983, Fairchild had a State Pollution Discharge Elimination System (SPDES) permit for discharges to the ORB. Copies of the SPDES permits which include the effluent limits and a chronological list of SPDES violations are provided in Appendix B. Incinerator waste and process wastes were also hauled to the ORB according to Fairchild's 1952 report. Incinerator residue would not contain VOCs, which would be destroyed during incineration.

The Suffolk County Department of Health Services (SCDHS) detected volatile organic compounds (VOCs) in Fairchild's discharge to the ORB during routine SPDES sampling on April 22 (methylene chloride, 1900 µg/l) and June 15, 1981 (methylene chloride, 910 µg/l and trichloroethylene [TCE], 72 µg/l). A SPDES violation was issued based on the detection of methylene chloride and TCE in the wastewater stream to the ORB. SCDHS ordered the termination of industrial wastewater discharges to the ORB in September 1981 and required that Fairchild undertake a comprehensive environmental study of the ORB. Fairchild complied with the order, and identified and eliminated the sources of the methylene chloride and trichloroethylene in accord with SCDHS requirements. Fairchild entered into a Consent Agreement with SCDHS on August 11, 1982 to study the ORB. Fairchild diverted treated industrial wastewater to the sanitary sewer system, but continued to discharge non-contact cooling water and stormwater runoff to the ORB until these discharges were diverted to a new recharge basin east of Route 110 in November 1983. The only evident discharges to the ORB from November 1983 to 1987 consisted of stormwater runoff from the Eaton AIL site south of the plant on the east side of Route 110 and stormwater runoff from the northwest end of Republic Airport and the northwest corner of a parking area at the former Fairchild plant east

of Route 110. The discharge pipe was sealed on the east side of Route 110 in 1987. The only point source discharge to the ORB since April 1987 has been stormwater from Route 110 where runoff leaks through a manhole into a sewer pipe leading to the ORB.

New York State began discharging stormwater runoff from Route 110 and Conklin Street into the ORB in the 1950s. Most of this discharge was eliminated in 1963 because the ORB occasionally flooded due to increased stormwater discharges and the accumulation of sediment which retarded infiltration.

1.2.3 Previous Studies

The five previous environmental investigations of the ORB provide a comprehensive and detailed analysis of its physical, chemical, and hydrogeologic condition. The first two studies were conducted by York Wastewater Consultants (York) and the last three by Geraghty & Miller (G&M). In addition, monitoring wells installed during the three G&M studies were sampled during a G&M Phase II Investigation of the former Fairchild plant.

The two York studies were carried out from June to October 1982. These studies included the collection of bottom sediment, surface water, and groundwater samples. Four exploratory borings were drilled (FR-1 through FR-4) and monitoring wells were subsequently installed in Borings FR-1, FR-2 and FR-3 (see Figure 2). Sampling locations are shown on Figure 2-2 in G&M's April 1992 Work Plan for the Remedial Investigation/Feasibility Study (the Work Plan).

The construction details for pre-RI monitoring wells FR-1 through FR-4, constructed by York, are summarized in the Work Plan. Well clusters 1 through 7 and MW-12S, constructed by G&M are shown in Table 1 in this text. Shallow wells at clusters 1 through 7 and well MW-12S screen the water table. The deep well at clusters 1 through 7 screens the intermediate

zone of the Upper Glacial aquifer (approximately 40 to 60 feet below land surface). Well number suffixes "S" and "D" identify shallow and deep monitoring wells.

York collected groundwater samples from three depths (40, 60 and 80 feet) in temporary wells set in borings FR-1 through FR-4. These samples were analyzed for selected metals and VOCs (Table 2).

TCE was detected in 1982 in both a temporary upgradient well (FR-1) and downgradient well (FR-2). Calculations presented in Appendix C demonstrate that a mound created around the ORB when it was full may have been extended up to well FR-1, located approximately 400 feet to the north of the ORB. If the ORB is a source, upgradient well FR-1 should have a lower concentration than downgradient well FR-2 even with mounding. The upgradient concentration was higher than the downgradient concentration, indicating an upgradient off-site source of contamination. The groundwater analytical results for metals were inconclusive, since the samples from the York wells were not filtered prior to preservation with acid. Without filtration, the acid preservative will dissolve metals which are part of the soil matrix. The metals concentrations in the non-filtered samples will be higher because of sample turbidity and may not be representative of actual groundwater quality.

The third ORB investigation was performed by G&M beginning in October 1983 (Geraghty & Miller, Inc. 1984). This study included the installation of seven monitoring well clusters (one shallow and one deep well) in the vicinity of the ORB (Drawing No. 1 and Figure 2-2, in the Work Plan), the collection of water level data, and the collection and analyses of groundwater samples from the G&M wells and from two of the York wells. Water level elevations were measured and a south-southeast groundwater flow direction was determined. Based on investigation results, G&M concluded that metals were not leaching from the ORB sediments to groundwater.

Beginning in April 1985, G&M conducted a fourth investigation to collect a second round of groundwater samples from the monitoring wells to determine the leachability of metals in bottom sediment using an extraction procedure (EP) and to prepare a Hazard Ranking Score (HRS) for the ORB (Geraghty & Miller, Inc. 1985). The leaching potential analysis indicated that small amounts of metals were leaching from the ORB bottom sediments at concentrations below regulatory standards. The results of this study confirmed earlier G&M findings that the groundwater flow direction was south-southeasterly and that the ORB was not a source of the metal concentrations found in the groundwater.

The fifth investigation was conducted by G&M during the period of September 1988 to January 1989 (Geraghty & Miller, Inc. 1989), in accord with a NYSDEC-approved work plan. This investigation included geophysical surveys, the collection and analyses of sediment, soil and surface-water samples, and the evaluation of groundwater quality data.

Samples of sediments and of the native soil beneath the sediments were collected from 16 soil borings during this study. The samples were analyzed by a USEPA-approved laboratory for Target Analyte List (TAL) parameters using extraction procedure methodologies (EP) following the USEPA Contract Laboratory Program (CLP). These data indicate that there were detectable concentrations of volatile organic compounds (VOCs), semivolatile compounds, polychlorinated biphenyls (PCBs), and total metals in the ORB sediment. Pesticides were also detected, but only in sediment samples from two of the eight borings in the South Pond. The concentrations of VOCs and pesticides are an order of magnitude higher in the sediment than in the native soil beneath the sediment. The highest chromium and lead concentrations were generally found in sediment samples collected from borings in the deepest part of the eastern lobe of the North Pond. The leaching potential of the sediments was determined to be very low.

Surface water samples were collected from 11 locations in the North Pond and 11 in the South Pond. The analytical results for VOCs, semivolatiles, metals and cyanide are presented

in the Work Plan. Pesticides/PCBs were not detected in any of the surface water samples, but VOCs and metals were detected. Intermediate depth samples were collected by G&M at several of the surface water sampling locations to determine the relationship between bottom sediment and surface water quality.

VOCs were found in the South Pond at concentrations ranging from 67 to 134 micrograms per liter (μg/l).

G&M collected five rounds of groundwater samples for metals and two rounds of samples for VOCs (Tables 3 and 4) from monitoring wells at the ORB. Samples from selected wells were analyzed once for TCL compounds.

Groundwater samples collected for metals analysis from wells in the vicinity of the ORB were filtered prior to preservation. These results indicate that iron and manganese were detected at concentrations above NYS standards, but the data are typical of background Long Island groundwater quality.

1.2.4 Off-Site Sources

NYSDEC files identify several known or suspected groundwater contamination sources upgradient of the ORB, including the East Farmingdale Fire Department facility at the corner of Carmans Road and two NYSDEC inactive hazardous waste sites: the Kenmark Textile site (site No. 152032), and the Target Rock site (site No. 152119). The data reviewed for this section of the RI are provided under separate cover and are included in the package sent to the repository.

1.2.4.1 Kenmark Textile Printing Corporation (Site #152032)

The Kenmark Textile site is located approximately 900 feet upgradient of the ORB at 921 Conklin Street.

RI investigations were conducted at the site from 1986 to 1990. The site was placed on the NYS Inactive Hazardous Waste Disposal Site Registry and the National Priorities List due to alleged SPDES violations. Data presented in the Preliminary Remedial Investigation for the Kenmark Textile Site, December 1993 indicated that industrial wastewater generated at the site contained heavy metals, cyanide and phenols and was discharged to groundwater through multiple leaching pits. VOCs, including chloromethane and tetrachloroethene (PCE), were detected at the site at concentrations above NYS groundwater standards in 1990. No significant concentrations of VOCs were found during groundwater sampling in 1992. The report concludes that iron and manganese consistently exceeded NYS groundwater standards.

Samples of wastewater discharged into on-site leaching pools had elevated concentrations of metals including chromium and lead in 1974, 1984 and 1985 (Site Summary Report for the Kenmark Textiles site, May 1993, pages 8, 9 and Table 1.2.2.1). Elevated concentrations of arsenic, chromium and lead were found in the soil with maximum concentrations of 220, 110 and 890 µg/kg, respectively (RI/FS Phase I Sampling Report, S.J. and J. Service Stations, Inc., June 1990, Tables 8-5 and 8-10). Chromium concentrations in the wastewater discharged by Kenmark Textiles to an upgradient leaching pit exceeded the effluent standard in 25% of the samples collected from 1974 to 1981, based on the December Preliminary RI Report for the site. There was no remedial action at the Kenmark Textile site subsequent to the RI although the extent of off-site contamination was not investigated. The Record of Decision is included in.

1.2.4.2 Target Rock Corporation (Site #152119)

The Target Rock Corporation site is located approximately 3,500 feet upgradient of the ORB. Environmental investigations at the Target Rock Corporation site are described in Roux Associates' 1988 Phase I report and Lawler, Matusky and Skelly Engineers 1993 Phase II report.

This site is located on 1966 East Broadhollow Road, Farmingdale. The facility manufactured valves from 1975 to October 1983. The SCDHS confirmed that between mid-1982 and September 1983, approximately 2,000 gallons of wastewater per month were discharged into an on-site dry well. This wastewater contained up to 5 percent (50,000 mg/l) of 1,1,1-TCA, 2,300 µg/l of PCE and other VOCs.

Leaking drums of solvent and cutting oil wastes were found during a May 1982 SCDHS inspection on site. The dry well and cesspools were pumped out and the drum storage area was bermed in 1983. Phase I and II investigations were conducted at the site during 1988 and 1993. 1,1,1-TCA was found in groundwater in 1992 at a concentration of 66,000 µg/l. The Phase II investigation recommended a downgradient groundwater investigation. The closest public water supply well field is located approximately 2,000 feet sidegradient and has been closed because of VOC contamination.

Target Rock was removed from the NYS Registry of Inactive Hazardous Waste Disposal Sites in January 19, 1994. The following reasoning was used to delist the site:

> *Target Rock disposed of wastewater containing up to 5 percent 1,1,1-TCA into a dry well at the rear of the building. According to Part 371, the concentration of 1,1,1-TCA in the wastewater would have had to be 10 percent or greater in order to be classified as a hazardous waste. Therefore, no hazardous waste disposal has been documented at this site. Consequently, this site should be removed from the NYS Registry of Inactive Hazardous Waste Disposal sites. However, groundwater, surface water and soil were sampled,*

and levels of 1,1,1 Trichloroethane above groundwater standards were found in both ground and surface water. This site has been referred to the NYSDEC's Division of Water for appropriate action.

The NYSDEC Division of Water at Stony Brook reported that a consent order was issued in January 1995 requiring a Phase II off-site investigation. SCDHS considers the site "an eminent threat of potential exposure to residents" and also wants private homes investigated for VOC fumes.

1.2.4.3 Brandt Airflex

This site is located on 937 and 965 Conklin Street, Farmingdale and is 150 feet from the Old Recharge Basin. The SCDHS has been overseeing the site investigation since 1994. A soil and water sample were collected in Dry Well 2 at 937 Conklin Street. A composite soil sample indicated TCE at 450 µg/l and PCE at 30,000 µg/l. The water sample collected at 26 feet below grade with a geoprobe indicated TCE at 13,000 µg/l, PCE at 170,000 µg/l and several other VOCs. The site investigation by American Environmental Assessment Corporation is ongoing (see Appendix I).

1.2.4.4 East Farmingdale Fire Department

The East Farmingdale Fire Department (Conklin Street Fire House) is located at Conklin Street west of Carmans Road, approximately 300 feet upgradient of the ORB. Pednault Associates East Farmingdale Fire Company 1990 Site Investigation report indicates the presence of benzene, toluene, ethylbenzene and xylene (BTEX) and PCE in groundwater at a total concentration up to 185,000 µg/l. High levels of PCE were found at six of the seven wells at a maximum concentration of 12,143 µg/l. The text mentions that TCE was found in four wells but there are no values reported in the laboratory reports. Maximum concentrations of BTEX were 184,373 µg/l. This investigation was initiated after a

significant release of hydrocarbon product was discovered during a UST removal in 1991. The tank contents were not clearly identified. An investigation found free product on the water table and PCE, TCE and BTEX dissolved in groundwater. PCE and TCE are not constituents in gasoline or diesel fuel and the high concentrations and spatial distribution in groundwater suggest an on-site or upgradient source.

1.2.5 Nature of Discharges to the Old Recharge Basin

Fairchild used its own water supply system. Fairchild's average well water usage in the 1970s was estimated at 1.7 million gallons per day (MGD). This estimate can be applied to all years of plant operations since the same manufacturing processes were used up to closure. The well water was used for cooling/refrigeration, manufacturing processes, and sanitary purposes. Non-contact cooling water, air conditioning, treated wastewater, and stormwater were discharged through the stormwater sewer to the ORB beginning in the early 1940s. Incinerator wastes and process wastes were also hauled to the ORB according to Fairchild's 1952 report. Incinerator residue would not contain VOCs which would be destroyed during incineration.

Wastewater treated at the wastewater treatment plant located on the Main Plant site was discharged to the ORB from 1950 to 1981 through the main stormwater sewer line. Figure 3 summarizes the wastewater streams and the amount of water discharged to the ORB.

Fairchild constructed a wastewater treatment plant in 1950 to treat process wastewater to reduce hexavalent chromium to trivalent chromium and to precipitate metal hydroxides. Wastewater was treated in batches from 1950 to 1963, but the facility was upgraded in 1963 to handle continuous waste streams. A copy of the original flow diagram of the wastewater treatment plant is included in Appendix D. Wastewater was received from the following areas: chemical milling alodine process, anodizing, spotweld wash, and the paint shop.

In accordance with the Clean Water Act of 1972, Fairchild obtained a State Pollution Discharge Elimination System (SPDES) permit for its discharges to the ORB. Treated wastewater was discharged to the ORB from 1950 to 1981. The treatment plant wastewater was diverted to the on-site sewage treatment plant located on Republic Airport property in 1981. The sewage treatment plant was owned by the New York State Department of Transportation and operated and maintained by Fairchild. The discharge was connected to the Suffolk County POTW in 1986. Fairchild diverted all discharges to a new recharge basin east of Route 110 in November 1983, with the possible exception of stormwater runoff from the parking area bordering Route 110.

1.2.5.1 Quantities Discharged

The average volume of water discharged to the ORB by Fairchild through the stormwater sewer is estimated at 2 MGD, which would have included 1.5 MGD of non-contact cooling water, 0.2 MGD of treated industrial water from the WWTP, and 0.3 MGD of surface runoff. Minor amounts of process-related water from different sources such as heat treat (~0.04 MGD), vapor degreaser steam condensate (0.0016 MGD) and solvent/water separator (1 gallon per day), titanium chemical milling, and research test tanks (~0.01 MGD) were also discharged to the stormwater sewer.

1.2.5.2 Historical Use of Chlorinated Hydrocarbons

The chlorinated hydrocarbons of concern found in soil and groundwater at the Main Plant Site are trichloroethylene (TCE), 1,1,1-trichloroethene (1,1,1-TCA), and tetrachloroethylene (PCE). Fairchild used TCE and 1,1,1-TCA in parts cleaning operations and PCE to control the viscosity of the liquid maskant used in the chemical milling area. Chlorinated hydrocarbons were not used in the paint shops because these solvents were not compatible with the paint.

1.2.5.2.1 Trichloroethylene

Fairchild used TCE as a degreaser from the start of its operations. It was used in the main steam vapor degreaser at the south side of Building 17 and in a small electric degreaser located on the main floor just west of the chemical mill/alodine process rooms. TCE was stored in aboveground tanks adjacent to the main vapor degreaser and in 55-gallon drums.

TCE has a distinctive odor and spills or leaks in work areas would not have gone unnoticed. A sight glass in the vapor degreaser still was broken in 1986 and TCE fumes entered the main plant area. The incident caused complaints from second shift workers, and they were all sent home.

There is no documentation of any TCE release during plant operations other than the fume incident. The only other documented release of TCE was during the decommissioning of the plant when approximately two pints of TCE were spilled from the TCE fill pipe to the ground surface (Geraghty & Miller, December 18, 1994 letter to NYSDEC).

1.2.5.2.2 1,1,1-Trichloroethane

1,1,1-TCA was principally used to clean aircraft assemblies, machines, and small parts. 1,1,1-TCA was dispensed in small quantities from an aboveground 500-gallon storage tank (13) located near Building 17. Approximately twenty 55-gallon drums of the solvent were commonly stored in the Building 25 drum storage area.

1.2.5.2.3 Tetrachloroethylene

Fairchild started using this material in early 1975 when the diluent used in the chemical milling maskant was changed from toluene to PCE to comply with federal and state ambient air quality regulations and with U.S. Air Force contract specifications.

The solvent was stored in a 3,000-gallon underground storage tank that formerly contained toluene. The tank was connected via a suction pipe to a pump located in an underground concrete vault. The discharge from the pump was piped through the vault wall into Building 17 where it ran above the floor to the chemical milling maskant tank. The tank which contained the maskant/solvent mixture was located inside a concrete pit that had no drains. There are no records of leakage in the system inside the building.

1.2.5.3 VOC Data For Fairchild Wastewater Discharges

The analytical data collected during the Fairchild investigations were reviewed to determine the VOC concentrations in wastewater during plant operations and possible groundwater quality impacts in the vicinity of the ORB. Wastewater discharged from the Fairchild Main Plant was analyzed monthly for VOCs since early 1982. The VOC analytical data are presented in Tables 5 through 8, and include discharge monitoring report (DMR) data collected by Fairchild and analyses performed by the Suffolk County Department of Health Services.

Process waste was discharged into the ORB prior to 1950. The vapor degreaser was the major source of chlorinated solvents during this time. TCE from the vapor degreaser was never discharged directly into the wastewater stream. PCE was not used until 1975. No analytical data are available prior to 1982, but, since the same manufacturing processes were used up to closure, the average VOC concentrations calculated from 1982 to 1988 data show the probable VOC concentrations in wastewater in the previous years.

Wastewater analyzed for VOCs was sampled at the following locations:

- Old Recharge Basin (ORB)
- Wastewater Treatment Plant (WWTP) Effluent
- New Recharge Basin (NRB)

- Sewage Treatment Plant (STP) Influent

1.2.5.3.1 Old Recharge Basin

Analytical data were collected from the ORB from September 1981 to November 1983 (Table 5). Average concentrations of PCE and TCE were 15 micrograms per liter (µg/l). Data collected from 1982 to 1983 are representative of non-contact cooling and stormwater quality, since treated water from the WWTP was diverted from the ORB at the end of 1981. WWTP effluent quality is discussed in Section 1.2.5.3.2. The WWTP analytical results indicate that the WWTP effluent contribution would not significantly change ORB water quality considering the dilution by other Fairchild discharges and other sources. Average PCE and TCE concentrations in previous years were estimated at 15 µg/l because there were no significant changes in plant operations and production since the early 1960s.

1.2.5.3.2 Wastewater Treatment Plant

The WWTP effluent analytical data cover 130 sampling events from January 1982 through November 1986 (Table 6). The results of the January 20, 1982 sampling show the maximum concentrations of PCE and TCE (14 and 54 milligrams per liter [mg/l]) at three orders of magnitude greater than any other sampling event. This may indicate a possible transcription error in converting the units from mg/l to µg/l. Even with these high results, the average concentrations of PCE and TCE are 150 and 440 µg/l. The amount of treated industrial waste water is estimated as 0.2 MGD. Treated wastewater was discharged to the main sewer line which carried about 1.8 MGD of stormwater, non-contact cooling water and surface runoff. This discharge diluted the industrial wastewater discharge by a factor of approximately 10. The WWTP effluent VOC concentration diluted 10 times would be 15 µg/l (PCE) and 44 µg/l (TCE). Since there were no major changes in plant operations or production, the estimated average concentrations (15 and 44 µg/l) are representative of WWTP effluent discharged to the ORB in the past.

1.2.5.3.3 New Recharge Basin

Water quality data collected for the NRB covers the period February 1984 up to the Main Plant closure in 1988 (Table 7). PCE and TCE were found at average concentrations of 2 and 3 µg/l, respectively, with maximum concentrations of 3 and 4 µg/l. These concentrations are representative of non-contact cooling water and stormwater discharged to the NRB and are indicative of the low level VOCs in Fairchild's discharges.

1.2.5.3.4 Sewage Treatment Plant

VOCs in the sewage treatment plant (STP) influent were analyzed during the period 1983-1986 (Table 8). PCE was found at an average concentration of 12 µg/l with a maximum concentration of 110 µg/l. These concentrations are representative of treated industrial wastewater discharged from the WWTP to the STP from 1983 until it was closed in 1986.

1.2.5.3.5 Summary

VOC concentrations at the ORB, NRB and STP indicated by surface water samples range from 2 to 15 µg/l. Although VOCs were not monitored or tested frequently prior to 1982, the effluent concentrations were probably similar to discharges during plant operations since these operations did not change substantially during the operating history of the plant. The WWTP effluent likely contributed 15 µg/l PCE and 44 µg/l TCE to the ORB after 1982 based on sampling during that period. The VOC levels are comparable to the 15 µg/l found in the ORB. The individual average PCE and TCE concentrations of 15 µg/l for the ORB probably indicate the VOC concentrations in Fairchild's discharges during plant operations.

2.0 PHYSICAL CHARACTERISTICS OF THE OLD RECHARGE BASIN

Five environmental investigations were conducted at the ORB from 1982 to 1989. These studies provide a substantial database describing the physical and chemical characteristics of the ORB sediments and surface water, groundwater quality at and around the ORB, and the hydrologic relationship between the ORB and the groundwater system.

The physical characteristics of the ORB (i.e., configuration, thickness of sediment layer, depth of water) and the chemical quality of the sediment layer and underlying soils and surface water in the ORB were determined during the 1988/1989 study. Sixteen soil borings (B-1 through B-16) were drilled through the bottom sediments in the North Pond (B-9 to B-16) and South Pond (B-1 to B-8) by a barge mounted drilling rig. The locations of the 16 borings are shown on Figure 4. The data from these borings provides information on the depth of water in the ORB, and the thickness and texture of the bottom sediments. Figure 3-1 of the Work Plan shows the contour map of the ORB bottom elevation, using data from the 16 soil borings and a fathometer survey conducted during the 1988/1989 study, based on a surface water elevation of approximately 50.55 feet above mean sea level. The map shows two deep areas or lobes (eastern and western) in the North Pond and a single deep area in the South Pond.

Samples from the 16 soil borings indicated that the ORB sediment is basically composed of loose unconsolidated, fine-grained, organic-rich material. The soil beneath the sediment layer was determined to be native sand and gravel of the Upper Glacial deposits.

2.1 Regional Site Hydrogeology

The hydrogeologic units on Long Island and at the site closely correspond to the geologic units, but are differentiated by their water transmitting properties rather than by age. The hydrogeologic units beneath the site are, in descending order: the Upper Glacial aquifer, the Magothy aquifer, the Raritan confining unit, and the Lloyd aquifer. The upper bedrock surface is typically considered to be the lower (no flow) boundary of the groundwater system and the Raritan clay represents the lower boundary of the Upper Glacial and Magothy aquifer systems.

Regional groundwater flow is characterized by an east-west trending groundwater divide that occurs in the approximate center of Long Island. Groundwater recharge to the Magothy and Lloyd aquifers occurs in the vicinity of the regional groundwater divide north of the site where there is a relatively high downward vertical hydraulic gradient and relatively flat horizontal hydraulic gradient. The groundwater flow direction becomes more horizontal with increasing distance from the regional divide. Groundwater ultimately discharges to streams and creeks near the shoreline, or discharges to the surrounding bays and the Atlantic Ocean.

The lower portion of the Upper Glacial deposits beneath the site is saturated, with the water table ranging from 19 to 30 feet below land surface on the east side of the ORB and 11 to 14 feet below land surface on the west side of the ORB. The land surface on the west side of the ORB is about 10 feet lower in elevation.

All previous site investigations found that groundwater flow is consistently south-southeasterly which is in agreement with regional water table maps for the area (Doriski et al. 1983). G&M Work Plan Figures 2-3 and 2-4 show flow directions in the shallow and deep zones of the Upper Glacial aquifer on April 11, 1989. The groundwater flow direction reported in the literature is south-southeasterly, and is the same for the Magothy and the Upper Glacial aquifer (Smolensky et al. 1989).

The Upper Glacial and Magothy aquifers have good hydraulic connection in most areas, except in areas close to the south shore where local hydrogeologic units (Gardiners Clay, "20-foot" Clay, and Monmouth Greensand) separate the aquifers. The two aquifers are sometimes regarded as a single system because of this hydraulic interconnection. The predominant direction of groundwater flow throughout most of the Upper Glacial and Magothy aquifers is horizontal, and the Upper Glacial aquifer recharges the Magothy because of differences in hydraulic head. Due to its low permeability (approximately 2×10^{-4} gpd/ft^2 [Isbister 1966]), the Raritan clay acts as a confining unit, thereby reducing groundwater flow to the Lloyd aquifer.

The Fairchild plant and the ORB are located between the recharge area of the regional groundwater divide and the discharge area south of the divide, a location where the groundwater flow direction would be expected to be nearly or predominantly horizontal.

No streams flow into or drain out of the ORB and the only water that enters the ORB, besides groundwater, is from direct precipitation and runoff from within the site confines. Some stormwater may also enter the ORB from a manhole located in Route 110 between the former discharge pipe and the pipe (now sealed) across the street in the main plant area. The ORB surface water has been in approximate equilibrium with the water table since the 1980s when discharges to the ORB were diverted to a new basin on the east side of Route 110.

2.2 Regional and Site Geology

The ORB lies on a gently sloping glacial outwash plain. The site, as well as most of Long Island, is underlain by three major unconsolidated geologic units which, in descending order from land surface, include the following: Pleistocene Upper Glacial deposits; the Magothy Formation; and the Raritan Formation, which is comprised of an upper unnamed clay and the lower Lloyd sand. These units have a combined total thickness of approximately 1,300 feet beneath the site and rest unconformable on a bedrock surface that slopes gently to the

southeast. The bedrock is Precambrian and/or Paleozoic (over 500 million years old) and is composed of schist and gneiss (Suter 1949).

The Upper Glacial deposits are about 100 feet thick and consist mainly of sand and gravel deposited by glacial meltwater more than 15,000 years ago (McClymonds and Franke 1972).

Approximately 60 feet of the Upper Glacial deposits were evidently excavated during the sand mining that created the ORB, and the basic shape and configuration of the ORB has changed little since it was created. There are an estimated 40 feet of Upper Glacial deposits between the ORB bottom and the top of the Magothy Formation. The location of the contact between these units is subject to geologic interpretation.

The Magothy Formation is about 700 feet thick beneath the site and consists mainly of interbedded fine-grained sand, sandy clay, and clay. Gravel occurs at the base or in the basal zone of the Magothy, but is rare in other parts of the formation. Minerals such as muscovite and pyrite help distinguish this formation from the Upper Glacial deposits. Lignite is also common in the Magothy and is a signature feature.

In the vicinity of the site, the unnamed clay member of the Raritan Formation and the Lloyd sand member are approximately 150 and 350 feet thick respectively (Smolensky, et. al, 1989).

2.3 Meteorology

The Long Island climate is characterized by warm, humid summers and moderate winters with variable snow amount. The mean annual temperature on the island is about 51°F (11°C). Minimum average monthly temperatures occur in February and range from 28° to 32°F; maximum average monthly temperatures occur in July and range from 69° to 75°F.

Precipitation averages about 44 inches per year and is fairly evenly distributed throughout the year. Evapotranspiration rates depend on the season and land use and are about 20 to 22 inches per year.

2.4 Demography and Land Use

The ORB is located in the northwestern corner of the Town of Babylon in a primarily urban area dominated by light manufacturing and commercial land use (Figure 1). The ORB is bordered by light industrial and retail land uses to the south, Conklin Street and the East Farmingdale Fire Department to the north, light industrial and residential uses to the west, and Route 110 and commercial activities to the east. The U.S. Census 1990 population of the Town of Babylon was 202,889. There are no wetlands within one mile of the site and there are no national forests, national recreation areas or natural surface water bodies.

3.0 STUDY AREA INVESTIGATION

3.1 Inspection, Repair, and Redevelopment of Existing Monitoring Wells

The ORB monitoring wells were inspected and repaired by Geraghty & Miller in June 1992. Geraghty and Miller determined that redevelopment was not necessary since excessive turbidity was not noted. Monitoring wells were resurveyed because several measuring points were damaged. The York "FR" series wells are no longer accessible for sampling since Well FR-1 was temporary, Wells FR-3 and FR-4 were destroyed, and Well FR-2 could not be located during the RI.

3.2 Basin/Water Table Interaction

A staff gauge was installed along the western shore of the South Pond to collect hydrologic data. The gauge was installed in approximately five feet of water and it protruded about three feet above the water surface to allow for surface water fluctuations. The top of the gauge was surveyed. The reliability of the installation was checked by resurveying the gauge one week after installation. Measurements were made by observing the water level on the gauge from shore and subtracting the water level from the surveyed elevation of the top of the gauge. The data from this gauge and from the North Pond pier were used with the water level data from the wells to evaluate the interconnection of the water in the ORB to the water table.

A rain gauge was installed in the northwest corner of the site and used to measure precipitation during a "minor" and a "major" precipitation event, in accord with the RI Work Plan. Water levels were measured at monitoring wells near the ORB and at the ORB staff gauge before, during, and after the two precipitation events.

3.3 Installation of Additional Monitoring Wells

Eder installed 11 monitoring wells around the ORB as shown in Drawing No. 1 (RI Sampling Locations). A deep well was constructed directly downgradient of the North Pond eastern lobe and former Fairchild ORB outfall. The borehole for this new monitoring well was geophysically logged before well construction began, and the screen elevation was determined by Eder and NYSDEC. Table 1 summarizes the well construction details.

Monitoring wells 8S and 8I, 200 feet south of wells 2S and 2D, are directly downgradient of the approximate center of the North Pond. This is the approximate location of well FR-2, installed during the York 1982 study, where metals and VOCs were detected at concentrations above ambient levels. The southernmost well cluster (10S, 10I, and 10D) is in the former right-of-way on the east side of Route 110 and is downgradient of the center of the South Pond. Well cluster 9S and 9I was installed about midway between well clusters 1 and 2, and the cluster is downgradient of the North Pond eastern lobe. Well cluster 11S, 11I, and 11D was installed upgradient of the North Pond in the Conklin Avenue right-of-way. This well cluster is near former well FR-1 where TCE was detected in 1982. Soil sampling at well 11D was substituted by a gamma log with NYSDEC approval.

All deep wells were installed using a hollow stem auger, and formation samples were collected from the deepest wells in each cluster at five-foot intervals using a split spoon. All wells were drilled, constructed and developed in accordance with Appendix A of the Field Sampling Plan. Boring logs, gamma logs and well construction details are in Appendix E.

3.4 Collection and Analysis of Surface Water

Two rounds of surface water samples were collected from the ORB during the RI. The surface water samples were collected at three locations in the North Pond, and at three locations in the South Pond. One sample was collected just below the water surface and one

sample was collected at an intermediate depth following the protocols presented in Appendix B of the Work Plan. The samples were sent to IEA Laboratory and analyzed for TAL and TCL parameters. Some of the surface water samples collected in the second round were analyzed for VOCs using USEPA Method 524.2 to provide lower detection limits. Analytical results are presented in Tables 9 through 14. Surface water sampling logs are in Appendix F.

3.5 Collection and Analysis of Groundwater Samples

Two rounds of groundwater samples were collected from the 11 new and 15 existing monitoring wells in accord with the Work Plan. Samples from wells where VOCs were detected in the first sampling round at less than 5 µg/l were analyzed using USEPA Method 524.2 for lower detection limits. Tables 15 through 20 show the analytical results.

Water level measurements were recorded monthly for a six-month period in all monitoring wells at the ORB to determine the direction of groundwater flow and the hydrologic relationship of the ORB to the groundwater system. Water level data are in Table 21. Bi-monthly water table maps are shown on Drawing No. 2.

3.6 Additional Data Collection

3.6.1 Soil Sampling

Three ORB surface soil samples were collected and analyzed in accord with the NYSDEC ASP CLP at the request of the NYSDEC and the Nassau County Department of Health. This task was not part of the RI.

Surface soil samples were collected 15 feet north, south, east and west of RI sample location ORB-1 D, and one foot west of the ORB fence as shown on Figure 5. The samples were

collected by removing soil from land surface to six inches below grade using new dedicated stainless steel trowels. Wooden stakes were used to mark the sample locations for future reference. The sample identification numbers were written on the stakes with permanent marker. The samples were shipped overnight in a cooler with ice to CTM Analytical Laboratories, Ltd. for TCL pesticides and PCB analysis.

3.6.2 Upgradient Groundwater Investigation

Groundwater samples were collected from FN-19 and FN-21 on the East Farmingdale Fire Department property, northwest (upgradient) of the ORB on September 17, 1993. CTM Analytical Laboratories, Ltd. analyzed the samples for the full TCL/TAL list.

3.7 Preliminary Baseline Exposure Assessment

A baseline exposure assessment was performed to consider two exposure scenarios associated with the ORB sediment. The analysis indicates that surface water and sediment do not pose an unacceptable health risk. The baseline exposure assessment is included in the ORB Feasibility Study Report.

3.8 Well Inventory

In 1992, Geraghty & Miller inventoried all public supply wells within a three-mile radius of the site and all wells within a one-mile radius of the site to identify public supply wells that could be affected by groundwater quality impacts from the ORB, to identify groundwater withdrawals that could alter local flow in the vicinity of the ORB, and to identify wells that could be used for monitoring purposes. This information was obtained from SCDOH files and NYSDEC files at Stony Brook, and are summarized in Work Plan Table 2-2. Locations of the inventoried wells, except for monitoring wells at the site and at the plant, are shown on the Work Plan Figure 2-5. The closest hydraulically downgradient active supply well is approximately 7,000 feet southeast of the site.

3.8.1 Upgradient Monitoring Well Sampling

Eder planned to collect groundwater samples at fire department monitoring well FN located approximately 400 feet hydraulically upgradient of the northwest corner of the ORB, but the well was destroyed during renovation work at the fire station in August or September 1993. Wells 19 and 21 were selected as the next best sampling points to determine if groundwater contamination is present on fire department property.

Eder collected groundwater samples from East Farmingdale Fire Department monitoring wells FNW-21 and FN-19 on September 17, 1993. The well locations are shown on Drawing 3. Well construction logs are in Appendix G.

Three well volumes were purged using a two-inch submersible pump. The purged water was containerized and transported to the Main Plant site for disposal. Temperature, pH and specific conductivity were measured following the removal of each casing volume. This information is shown on the Well Sampling Logs in Appendix G. Groundwater samples were collected after three casing volumes were purged and after pH and conductivity measurements stabilized. Dedicated Teflon™ bailers and new polypropylene rope were used to sample each well. The samples were shipped on ice in a cooler via overnight delivery to CTM Analytical Laboratories, Ltd., Latham, New York and analyzed in accord with the NYSDEC ASP CLP.

3.8.2 Source Identification

Eder reviewed state and local records to determine if there is any evidence of a hydraulically upgradient source of groundwater contamination other than the known NYSDEC-listed Inactive Hazardous Waste Sites.

A 3,000 gallon diesel tank on East Farmingdale Fire Department property northwest of the ORB opposite Carmans Road failed a tightness test in 1985. NYSDEC records do not specify

the action taken, but a release was discovered during the removal of an underground tank in 1990. The release is associated with an underground gasoline tank on the fire department's property, but the tank location and contents are not clearly identified. An investigation revealed free product on the water table and dissolved BTEX groundwater contamination. PCE was found in groundwater in September 1990 at levels ranging from 37.2 to 12,143 µg/l. The concentrations suggest a significant release of PCE. PCE is not a constituent in gasoline or diesel fuel and the high concentrations and spatial distribution in groundwater strongly suggest an off-site PCE source. TCE was reported in four wells, but the analytical results were not included in the laboratory reports. Groundwater analytical data for TCA was not discussed, suggesting that this constituent was not included in the 1990 analysis. PCE data are shown in Appendix H along with a well location map.

A pump-and-treat remediation system has been operating at the fire station since late 1990 to remediate the petroleum contamination. NYSDEC Stony Brook groundwater monitoring data shows the migration of dissolved petroleum constituents BTEX southeast onto the ORB site. The fire department did not analyze groundwater samples for halogenated VOCs after 1990 and the current extent of the PCE is unknown but certainly now extends downgradient onto the ORB site and, based on the groundwater flow direction, is likely related to the VOCs found during the RI at monitoring wells 6S, 6D, and MW-12S, and in ORB surface water.

NYSDEC records indicate that the fire station's pump and treat system consists of one well which pumped at 70 gpm from 1990 to early 1993, and is now pumping at 90 gpm. The extraction well is approximately 300 feet northwest (upgradient) of the northeast corner of the ORB site.

Monitoring wells FN-19 and FN-21 are over 200 feet from the fire department pumping well and it is unlikely that groundwater at these wells is significantly influenced by the fire station's remedial pumping based on typical the Upper Glacial aquifer characteristics in this area. The FN-17 capture zone calculations are included as Appendix I.

3.9 Soil Sampling

Surface soil samples were collected at three locations on-site at the request of NYSDEC and Nassau County Department of Health during the RI. The samples were collected from 0 to 6 inches below grade. PCB concentrations were above the New York State PCB draft cleanup level and NYSDEC requested supplemental soil sampling to further characterize the extent of the PCBs. On September 1, 1993, four soil samples were collected 15 feet from ORB-1 and analyzed for Target Compound List (TCL) pesticides and PCBs (Figure 6).

3.10 Fish and Wildlife Impact Analysis

A Fish and Wildlife Impact Analysis was conducted by a project team consisting of Eder staff and Orland Blanchard, Ph.D., a professor of biology at Long Island University (Greenvale), to determine if fish and wildlife resources have been adversely affected or could be affected by site-related contaminants. Steps I, IIA, and IIB of the impact analysis were performed in accord with NYSDEC Division of Fish and Wildlife (DFW) guidance. Most of the half-mile area around the site is densely developed and is virtually devoid of vegetation. DFW criteria and site investigation data indicate that the fish and wildlife value to humans should be judged "negligible." There are no significant ecological resources in or around the ORB that have evidently been adversely impacted by site-related contaminants, and there are no potential pathways by which contaminants could migrate to the nearest off-site significant resources. Resource impact is therefore minimal, if any, and, based on DFW guidance, collecting additional ecological information is not warranted. The complete Impact Analysis report is included in Appendix J.

4.0 NATURE AND EXTENT OF CONTAMINATION

4.1 Surface Water Analytical Results

The surface water analytical results are compared to NYSDEC surface water and groundwater standards. The groundwater standards comparison is included because the ORB is not connected to any other surface water body and is not legally used for recreation or as a potable water supply. The ORB currently receives water from precipitation and local surface runoff and is hydraulically connected to the groundwater. Any impacts to the environment from the ORB would be from the surface water to the groundwater. Fairchild's SPDES permits specified groundwater (GA) as the receiving water. Tables 9 through 14 show the surface water quality results from the two sampling rounds in 1992 and 1993. NYSDEC surface water and groundwater standard exceedances are shown on Drawings 4, 5, 6, and 7.

4.1.1 Volatile Organic Compounds

All VOCs were found at concentrations below the groundwater NYS standards.

PCE was found above the surface water standard (0.7 µg/l) at a maximum concentration of 2.1 µg/l (estimated) at SW-6. 1,1-DCE was found above surface water standard (0.7 µg/l) at a concentration of 1.0 µg/l (estimated) at SW-4 in February 1993. Concentrations of 1,1-DCE in all other samples were below NYS surface water standards.

Three non- Target Compound List volatile organic compounds were reported above surface water standards or guidelines. 1,2-dibromo-3-chloropropane (guidance value is 0.2 µg/l) was found at a maximum concentration of 3.8 µg/l (estimated) at SW-4; hexachlorobutadiene (guidance value is 0.5 µg/l) was found at a maximum concentration of 1.1 µg/l (estimated)

at SW-4; and dibromochloromethane (guidance value is 5 µg/l) was found at a maximum concentration of 7.8 µg/l (estimated) at SW-6.

4.1.2 Semivolatile Organic Compounds

All semivolatile organic compounds were found below NYS groundwater and surface water standards.

4.1.3 Pesticides and PCBs

Concentrations of pesticides and PCBs were below NYS groundwater and surface water standards.

4.1.4 Metals

Iron and manganese concentrations in ORB surface water exceeded NYS groundwater and surface water standards. Iron concentrations (total) varied from 335 µg/l at SW-6 location to 2,955 µg/l at SW-3. Manganese concentrations varied from 300 µg/l at SW-1 to 1,948 at SW-3.

Concentrations of dissolved iron in all samples was below NYS standards. The maximum concentration of dissolved manganese was 596 µg/l at SW-4.

Antimony (total) was found in 3 of the 12 first round samples above the NYS standard. Concentrations varied from 21.4 µg/l (estimated) at SW-6 to 33.8 µg/l (estimated) at SW-3. Antimony (total) concentrations in the second round samples were below the standard. Dissolved antimony exceeded the method detection limit only at SW-6. This dissolved antimony concentration of 123 µg/l is approximately 6 times higher than the total antimony

concentration (21.4 µg/l) in the sample collected at the same location, which indicates a contaminated sample or a misinterpretation of the laboratory data.

Cobalt (total) was found only once during the first sampling round at an estimated concentration of 11.1 µg/l at SW-3. Cobalt concentrations in the other first and second round samples were below the standard.

Sodium (total) was found above the NYS standard at SW-3 (21,991 µg/l). Total and dissolved sodium concentrations in all other samples were below the NYS standard.

4.2 Groundwater Analytical Results

During the RI and supplemental RI, two rounds of groundwater samples were collected from 26 monitoring wells in the vicinity of the ORB.

4.2.1 VOCs

The first round samples collected in 1992 were analyzed by NYSDEC method 91-1 with 10 µg/l practical quantification limit. Samples collected from wells at which VOCs were found at less than 5 µg/l in the first sampling round were analyzed using USEPA method 524.2 with 1 µg/l practical quantification limit. Drawings 6 and 7 show concentrations of VOCs exceeding NYS groundwater standards. Table 15 shows the groundwater analytical results for volatile organic compounds.

The following VOCs were detected during the first sampling round at concentrations above NYS standards: 1,1,1-Trichloroethane (1,1,1-TCA), 1,1-Dichoroethene (1,1-DCE), 1,1-Dichloroethane (1,1-DCA), 1,2-Dichloroethene (1,2-DCE), Trichloroethylene (TCE), Tetrachloroethylene (PCE), and Acetone.

1,1,1-TCA was found at well 5D at a concentration of 14 µg/l and at 6S and 6D at concentrations of 550 and 548 µg/l, respectively. 1,1-DCE varied from 37 to 52(estimated) µg/l; 1,1,1-TCA ranged from 548 to 585 µg/l; TCE varied from 25 to 29 (estimated) µg/l. 1,1-DCA, 1,2-DCE and PCE were found only at well 6D at concentrations of 12 (estimated), 29 (estimated), and 14 (estimated) µg/l, respectively. TCE was found at wells 7S and 7D at concentrations of 28 µg/l. 1,2-DCE was found at well 8S at 6 (estimated) µg/l. 1,1-DCA at a concentration of 5 (estimated) µg/l was found at well 4D. 1,2-DCE at 6 (estimated) µg/l was found at well 8S.

TCE was detected at monitoring wells 7S and 7D east of the ORB at concentrations of 22 and 38 µg/l, respectively. These wells are located at the Fairchild Main Plant site property 1,700 feet sidegradient of the ORB, and these results will be discussed in the Main Plant site RI report.

Cluster 10 is located approximately 1,000 feet downgradient of the ORB, cluster 11 is approximately 400 feet upgradient of the ORB. 1,2-DCE, TCE and PCE were found at well 10D at concentrations of 11, 8 (estimated), and 19 µg/l respectively. The same compounds were found at well 11D at concentrations of 13 (1,2-DCE), 8 (TCE), and 20 (PCE) µg/l.

VOCs were found below NYS groundwater standards at wells 2XD, 10I and MW-12S at concentrations from non-detect to 4 µg/l. VOC concentrations at wells 1S, 1D, 2S, 2D, 3S, 3D, 4S, 5S, 8I, 9S, 9I, 10S, and 11S, were reported as non-detected.

Acetone was found at wells 10D and 11I at concentrations of 15 and 21 (estimated), respectively. Acetone is a common laboratory contaminant, is very soluble in water, and is characterized by high degradation rates. Acetone in the samples is not likely to be associated with Fairchild's discharges that terminated more than 10 years ago.

Other VOCs at wells 1S, 1D, 2S, 2D, 3S, 4S, 4D, 5S, 5D, 8S, 8I, 9S, 9I, 10S, 11S, 11I, 11D, and MW-12S were below the NYS groundwater standards or were non-detect.

4.2.2 Semivolatile Compounds

All semivolatile compounds found in groundwater were reported below the method quantification limit at estimated concentrations. Pentachlorophenol was detected at one well, 9I in 1993 above the NYS groundwater standard (1 µg/l) concentration at 2 µg/l (estimated). Pentachlorophenol was found below the method detection limit in 1992. Benzo(a)pyrene was found at well MW-12S at estimated concentrations of 0.6 µg/l and 0.3µg/l in 1992 and 1993, respectively and at well 10I at concentrations of 0.3 µg/l (estimated). These concentrations are above the NYS groundwater standard which is below the method detection limit concentrations.

4.2.3 Metals

Tables 18 and 19 present the analytical results for the total and dissolved metals and Drawings 4 and 5 show exceedances. Iron, manganese, and sodium concentrations in groundwater samples collected from most of the ORB monitoring wells exceed NYS groundwater standards. Concentrations of dissolved iron in groundwater samples from December 1992 and February - March 1993 range from 160 to 18,887 µg/l with total iron concentrations ranging from 127 to 61,055 µg/l. Concentrations of dissolved manganese in groundwater sampled at the same time, range from 1.3 to 6,214 µg/l, with total manganese concentrations ranging from 31.8 to 5,832 µg/l. Concentrations of dissolved sodium in the December 1992 and February and March 1993 groundwater samples range from 60.7 to 88,255 µg/l. Total sodium concentrations range from 111 to 86,975 µg/l.

Total chromium concentrations exceeding NYS groundwater standard (50 µg/l) were 137 µg/l at monitoring well MW-12S, 60 µg/l at monitoring well MW-6S, and 239 µg/l at monitoring

well 10S. Lead was detected at above the standard concentrations (25 µg/l) of 338 µg/l, 27 µg/l, and 37.4 µg/l at monitoring wells MW-12S, 10S, and 10D. Well clusters 6, 10 and well MW-12S are located along and downgradient of the western portion of the ORB and are likely affected by off-site source(s). Concentrations of total arsenic in groundwater samples from monitoring wells 2S and 8S are 50.5 and 44 µg/l, respectively, which is above NYS groundwater standard of 25 µg/l.

All dissolved chromium, lead and arsenic concentrations were found to be below NYS groundwater standards.

Antimony (total) was found above the NYS standard (3 µg/l) in 4 of 55 samples. Concentrations of dissolved antimony were above the standard in 4 of 55 samples. Dissolved and total antimony concentrations varied from 20.6 µg/l (estimated) in sample FRC-8I-01 to 26.1 µg/l (estimated) in sample FRC-2S-01. Antimony was found in the rinse blank at a concentration of 18.4 µg/l (estimated).

Beryllium (total) was found above the standard (3 µg/l) in 3 of 55 samples. The concentrations varied from 5.5 µg/l (estimated) sample FRC-12S-01, to 9.6 µg/l (estimated) in sample FRC-12S-02. Zinc (total) was found above the standard (300 µg/l) in 3 of 55 samples at concentrations from 673 µg/l in sample MW-12S-01 to 798 µg/l in sample FRC-11D-02.

All concentrations of dissolved beryllium and zinc were below NYS groundwater standards.

4.2.4 PCBs and Pesticides

The pesticides, beta-benzene hexachloride (B-BHC), Dieldrin and 4,4'-DDD, were detected at monitoring well MW-12S. The groundwater standards for these compounds are specified as non-detected. Concentrations of alpha and gamma chlordane at monitoring well MW-12S

range from 0.48 to 1.2 µg/l and from 0.41 to 0.89 µg/l, respectively. These concentrations exceed drinking water standards (0.1 µg/l). Dieldrin, and alpha and gamma chlordane were also detected at monitoring well 6D at above standard concentrations. Arochlor-1254 was detected at monitoring well 6S and at MW-12S. These monitoring wells are located to the west and downgradient of the west portion of the ORB and the data indicate an off-site source. Dieldrin was also detected at monitoring well 4D hydraulically downgradient of the ORB. Alpha and gamma chlordane were also detected at monitoring wells 5D and 7S hydraulically sidegradient of the ORB. State groundwater quality exceedances are identified on Drawings 8 and 9.

4.2.5 Sulfate and Nitrate/Nitrite-Nitrogen

Concentrations of sulfate and nitrate/nitrite-nitrogen were found below the NYS groundwater standards in all wells.

4.3 Surface Soil Analytical Results

During the RI surface soil samples were collected at three locations on-site at the request of NYSDEC and Nassau County Department of Health. The samples were collected from zero to six inches below grade, and the analytical data are contained in Tables 22 through 25. VOCs were found at very low concentrations which the validator attributed to the blanks or to concentrations below the method detection limits. Polycyclic aromatic hydrocarbons and PCBs were found at concentrations above ambient levels at sample ORB-1. Concentrations of arsenic, beryllium, cadmium, chromium, copper, iron, lead, mercury, nickel and zinc exceed NYSDEC-recommended soil cleanup levels (The Soil Chemistry of Hazardous Materials, Dragun, Jr., Ph.D., 1988 and NYSDEC Memorandum: Determination of Soil Cleanup Levels, November 16, 1992). Concentrations of copper, lead, mercury, silver and zinc exceeded ambient levels. All metals, except mercury, where concentrations exceed the ambient level, were regulated by SPDES permits.

Table 26 summarizes the additional analytical data collected during the Supplemental RI report in September 1993. PCBs were found in the ORB-4 soil sample at 160 ppb which is below the New York State draft cleanup level. PCBs were not found in the other soil samples. Since these soil samples were taken 15 feet from ORB-1, where PCBs were previously found, the distribution of PCBs in surface soil does not appear to be extensive.

Some of the PCB detection limits for these samples were above the New York State draft cleanup level due to matrix interference. The laboratory was not able to achieve lower detection levels.

The concentration of Aldrin in sample ORB-7 exceeded the NYSDEC draft cleanup level, but this is not unusual for Long Island suburban areas. Arochlor-1254 was detected in sample ORB-4 at a concentration (160 µg/kg) below the cleanup level (1000 µg/kg). The presence of PCBs at the ORB is not unexpected due to the constituent's persistence and historic widespread use.

4.4 Hydrologic Data Analysis

Water levels were measured during a major 0.53 inch rain event on April 26 to April 29, 1993 (Table 27). A 0.03 foot rise in the ORB water level was measured at the North Pond pier staff gauge. A 0.04 foot rise in water level at monitoring well 2S, coincided with the rise measured at the ORB staff gauge. A rise in the water level elevation was also measured at other monitoring wells near the ORB. The reason for a 0.05 foot decrease in the water level elevation at monitoring well MW-12S is unclear. Water levels in the monitoring wells near the ORB and at the staff gauge in the ORB returned to pre-rain water levels within 15 hours after the end of the rain event.

Hydrologic data was collected during a minor rain event on May 5 to May 6, 1993, and Table 28 presents these data. A 0.09 inch rainfall resulted in a maximum water level rise of 0.01

foot in nearby monitoring wells and a 0.01 foot rise in the ORB water level. Water levels returned to pre-rain event water levels within 24 hours after the rain event.

Groundwater is in relative equilibrium with the ORB surface water since there is currently no significant discharge from or recharge to the ORB. The ORB surface water elevation did not increase significantly during or after RI precipitation events. The ORB is inactive and does not receive substantial stormwater runoff. Since the ORB has an open water surface it is more strongly affected by evaporation than the surrounding groundwater and in its inactive state represents a greater loss of precipitation than the groundwater.

The ORB is not currently recharging the aquifer based on relative groundwater and surface water elevations, although it did function as a recharge basin in the past. The groundwater flow direction at the ORB does not significantly change due to precipitation events.

4.5 ORB Sediment Analytical Results

Geraghty & Miller's Hydrogeologic Investigation of the Old Recharge Basin, December 1989 details the sediment sampling conducted at the ORB. Split spoon samples of sediments and native soil below the sediments were collected. The approved work plan did not require additional sediment sampling. The portions of the report discussing the results along with tables are included in Appendix K.

At the time of the RI, the North and South Ponds were separated by a land bridge. The land bridge was exposed after discharges to the ORB were terminated (1983), but the land bridge restricted the migration of soil particles floating in the water between the ponds.

4.5.1 VOCs

Borings B-1 through B-8 were collected in the South Pond. VOCs were not detected in Boring B-4 and B-5. The VOCs detected in the other borings included methylene chloride, acetone, 2-butanone, 1,2-dichloroethene and PCE. G&M assumed that methylene chloride and acetone are common laboratory contaminants. The results from B-1 indicated 1,2-dichloroethylene (20 µg/l and PCE (6 µg/l).

Samples B-9 through B-16 were collected in the North Pond. The VOCs detected in the borings include xylene, PCE, TCA, 1,2-dichloroethene, TCE, methylene chloride, 2-butanone, ethylbenzene, vinyl chloride, acetone and chlorobenzene. VOC concentrations in B-9, B-10, B-12, B-14 and B-16 were higher in sediment than native soil samples. VOC concentrations in Borings B-11, B-13 and B-15 were similar to the native soil samples.

4.5.2 Semivolatile Organic Compounds

Higher semivolatiles were detected in the North Pond than in the South Pond which is similar to the VOC results.

4.5.3 Pesticides and PCBs

The pesticides, alpha and gamma chlordane were detected in B-6 and B-8. Samples of the native soil samples collected at B-8 also contained alpha and gamma chlordane.

PCBs were detected in higher concentrations in the North Pond than the South Pond. The location of the highest concentrations was near the Fairchild and NYSDOT discharge pipes.

4.5.4 Metals/Cyanide

Relative high metal concentrations were found in sediment samples. The metal concentrations in sediment are at least an order of magnitude higher than in the native soils. Cyanide was detected in 23 of the 36 soil/sediment samples collected from the North and South Ponds.

Despite the relatively high metal concentrations in sediment samples, metals are in stable condition as indicated by EP toxicity tests.

4.5.5 Off-Site (Baseline) Soil Quality

Sediment samples were collected in 1988 by Geraghty and Miller from the two NRBs and analyzed for VOCs, semivolatiles, pesticides/PCBs, metals, cyanide and EP toxicity. Trace amounts of VOCs and semivolatiles were detected in the samples.

4.6 Off-site Source Investigation

NYSDEC requested the collection and analysis of groundwater samples from monitoring wells hydraulically upgradient of ORB monitoring wells where groundwater contamination was found (MW-12S and well clusters 6 and 10). The purpose of this sampling was to investigate VOCs in groundwater upgradient of the ORB.

Tables 29 through 32 present the groundwater analytical results for samples from fire department monitoring wells.

Bromomethane, dieldrin, iron, manganese and sodium were detected in groundwater at well FN-19 above the NYCRR Part 703 class GA groundwater standard. Bromomethane was also detected in the method blank. 1,1,1-TCA was detected in groundwater at well FN-21 at the State standard of 5 µg/l.

TCE was found at ORB wells 6S and 6D during the RI at levels above 5 µg/l. TCE was not detected at the two fire department wells in September 1993.

Hydraulically upgradient heavy metals contamination is documented in the NYSDEC records at the Kenmark Textile site located north of Conklin Avenue (Section 1.2.4).

5.0 CONTAMINANT FATE AND TRANSPORT

Contaminant fate and transport evaluations are based on the site physical characteristics and the known nature and extent of chemical contamination.

5.1 Potential Routes of Migration

RI results indicate the presence of contamination in the ORB surface water, sediments and in the groundwater in the vicinity of the ORB. Surface water infiltration and groundwater are the primary potential migration routes of concern. Access to the site is restricted by a locked fence which limits the potential for direct contact. Secondary routes of potential migration include air and storm water runoff.

5.2 Contaminant Persistence and Migration

A chemical's persistence, or tendency to degrade and transform, depends on its physical and chemical properties. The rate that a contaminant will migrate from its source into air, soil, groundwater, or surface water depends on several factors including contaminant solubility, volatility, and the tendency for the contaminant to adsorb onto soil particles and atmospheric particulates. In addition, migration is affected by the physical and environmental characteristics of the site such as geology, soil composition, groundwater flow rate, weather, terrain, and vegetative cover.

Vapor pressure, water solubility, and carbon/water partition coefficient are used to estimate the environmental fate of contaminants. The vapor pressure of a liquid or solid is the pressure at which its corresponding gas phase is in equilibrium with the liquid or solid. Vapor pressure is useful in predicting the extent to which chemicals will volatilize under

varying conditions. In general, chemicals with relatively low vapor pressures are less likely to migrate into the air than those with higher vapor pressures.

A chemical's water solubility can be used to indicate how efficiently the chemical may be transported by surface runoff and groundwater flow. Water solubility can also affect the chemical's tendency to oxidize, reduce, photolyze, and hydrolyze. The carbon/water partitioning coefficient (Koc) is a chemical specific parameter used to predict the extent to which a chemical may adsorb onto a soil particle. In general, the higher the Koc, the more readily the chemical will sorb onto soil particles. This coefficient is used to estimate the equilibrium distribution between a contaminant dissolved in groundwater and adsorbed onto soil particles.

5.2.1 VOCs

Table 33 shows the contaminants of concern found in the ORB soil and sediments and groundwater and their water/carbon partition coefficients, solubilities and vapor pressures.

VOCs in groundwater are transported in the dissolved phase. VOC concentrations in groundwater gradually decrease due to sorption, dilution, and chemical and biological degradation. Contaminants found at the water table can volatilize and be transported through the vadose zone. VOCs found in the vadose zone can volatilize or dissolve by water percolating through the soils and carried to the groundwater. VOCs in surface water can volatilize due to contact with the air and VOC concentrations in surface water tend to decrease over time.

5.2.2 Metals

Metals are persistent in the environment because they do not readily volatilize and tend to adsorb onto soil particles. The oxidation state of a metal can change its tendency to be mobile in the environment.

5.2.3 PCBs and Pesticides

PCBs and Pesticides are persistent in the environment and have very low solubilities in water. They readily adsorb onto soil particles and generally do not migrate a significant distance from the source.

5.3 Contaminant Migration

The primary migration pathway for site contaminants is likely to be groundwater transport. Water infiltration through sediments and surface soil is discussed below. The possibility of surface water transport from flooding the ORB is minimal, as the current water level in the ORB is 15 to 20 feet below grade. Contaminant migration through fugitive dust emission is greatly reduced by vegetation around the ORB.

5.3.1 Groundwater

5.3.1.1 VOCs

Analysis of the groundwater analytical data in the ORB vicinity allows a determination of the possible contribution from Fairchild's prior discharges to the ORB. Chlorinated hydrocarbons (PCE, TCE and 1,2-DCE) were found at concentrations less than 5 µg/l in clusters 2, 3, 4, 8, 9 and well 2XD downgradient of the ORB, except well 8S, where 1,2-DCE was found at

estimated concentration of 6 µg/l. These data do not indicate any significant groundwater impact from the ORB.

VOCs were detected at high concentrations during the 1992-1993 sampling events at sidegradient monitoring wells 6S and 6D located approximately 20 feet from the ORB. Fairchild stopped all discharges to the ORB in 1983. Concentrations of 1,1,1-TCA in 1987 and 1988 at cluster 6 ranged from 6 to 12 µg/l. PCE concentration was 3 µg/l (well 6D) and The TCE concentration was less than 2 µg/l (Tables 3 and 4). 1,1,1-TCA concentrations found in these wells in 1992 and 1993 increased by 20 to 50 times from the 1987 levels and ranged from 131 to 660 µg/l. Concentrations of PCE at well 6D increased by five times and concentrations of TCE increased by 30 times from 1987 to 1993. These concentrations should be higher in 1987 than 1992 if the ORB were the source of VOCs found at 6S and 6D considering that Fairchild's discharge to the ORB ceased in 1983. These data clearly indicate that Fairchild's prior discharges could not be a source of the VOCs found at cluster 6, and they should be attributed to off-site sources.

Elevated VOC concentrations were also found at well MW-12S and cluster 10. Monitoring well MW-12S and cluster 10 are located directly downgradient of cluster 6. VOC contamination was not found above the NYSDEC groundwater standard in clusters 2, 3, 4, 8 and 9 which are downgradient of the ORB, but east of cluster 6. The spatial distribution of contaminants and the direction of groundwater flow indicate that cluster 6, 10 and well MW-12S, located west of the ORB and downgradient of its west side, are affected by off-site contamination.

Concentrations of VOC compounds in groundwater downgradient (cluster 10) of the ORB are generally similar to the concentrations in upgradient groundwater (cluster 11) indicating an off-site source, which would indicate that the ORB is probably not a VOC source. The groundwater flow direction, the locations of upgradient off-site sources, and the spatial

distribution of VOCs, indicate that there is an off-site hydraulically upgradient source or a sidegradient source.

Benzene was detected at upgradient monitoring wells 1S and 1D adjacent to Route 110 and downgradient MW-12S in 1993 but was not detected in 1992. Benzene is a constituent of gasoline which is not associated with Fairchild's operations. Fairchild's SPDES permits did not specify a discharge limit for benzene. The May 1984 SPDES permit called for a short term high intensity sampling program for benzene, toluene and xylene from outfall 004. Samples were collected on three consecutive days in August 1984 and benzene was not detected. These results are included with the SPDES permits in Appendix B. The benzene source is unknown.

PCE and 1,1-DCE slightly exceeded NYS surface water standards but are below NYS groundwater standards.

There are several known and/or suspected sources of groundwater contamination upgradient of the ORB including the East Farmingdale Fire Department facility, two NYS inactive hazardous waste sites: the Kenmark Textile site (site #152032) and the Target Rock Corporation site (#152119), and the SCDHS Brandt Airflex site. Information on these sites is summarized in Section 1.2.4 Off-Site Sources.

5.3.1.2 Metals

Iron, manganese, and sodium concentrations in groundwater samples collected from most of the ORB monitoring wells exceed NYS groundwater standards. Concentrations of dissolved iron in groundwater samples from December 1992 and March 1993 range from 160 to 18,887 µg/l with total iron concentrations ranging from 127 to 61,055 µg/l. Concentrations of manganese dissolved in groundwater, sampled at the same time, range from 1.3 to 6,214 µg/l with total manganese concentrations ranging from 31.8 to 5,832 µg/l. Concentrations of

dissolved sodium in the December 1992 and March 1993 groundwater samples range from 60.7 to 88,255 µg/l. Total sodium concentrations ranged from 111 to 86,975 µg/l.

Typical ambient concentrations of iron, manganese and sodium in Long Island groundwater are as follows: dissolved iron concentrations range from 160 to 360,000 µg/l, dissolved manganese concentrations range from 10 to 10,000 µg/l, and dissolved sodium concentrations range from 3,000 to 100,000 µg/l. (A list of references is presented at the end of this report).

These compounds were detected at the upgradient monitoring wells 11S, 11I, and 11D at concentrations exceeding NYS groundwater standards.

Total chromium and lead was found above NYS groundwater standards at wells 6S, 10S, 10D and MW-12S at concentrations ranging from 60 to 239 µg/l. Chromium and lead concentrations at the 22 other wells were below the NYS groundwater standard (50 and 25 µg/l, respectively).

Concentrations of total arsenic in groundwater samples from monitoring wells 2S and 8S were 50.5 and 44 µg/l, respectively, which exceed the drinking water standards (25 µg/l). Dissolved chromium, lead, and arsenic concentrations at all wells investigated during the RI were below the NYS groundwater standards.

The difference between total and dissolved metals concentrations is likely associated with metals adsorbed on soil particles and contained in colloidal form. Groundwater samples designated for the dissolved metals analyses were filtered in the field before sample preservation. This procedure removes fine particles and colloidal matter, and yields water containing only the dissolved constituents which are being transported with groundwater. The analytical data indicate that the ORB does not affect groundwater quality at the site.

Heavy metal contamination in groundwater was found upgradient the Kenmark site based on NYSDEC files. The extent of this contamination was never determined.

5.3.1.3 Pesticides and PCBs

The pesticides, beta-benzene hexachloride (B-BHC), Dieldrin, and 4,4-DDD, were detected at monitoring well MW-12S. Dieldrin, and alpha and gamma chlordane were detected at monitoring well 6D and Arochlor-1254 was detected at monitoring well 6S and at MW-12S. These monitoring wells are west of the ORB and are likely affected by an off-site source. Dieldrin was also detected at monitoring well 4D hydraulically downgradient of the ORB.

Alpha and gamma chlordane were also detected at monitoring wells 5D and 7S hydraulically sidegradient of the ORB. State groundwater quality exceedances are identified on Drawings 8 and 9.

Pesticides and PCBs were not detected at monitoring wells 6S, 6D, 4D, and 7S during the Phase II groundwater sampling in 1988. Alpha- and gamma-chlordane were found at well 12S in 1988. If Fairchild's discharges were the source of contamination, the concentrations should be higher in 1988 than in 1993 considering that Fairchild's discharges ceased in 1983. These data indicate that this contamination is likely from off-site sources.

PCBs were used in transformers at the main plant site but there is no historical data on discharges of PCBs and pesticides to the ORB by Fairchild. PCBs found in soil and groundwater (Arochlor 1254), and sediments (Arochlor 1248 and 1254) at the ORB are of a different type than the PCBs used in most of the transformers at the Main Plant (Arochlor 1260 and 1242). Table 34 shows the transformer oil analytical results for PCBs. This contamination is likely not attributable to Fairchild's discharges.

Groundwater analytical data collected during this and previous environmental investigations indicate that groundwater quality at well clusters 6, 10 and well MW-12S is characterized by elevated concentrations of VOCs, metals and PCB/pesticides, and is likely affected by off-site sources. Several suspected off-site sources of groundwater contamination are described in Section 1.2.4 Off-Site Sources.

5.3.2 Surface Soil and Sediments

The extent of possible contaminant migration in soil and sediments is evaluated by analyzing surface and groundwater quality at the site.

VOC, metals and PCBs were found above the NYS cleanup levels in the ORB sediments and limited PCB contamination was found in the surface soil on the west side of the ORB.

Sediments in the North Pond generally contained higher VOC concentrations than in the South Pond. Concentrations of PCE and TCE in surface water during the 1987 and 1988 sampling rounds were higher in the South Pond than in the North Pond. All VOCs detected in surface water in 1992 and 1993 were below the NYS groundwater standards. These data suggest that the sediments are stable and do not impact surface water quality.

The spatial distribution of contamination and groundwater flow show that the groundwater contamination at well clusters 6, 10 and well MW-12S is likely associated with off-site sources. Analytical data on groundwater quality downgradient of the ORB indicate either one or more off-site sources, discharges by Fairchild and others, or a combination of these discharges.

The results of the sediment EP toxicity tests indicated that metals in the sediments are stable. The EP toxicity test is designed to simulate leaching conditions at landfill sites. Despite the relatively high total metal concentrations, the EP toxicity test results presented in Appendix

K indicate that metal concentrations in the leachate extract were not above the EPA statutory limits.

PCBs were not found in surface water during the 1987, 1988, 1992 and 1993 sampling rounds, which suggests that the PCBs found a few feet from the ORB (see Section 4.3 Surface Soil Analytical Results) are stable and do not migrate to surface water or to groundwater.

6.0 SUMMARY AND CONCLUSIONS

The RI conclusions are as follows:

Site Background

- The bottom of the ORB covers 10.5 acres and is approximately 60 feet below the land surface at its greatest depth. The ORB is hydraulically connected to groundwater which is approximately 30 feet below the surface.

- Fairchild held discharge permits from New York State from 1941 until 1983 when discharges were terminated. The average discharge was two million gallons per day which consisted of non-contact cooling water, air conditioning water, treated wastewater, and stormwater.

- Historical data indicates that road runoff and a number of industrial dischargers, including NYSDOT, Fairchild, Eaton AIL and Picone discharged to the ORB.

- Historical aerial photographs show that the ORB was once littered with potentially contaminated debris, drums and tires. Drums were stored in the northwest corner.

- All public water supply wells within a three mile radius of the site and all wells within a one mile radius of the site were inventoried. The closest downgradient active supply well is approximately 7,000 feet southeast of the site.

- Groundwater movement is to the south-east, which is in agreement with the regional groundwater flow direction. Groundwater flow velocity is estimated at 1 to 1.5 feet per day.

- Groundwater is in relative equilibrium with the ORB surface water since there is currently no significant discharge from or recharge to the ORB. The ORB surface water elevation did not increase significantly during or after precipitation events. The ORB is inactive and does not receive substantial stormwater runoff. The ORB has an open water surface and it is more strongly affected by evaporation than the surrounding groundwater and in its inactive state the ORB represents a greater loss of precipitation than the groundwater.

- The ORB currently does not recharge the aquifer based on relative groundwater and surface water elevations, although it did function as a recharge basin in the past. The open water surface would create an increased evaporation loss from recharge relative to surrounding areas. The groundwater flow direction at the ORB does not significantly change due to precipitation events.

- NYSDEC files identify several known or suspected groundwater contamination sources upgradient of the ORB, including the East Farmingdale Fire Department facility at the corner of Carmans Road and two NYSDEC hazardous waste sites: Kenmark Textiles and Target Rock.

- Studies at the Kenmark Textile site indicated that industrial wastewater at the site contained heavy metals, cyanide, phenols, and VOCs. The wastewater was discharged to groundwater through leaching pits.

- Over 1400 gallons of TCA were released with PCE in 1983 at the upgradient Target Rock site and this contamination should now be found at well cluster

6 based on the regional groundwater flow direction and an estimated groundwater flow velocity of 1-1.5 feet per day.

- A study by SCDHS at Brandt Airflex 150 feet upgradient of the ORB found TCE (450 µg/kg) and PCE (30,000 µg/kg) in soil, and TCE (13,000) µg/l and PCE (170,000) µg/l in groundwater. Based on the groundwater flow rate of 1 to 1.5 feet/day, contaminated groundwater would migrate to the ORB in less than one year.

- Groundwater contamination was found at the East Farmingdale Fire Station. In 1990, PCE was found at extremely high concentrations in groundwater (12,143 µg/l). Based on the groundwater flow rate of 1 to 1.5 feet/day, contaminated groundwater from the station would migrate to the ORB in less than one year.

Nature and Extent of Contamination

- PCE and 1,1-DCE slightly exceeded NYS surface water standards but are below NYS groundwater standards.

- Iron, manganese, antimony, cobalt and sodium (total) were found in the ORB at concentrations exceeding NYS standards. Manganese is the only dissolved metal found above the NYS standard. This indicates that elevated total metal concentrations are likely associated with particles of soil.

- VOCs, chromium, lead, pesticides and PCBs were detected in on-site groundwater at concentrations exceeding NYS groundwater standards, but they were detected at locations that indicate either one or more off-site sources, discharge by Fairchild and others, or a combination of the above, based on the RI data.

- TCE, PCE and TCA concentrations at well cluster 6 increased five to fifteen times from 1987 to 1993. If the ORB were the source of VOCs found at cluster 6, the concentrations should be higher in 1987 than in 1993 considering that Fairchild's discharges ceased in 1983. These data clearly indicate that Fairchild could not be the only source and VOCs should be attributed to off-site sources.

- Monitoring well 10D is downgradient of cluster 6. TCE, PCE, and 1,2-DCE were found at monitoring well 10D, but at none of the other downgradient wells. These VOCs can be attributed to off-site sources.

- Benzene was found in groundwater at upgradient wells 1S and 1D and downgradient well 12S in 1993 but was not detected in 1992. These data indicate that benzene is not associated with Fairchild discharges which terminated more than ten years ago.

- Concentrations of iron, manganese, and sodium are above NYS groundwater standards at the ORB monitoring wells. These concentrations are within the range of concentrations commonly found in Long Island groundwater and are not attributable to the past Fairchild's discharges.

- Elevated chromium and lead concentrations were found at well clusters 6, 10 and well MW-12S, which are sidegradient and downgradient of the western portion of the ORB. Lead and chromium were below NYS standards in all other downgradient wells. The spatial distribution of contamination in groundwater suggests a source from the southwest portion of the ORB and/or an off-site source such as the Kenmark Textiles or Target Rock sites.

- Groundwater flow velocity on the Upper Glacial Aquifer at the site is estimated as 1-1.5 feet/day. Heavy metals contamination migrates much slower based on physical and chemical characteristics of the contaminants and would be detected at downgradient wells if the ORB is a source. Analytical data at monitoring wells downgradient of the ORB show no heavy metal contamination that can be linked to Fairchild.

- Concentrations of dissolved chromium, lead and arsenic were below NYS standards at all ORB wells. Metals are transported in groundwater in the dissolved phase. These data indicate that metals in the ORB sediment do not impact ORB groundwater.

- Concentrations of total chromium and lead were detected above NYS standard in 3 out of 26 monitoring wells and arsenic was detected above NYS standard in 2 out of 26 monitoring wells. These concentrations are likely related to higher turbidity in the groundwater samples and are characteristic of local conditions.

- Pesticides (B-BHC, dieldrin, 4,4-DDD and A-chlordane and G-chlordane) were found in groundwater at several monitoring wells. They are not likely attributed to past Fairchild discharge since they were not used in past Fairchild's manufacturing processes.

- PCBs were detected in groundwater at sidegradient cluster 6 and well MW-12S. Pesticides and PCBs were not detected at monitoring wells 6S, 6D, 4D, and 7S during the Phase II groundwater sampling in 1988. Alpha- and gamma-chlordane were found in 1988 at well 12S. If Fairchild's discharges were the source of contamination, the concentrations should be higher in 1988 than in 1993 considering that Fairchild's discharges ceased in 1983. These data

indicate that this contamination is likely attributed to off-site sources. The source may be from an off-site source(s) or from PCB's in soil at the western portion of the ORB.

- PCBs found in soil and groundwater (Arochlor 1254), and sediments (Arochlor 1248 and 1254) at the ORB are of a different type than the PCBs used in the majority of transformers at the Main Plant (Arochlor 1260 and 1242). These data indicate that PCB contamination found at the ORB is not associated with past Fairchild's discharges.

- PCB's were detected in surface soil at the western side of the ORB. The sampling results indicate the limited extent of contamination. The source of this contamination is unknown but can not be attributed to Fairchild's prior discharges. The Fairchild discharge pipe was located on the opposite (eastern) side of the ORB.

- VOCs, semivolatile organic compounds, metals and PCBs were found in the ORB sediments. The sediment contamination is in stable condition and does not leach into surface water and groundwater as indicated by the surface water and groundwater analytical data. EP toxicity test results confirm that metals in the sediments are stable.

Contaminant Fate and Transport

- The primary migration pathway for site contaminants is likely groundwater transport. The possibility of surface water transport from the ORB by flooding the ORB is minimal, as the current water level in the ORB is 15 to 20 feet below grade. Contaminant migration through fugitive dust emissions is greatly reduced by vegetation around the ORB.

- The RI groundwater data do not indicate significant concentrations of contaminants that can be attributed to Fairchild discharges to the ORB.

- The fish and wildlife impact analysis indicates that the physical characteristics of the site and surrounding area do not support a significant ecological diversity or biomass. Based on the ecological data, there is no evidence of impact to fish and wildlife. Sediments in the north and south ponds were sampled in 1988 and metals, VOCs, and PCB concentrations in some of the samples exceed State generic aquatic life criteria. However, it is unlikely that these contaminated sediments represent a significant threat to the environment, since the ORB does not support a significant aquatic population based on the ecological data collected.

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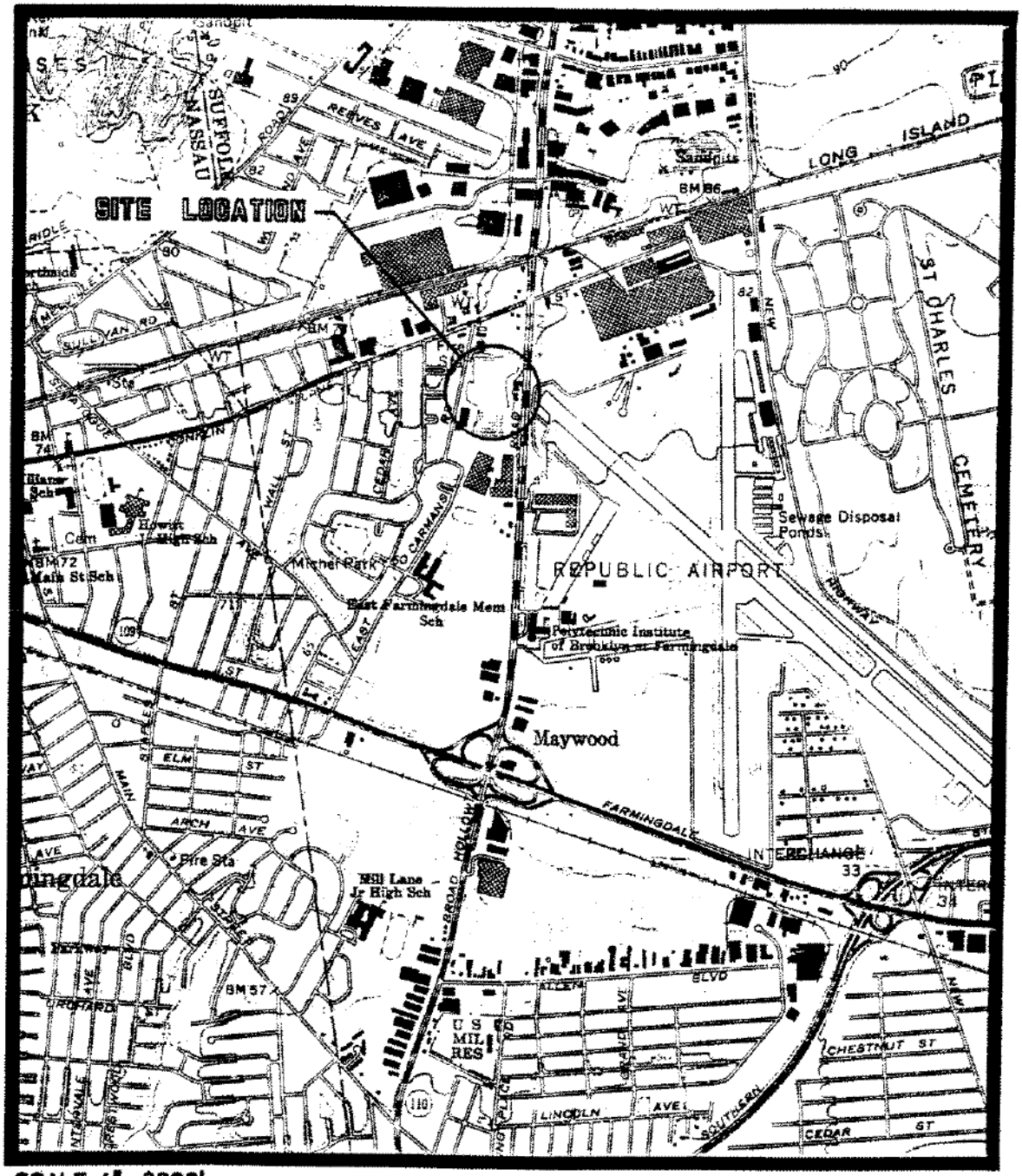
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FIGURE 1

FAIRCHILD INDUSTRIES INC.

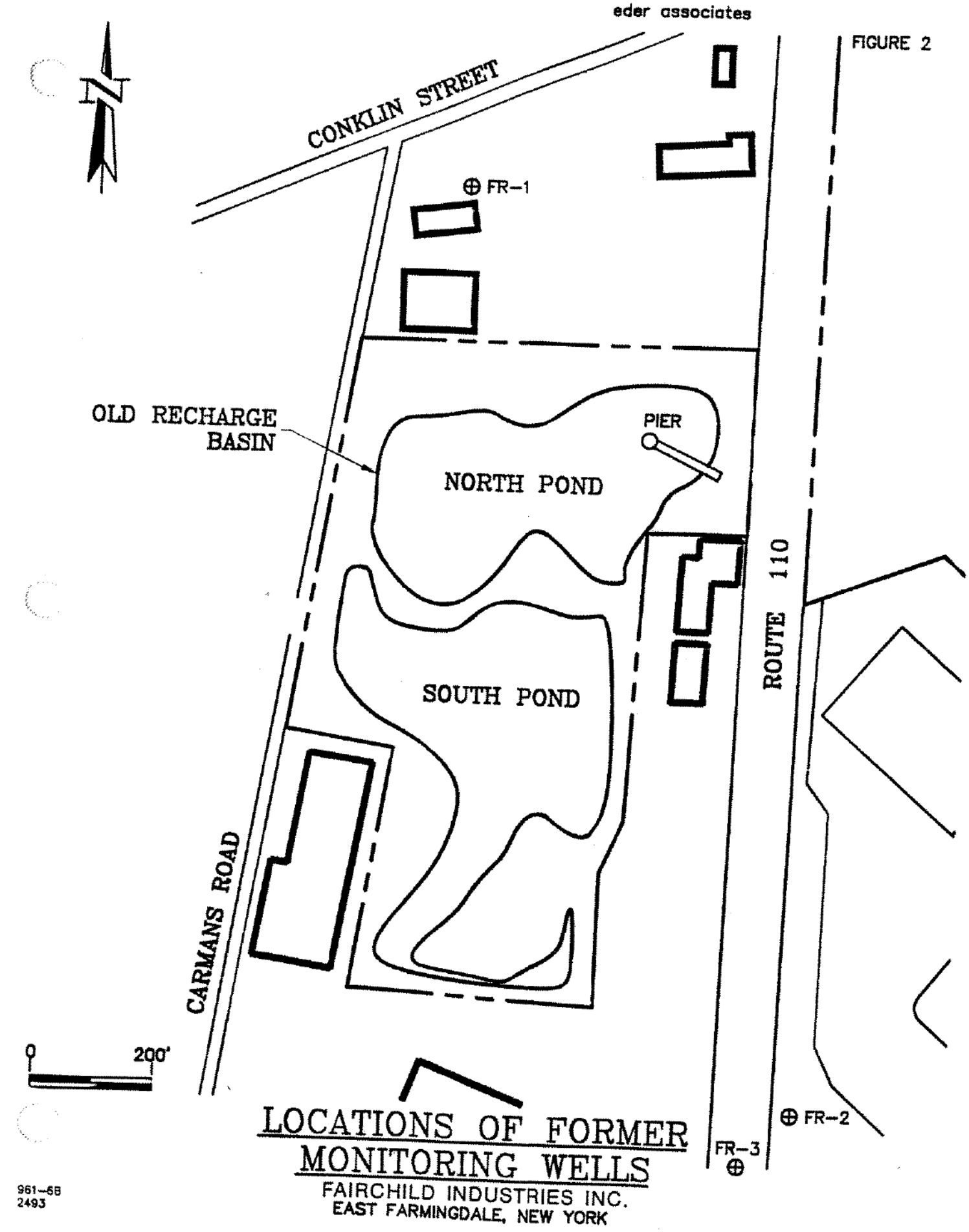
EAST FARMINGDALE, NEW YORK



SCALE 1"=2000'

U.S.G.S. 7.5 MINUTE QUADRANGLE
AMITYVILLE, NEW YORK

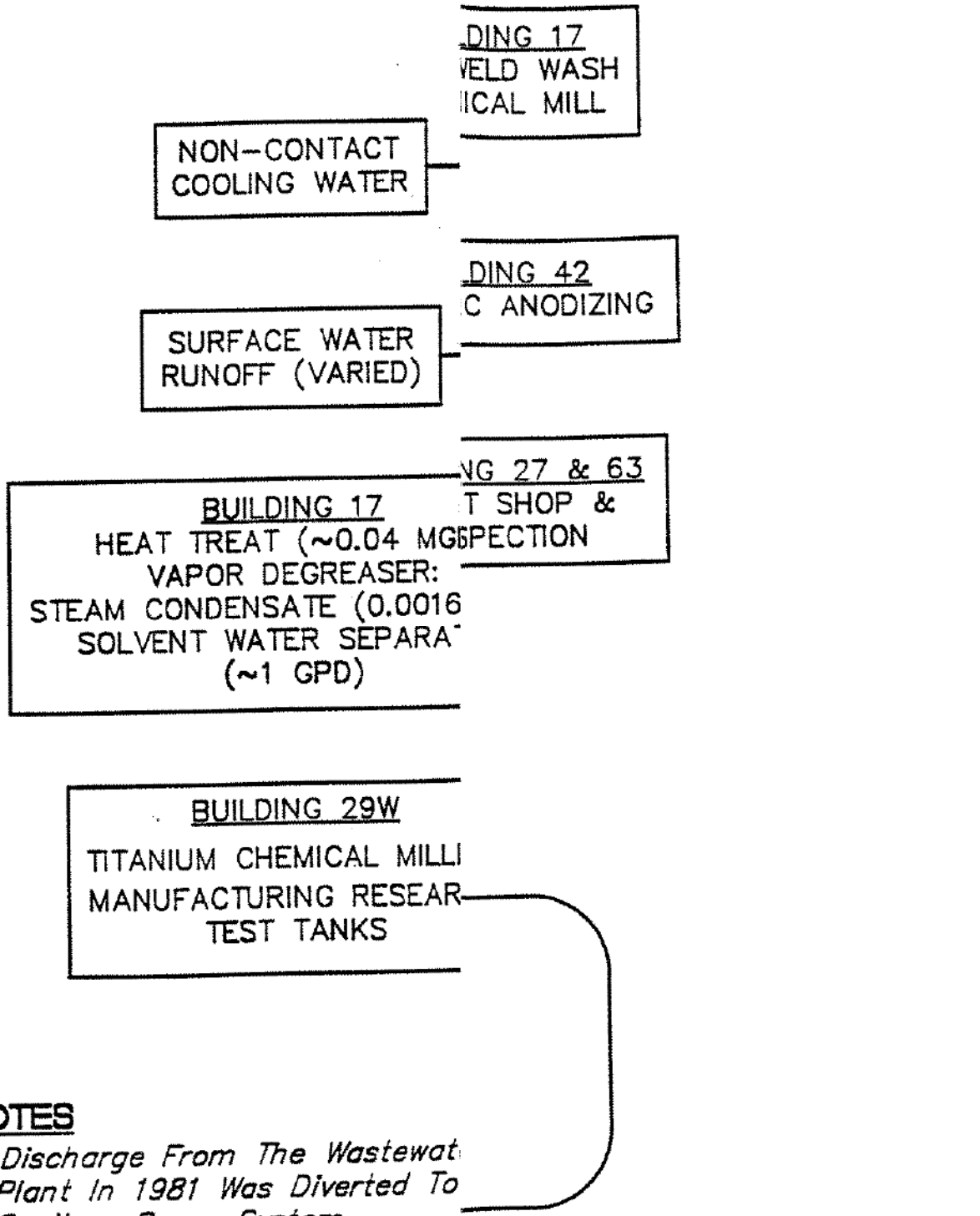
LOCATION MAP



LOCATIONS OF FORMER MONITORING WELLS

FAIRCHILD INDUSTRIES INC.
EAST FARMINGDALE, NEW YORK

961-68
2493



NOTES

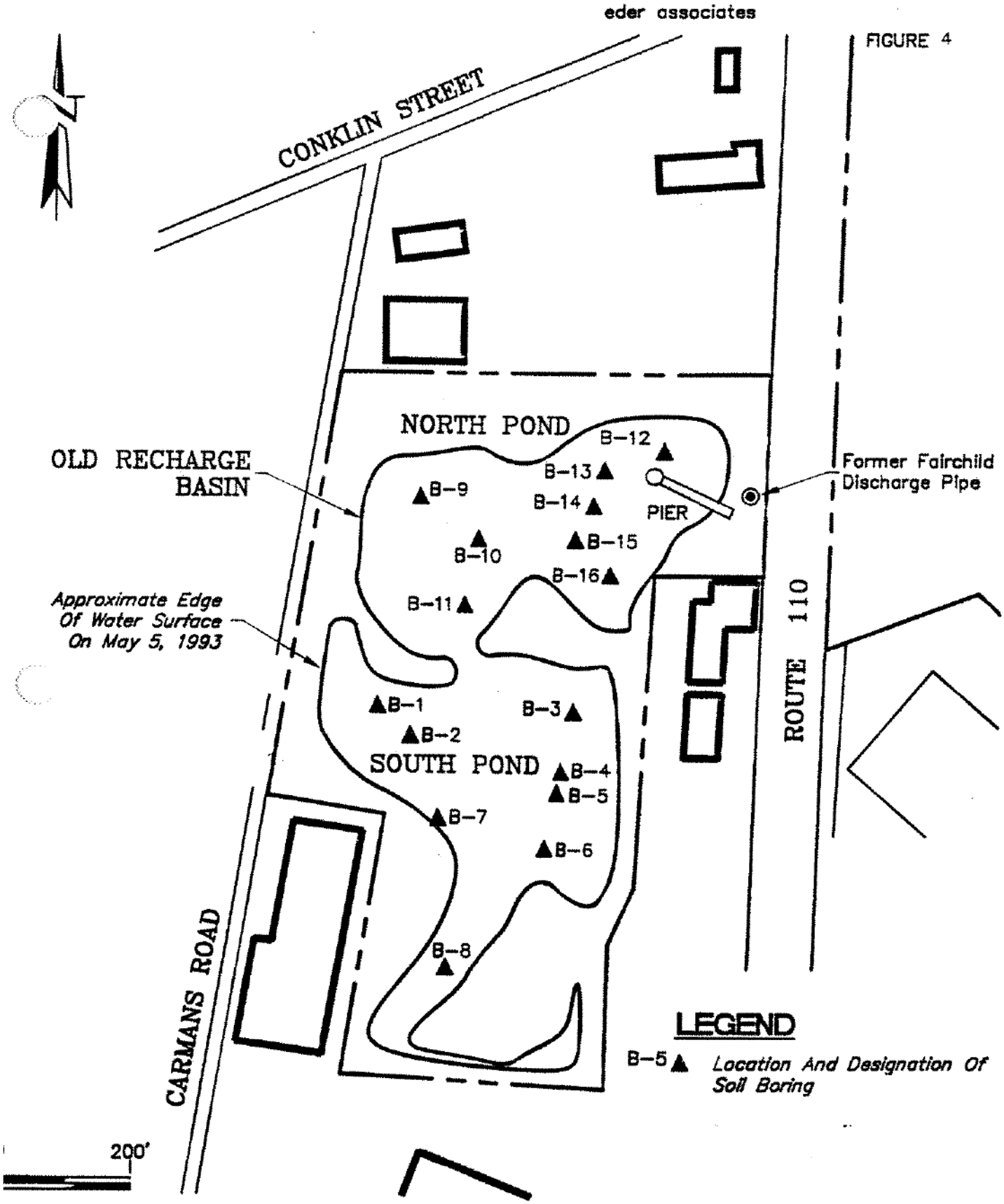
1. *Discharge From The Wastewat Plant In 1981 Was Diverted To Sanitary Sewer System.*

2. *Stormwater Run Off Was Cons Estimated As Average Annua Precipitation Over A 100 Acr*

ASTEWATER DISCHARGE
RECHARGE BASIN
D INDUSTRIES, INC.
RMINGDALE, NEW YORK

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FIGURE 4

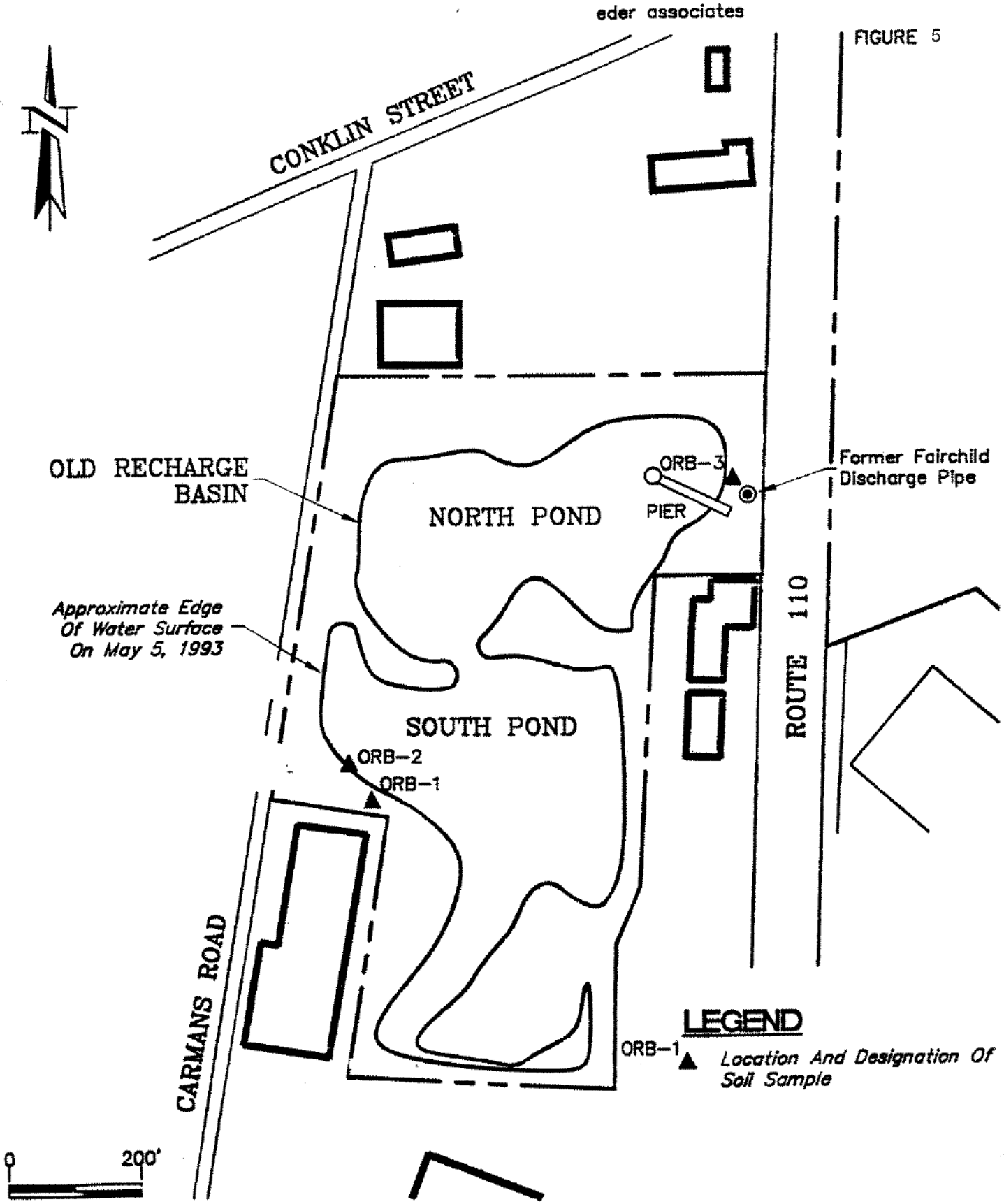


GERAGHTY AND MILLER
SEDIMENT SAMPLING LOCATIONS

FAIRCHILD INDUSTRIES INC.
EAST FARMINGDALE, NEW YORK

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FIGURE 5

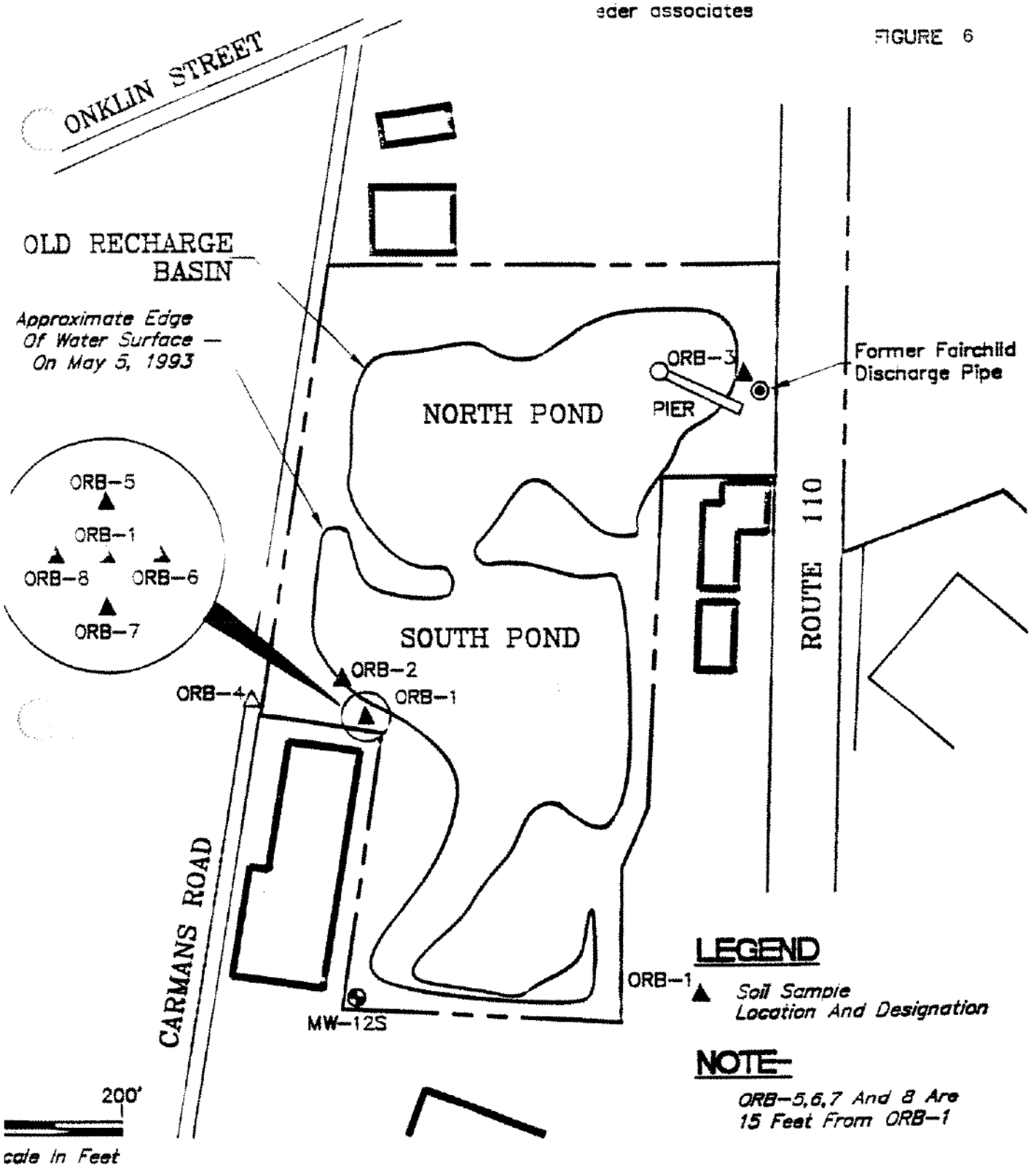


SURFACE SOIL SAMPLING LOCATIONS

FAIRCHILD INDUSTRIES INC.
EAST FARMINGDALE, NEW YORK

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FIGURE 6



SURFACE SOIL SAMPLE LOCATIONS

REMEDIAL INVESTIGATION

OLD RECHARGE BASIN

FAIRCHILD INDUSTRIES INC.

EAST FARMINGDALE, NEW YORK

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 1

SUMMARY OF WELL CONSTRUCTION DETAILS
FOR MONITORING WELLS IN THE VICINITY
OF THE OLD RECHARGE BASIN

Well #	Installation Date	Well Diameter (inches)	Feet Below Land Surface				
			Total Depth	Screened Interval	Gravel Pack	Bentonite Seal	Cement Grout
1S	11/7/83	2	37	17-37	4-37	2-4	0-2
1D	11/7/83	1.5	57.8	37.8-57.8	35.5-57.8	33.5-35.5	0-2
2S	11/8/83	2	38	18-38	4-38	2-4	0-2
2D	11/8/87	1.5	59	39-59	36-59	36-38	0-2
2XD	8/12/92	4.0	90	80-90	78-90	76-78	2-76
3S	11/8/87	2	39	19-39	4-39	2-4	0-2
3D	11/8/87	1.5	59.7	39.7-59.7	36-59.7	36-38	0-2
4S	11/9/87	2	39	19-39	4-39	2-4	0-2
4D	11/9/87	1.5	59.8	39.8-59.8	37-59.8	37-39	0-2
5S	11/10/87	2	39.2	19.2-39.2	4-39.2	2-4	0-2
5D	11/10/87	1.5	60.5	40.5-60.5	35-60.5	25-37.5	0-2
6S	11/9/87	2	38	18-38	4-38	2-4	0-2
6D	11/9/87	1.5	58.3	38.3-58.3	35-58.3	35-38	0-2
7S	11/10/87	2	39	19-39	4-39	2-4	0-2
7D	11/10/87	1.5	60	40-60	37-60.0	37-39	0-2
MW-12S	11/2/87	2	21.2	11.2-21.2	9-21.2	7-9	1-7
8S	8/13/92	4.0	35.0	20-35	17-35	15-17	2-15
8I	8/13/92	4.0	60.0	50-60	47-60	42-47	2-42
9S	8/14/92	4.0	35.0	20-35	17-35	15-17	2-15
9I	8/14/92	4.0	60.0	50-60	46.5-60	40-46.5	2-40
10S	10/19/92	4.0	34.0	19-34	16-34	13-16	2-13
10I	10/19/92	4.0	60.0	50-60	47-60	43.5-47	2-43.5
10D	10/20/92	4.0	94.0	84-94	81-84	78-81	2-78
11S	10/28/92	4.0	35.0	20-35	17-35	14-17	2-14
11I	10/27/92	4.0	59.0	49-59	46-59	43-46	2-43
11D	11/3/92	4.0	92.5	82.5-92.5	80-92.5	77-80	2-77

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OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 2

1982 GROUNDWATER ANALYTICAL RESULTS FOR
VOLATILE ORGANIC COMPOUNDS

Sample Location	FR-1		FR-2		FR-3		FR-4	
Depth (ft)	MC	TCE	MC	TCE	MC	TCE	MC	TCE
40	<10	98	<10	76	<10	<10	<10	<10
60	<10	40	<10	<10	<10	<10	<10	<10
80	<10	42	<10	<10	<10	<10	<10	<10

NOTES:

All results in µg/l
MC - Methylene chloride
TCE - Trichloroethylene

Samples were collected by York Wastewater Consultants (YWC) and the results were presented in the Installation and Sampling of Groundwater Monitoring Wells Report, YWC, 1982.

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EAST FARMINGDALE, NEW YORK

TABLE 3

1987 GROUNDWATER ANALYTICAL RESULTS FOR
VOLATILE ORGANIC COMPOUNDS

Sample Location	1S	1D	2S	2D	3S	3D	4S	4D	5S	5D	6S	6D	7S	7D	FR-3
Date Sampled	12/8/87	12/8/87	12/7/87	12/7/87	12/7/87	12/7/87	12/7/87	12/7/87	12/7/87	12/7/87	12/9/87	12/9/87	12/7/87	12/7/87	12/9/87
Vinyl Chloride	<1	<1	<1	6	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroethane	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	<1	<1	<1	2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethene	<1	<1	<1	11	<1	<1	<1	<1	<1	<1	<1	<1	8	4	<1
1,1,1-Trichloroethane	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2	<1	<1
Trichloroethylene	<1	<1	<1	<1	3	<1	<1	<1	<1	2	<1	1	6	1	<1
Tetrachloroethene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	3	3	<1	1	<1
Chlorobenzene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,4-Dichlorobenzene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Benzene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

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Table 3 Continued . . .

Sample Location	1S	1D	2S	2D	3S	3D	4S	4D	5S	5D	6S	6D	7S	7D	FR-3
Date Sampled	12/8/87	12/8/87	12/7/87	12/7/87	12/7/87	12/7/87	12/7/87	12/7/87	12/7/87	12/7/87	12/9/87	12/9/87	12/7/87	12/7/87	12/9/87
Toluene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2	<1	<1	<1	<1
Ethyl benzene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
m-Xylene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
o+p Xylene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total Volatile Organics	<1	<1	<1	19	3	<1	<1	<1	<1	2	14	14	20	8	<1

NOTES:

All results in µg/l.
Samples were collected by Geraghty & Miller and analyzed by EPA Method 601, 602.

The results were presented in the Phase II Hydrogeological Investigation Report, Geraghty & Miller, April 1988.

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OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 4

1988 GROUNDWATER ANALYTICAL RESULTS FOR
VOLATILE ORGANIC COMPOUNDS

Sample Location	2D	3S	5D	6S	6D	7S	7D	FB-2	TB-1
Date Collected	2/1/88	2/1/88	2/1/88	2/3/88	2/3/88	2/2/88	2/2/88	2/2/88	
Chloromethane	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromomethane	<1	<1	<1	<1	<1	<1	<1	<1	<1
Vinyl chloride	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroethane	<1	<1	<1	<1	<1	<1	<1	<1	<1
Methylene chloride	<1	<1	<1	1 JB	1 JB	2 JB	<1	<1	3 J
Acetone	<1	4 JB	<1	6 JB	<1	<1	19	<1	2 JB
Carbon disulfide	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	<1	<1	<1	<1	<1	<1	9	<1	<1
1,2-Dichloroethene	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform	<1	<1	<1	<1	<1	<1	<1	97	<1
1,2-Dichlorethane	<1	<1	<1	<1	<1	<1	<1	<1	<1
2-Butanone	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1-Trichloroethane	<1	<1	<1	6 B	12 B	5 B	8 B	<1	<1
Carbon tetrachloride	<1	<1	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	<1	<1	<1	<1	<1	<1	<1	12	<1
1,1,2,2-Tetrachloroethane	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloropropane	<1	<1	<1	<1	<1	<1	<1	<1	<1
trans-1,3-Dichloropropene	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	<1	<1	<1	2 J	1 J	<1	4 J	<1	<1

Table 4 Continued . . .

Sample Location	2D	3S	5D	6S	6D	7S	7D	FB-2	TB-1
Date Collected	2/1/88	2/1/88	2/1/88	2/3/88	2/3/88	2/2/88	2/2/88	2/2/88	
Dibromochloromethane	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	<1	<1	<1	<1	<1	<1	<1	<1	<1
Benzene	<1	<1	<1	<1	<1	<1	<1	<1	<1
cis-1.3-Dichloropropene	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromoform	<1	<1	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	<1	<1	<1	<1	<1	<1	10	<1	<1
4-Methyl-2-pentanone	<1	<1	<1	2 J	<1	<1	<1	<1	<1
Tetrachloroethene	<1	<1	<1	6	3 J	<1	<1	<1	<1
Toluene	<1	<1	<1	1 JB	0.9 JB	<1	<1	<1	0.7 JB
Chlorobenzene	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	<1	<1	<1	<1	<1	<1	<1	<1	<1
Styrene	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total Xylenes	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total VOCs	<1	4	<1	24	18	7	50	109	7

NOTES:

All results in µg/l.
FB - Field Blanks.
TB - Trip Blanks.
Samples were collected by Geraghty and Miller and analyzed by USEPA Method 624 by York Laboratories, Inc, Monroe, Connecticut.
J Compound was detected above zero but below minimum detection limit. Concentration given is an estimated value.
B Compound was detected in the blanks as well as the sample. Indicates possible sample contamination.

The results were presented in the Phase II Hydrological Investigation Report, Geraghty and Miller, April 1988.

FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 5

TCE AND PCE SAMPLING RESULTS FROM OLD RECHARGE BASIN

Sampling Date	Concentration (mg/l)	
	TCE	PCE
6/15/81	0.072	NA
7/29/82	<0.010	<0.010
8/13/82	<0.010	<0.010
9/8/82	<0.010	<0.010
10/27/82	<0.010	<0.010
11/11/82	<0.010	<0.010
12/6/82	<0.010	<0.010
2/3/83	<0.010	<0.010
3/3/83	<0.010	<0.010
4/6/83	<0.010	<0.010
5/5/83	<0.010	<0.010
6/6/83	<0.010	<0.010
7/7/83	<0.010	<0.010
8/4/83	<0.010	0.099
9/1/83	<0.010	<0.010
10/6/83	<0.010	<0.010
11/8/83	<0.010	<0.010
12/12/83	0.029	<0.010
Max. Concentration	0.072	0.099
Average Concentration*	0.015	0.015

NOTES:
NA - Not Analyzed
* - Average concentrations were calculated assuming that the concentrations reported as below method detection limit (MDL) are equal to the MDL.

FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 6

TCE AND PCE SAMPLING RESULTS FROM WASTEWATER TREATMENT PLANT EFFLUENT

Sampling Date	Concentration, mg/l	
	TCE	PCE
1/20/82	54	14
4/23/82	0.007	NA
5/5/82	<0.010	NA
5/21/82	<0.010	NA
12/2/82 (g)	<0.010	NA
12/2-3/82 (c)	<0.010	NA
12/9/82 (g)	0.010	NA
12/9-10/82 (c)	<0.010	NA
12/16/82 (g)	<0.010	NA
12/16-17/82 (c)	<0.010	NA
12/21/82 (g)	<0.010	NA
12/21-22/82 (c)	<0.010	NA
12/28/82 (g)	0.014	NA
12/28-29/82 (c)	0.030	NA
1/6/83 (g)	<0.010	NA
1/6-7/83 (c)	<0.010	NA
1/13/83 (g)	0.017	NA
1/13-14/83 (c)	<0.010	NA
1/21/83 (g)	<0.010	NA
1/20-21/83 (c)	<0.010	NA

NOTES:
NA - Not Analyzed
(g) - Grab Sample
(c) - Composite Sample

Sampling Date	Concentration, mg/l	
	TCE	PCE
1/28/83 (g)	<0.010	NA
1/27-28/83 (c)	<0.010	NA
2/3/83 (g)	<0.010	NA
2/3-4/83 (c)	<0.010	NA
2/10/83 (g)	<0.010	NA
2/10-11/83 (c)	<0.010	NA
2/17/83 (g)	0.011	NA
2/17-18/83 (c)	0.012	NA
11/10/83 (g)	<0.010	<0.010
11/10-11/83 (c)	<0.010	<0.010
11/17/83 (g)	<0.010	<0.010
11/17-18/83 (c)	<0.010	<0.010
11/23/83 (g)	<0.010	<0.010
11/23-24/83 (c)	<0.010	<0.010
2/7/84	<0.010	<0.010
3/1/84	<0.010	0.005
4/12/84	<0.010	<0.010
5/12/84	<0.010	<0.010
7/30/84	0.020	<0.002
7/31/84	0.005	<0.002
8/1/84	0.008	<0.002
8/22/84	0.009	<0.002
1/3/86 (g)	<0.001	0.024
1/3/86 (c)	<0.001	0.021
1/8/86 (g)	0.002	0.003

NOTES:

NA - Not Analyzed
(g) - Grab Sample
(c) - Composite Sample

Sampling Date	Concentration, mg/l	
	TCE	PCE
1/10/86 (c)	0.005	0.007
1/15/86 (g)	0.008	0.026
1/16/86 (c)	0.009	0.029
1/22/86 (g)	<0.001	0.006
1/23/86 (c)	0.001	0.006
1/29/86 (g)	<0.001	0.008
1/30/86 (c)	0.002	0.005
2/5/86 (g)	0.002	0.005
2/6/86 (c)	0.002	0.001
2/12/86 (c)	0.002	0.003
2/13/86 (c)	0.001	0.004
2/19/86 (c)	<0.001	<0.001
2/19/86 (g)	0.002	0.009
2/26/86 (c)	0.005	0.003
2/26/86 (g)	0.009	0.013
3/5/86 (g)	0.001	0.005
3/5/86 (c)	0.004	0.001
3/12/86 (g)	0.001	0.007
3/13/86 (c)	<0.001	<0.001
3/20/86 (c)	<0.001	0.002
3/26/86 (g)	0.003	0.021
3/27/86 (c)	0.002	0.006
4/2/86 (g)	0.001	0.003
4/3/86 (c)	<0.001	0.002
4/9/86 (g)	<0.001	0.003

NOTES:

NA - Not Analyzed
(g) - Grab Sample
(c) - Composite Sample

Sampling Date	Concentration, mg/l	
	TCE	PCE
4/16/86 (g)	<0.001	<0.001
4/17/86 (c)	<0.001	0.001
4/23/86 (g)	<0.001	0.001
4/24/86 (c)	<0.001	0.002
4/30/86 (g)	<0.001	0.003
5/1/86 (c)	<0.001	0.003
5/7/86 (g)	<0.001	0.012
5/8/86 (c)	<0.001	0.003
5/14/86 (g)	<0.001	0.003
5/15/86 (c)	<0.001	0.001
5/21/86 (g)	<0.001	0.005
5/22/86 (c)	<0.001	0.002
5/29/86 (g)	<0.001	0.001
5/30/86 (c)	<0.001	<0.001
6/4/86 (g)	<0.001	0.002
6/5/86 (c)	<0.001	<0.001
6/12/86 (c)	0.003	0.001
6/12/86 (g)	0.003	0.002
6/18/86 (g)	<0.001	0.008
6/19/86 (c)	<0.001	0.002
6/25/86 (g)	<0.001	0.002
6/26/86 (c)	<0.001	<0.001
7/2/86 (g)	<0.001	0.001
7/3/86 (c)	<0.001	<0.001
7/10/86 (g)	<0.001	<0.001

NOTES:

NA - Not Analyzed
(g) - Grab Sample
(c) - Composite Sample

Sampling Date	Concentration, mg/l	
	TCE	PCE
7/10/86 (c)	<0.001	<0.001
7/17/86 (g)	<0.001	0.001
7/17/86 (c)	<0.001	<0.001
7/23/86 (g)	0.001	0.002
7/24/86 (c)	<0.001	<0.001
7/31/86 (c)	<0.001	0.003
7/31/86 (g)	<0.001	0.004
8/6/86 (g)	<0.001	0.002
8/7/86 (c)	<0.001	<0.001
8/14/86 (g)	<0.001	0.003
8/14/86 (c)	<0.001	<0.001
8/20/86 (g)	<0.001	0.003
8/21/86 (c)	<0.001	<0.001
8/27/86 (g)	<0.001	0.001
8/28/86 (c)	<0.001	0.001
9/3/86 (g)	<0.001	0.002
9/4/86 (c)	<0.001	<0.001
9/10/86 (g)	<0.001	0.002
9/11/86 (c)	<0.001	0.001
9/18/86 (g)	<0.001	0.002
9/18/86 (c)	<0.001	0.076
9/24/86 (g)	<0.001	0.002
9/25/86 (c)	<0.001	<0.001
10/1/86 (g)	<0.001	0.002
10/2/86 (c)	<0.001	<0.001

NOTES:

NA - Not Analyzed
(g) - Grab Sample
(c) - Composite Sample

Sampling Date	Concentration, mg/l	
	TCE	PCE
10/9/86 (g)	<0.001	0.002
10/9/86 (c)	<0.001	<0.001
10/15/86 (g)	0.170	0.016
10/16/86 (c)	0.054	0.014
10/23/86 (g)	0.140	0.007
10/23/86 (c)	0.093	0.003
10/30/86 (c)	0.003	<0.001
10/29/86 (c)	0.003	<0.001
11/5/86 (g)	0.002	0.001
11/6/86 (c)	0.002	<0.001
Max. Concentration	54	14
Average Concentration*	0.44	0.15

NOTES:

NA - Not Analyzed

(g) - Grab Sample

(c) - Composite Sample

* - Average concentrations were calculated assuming that the concentrations reported as below method detection limit (MDL) are equal to the MDL.

FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 7

TCE AND PCE SAMPLING RESULTS FROM NEW RECHARGE BASIN

Sampling Date	Concentrations, mg/l	
	TCE	PCE
2/7/84	<0.010	<0.010
3/1/84	<0.010	<0.010
4/12/84	<0.010	<0.010
5/12/84	<0.010	<0.010
6/28/84	<0.002	<0.002
7/30/84	NA	<0.002
7/31/84	NA	<0.002
8/1/84	NA	<0.002
8/22/84	NA	0.002
1/3/85	0.001	<0.001
2/7/85	0.003	0.001
3/6/85	0.003	0.001
4/14/85	0.001	<0.001
5/31/85	0.002	<0.001
6/5/85	<0.001	<0.001
7/3/85	0.003	<0.001
8/1/85	0.002	<0.001
9/5/85	0.003	<0.001
10/4/85	0.002	<0.001
11/7/85	0.002	<0.001
12/5/85	0.002	<0.001
1/9/86	0.002	<0.001

Sampling Date	Concentrations, mg/l	
	TCE	PCE
2/6/86	0.002	<0.001
3/6/86	0.002	<0.001
4/10/86	0.002	<0.001
5/1/86	0.002	0.003
5/30/86	0.002	<0.001
7/3/86	<0.001	0.002
8/14/86	0.003	0.001
9/25/86	0.003	<0.001
10/23/86	0.004	<0.001
11/20/86	0.002	<0.001
12/18/86	0.002	<0.001
5/10/88	<0.001	<0.001
6/14/88	<0.001	<0.001
7/15/88	<0.001	0.002
8/12/88	<0.001	<0.002
Max. Concentration	0.004	0.003
Average Concentration*	0.003	0.002

Notes:
NA - Not Analyzed
* - Average concentrations were calculated assuming that the concentrations reported as below method detection limit (MDL) are equal to the MDL.

FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 8

TCE AND PCE SAMPLING RESULTS FROM SEWAGE TREATMENT PLANT INFLUENT
(STP Discharged into POTW)*

Sampling Date	Concentration, mg/l	
	TCE	PCE
3/9/83	NA	0.110
6/28/84	NA	0.052
7/12/84	NA	0.005
8/9/84	NA	0.001
9/6/84	NA	0.001
10/4/84	NA	0.001
11/1/84	NA	0.001
1/3/85	NA	<0.001
2/7/85	NA	<0.003
3/6/85	NA	<0.001
4/14/85	NA	<0.001
5/31/85	NA	<0.001
6/5/85	NA	0.002
1/9/86	NA	0.001
3/6/86	NA	0.008
4/10/86	NA	<0.001
5/1/86	NA	0.005
5/30/86	NA	<0.001

Table 8 Continued . . .

Sampling Date	Concentration, mg/l	
	TCE	PCE
7/3/86	NA	0.003
8/14/86	NA	0.043
9/25/86	NA	0.006
10/23/86	NA	0.015
Max. Concentration	NA	0.110
Average Concentration**	NA	0.012

NOTES:

NA - Not Analyzed
* - STP - Sewage Treatment Plant
POTW - Publicly Owned Treatment Works
** - Average concentrations were calculated assuming that the concentrations reported as below method detection limit (MDL) are equal to the MDL.

FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 9

VALIDATED DATA SUMMARY
SURFACE WATER ANALYTICAL RESULTS FOR TCL VOLATILE ORGANIC COMPOUNDS

Sample Location:	Surf. Water	Groundwater	SW1	SW1	SW1	SW2	SW2	SW3	SW3	SW4	SW4	SW5	SW5	SW6	SW6	
Sample Designation:	Standards	Standards	FRC-SW1-01	FRC-SW1-01	FRC-SW1-01	FRC-SW2-01	FRC-SW2-01	FRC-SW3-01	FRC-SW3-01	FRC-SW4-01	FRC-SW4-01	FRC-SW5-01	FRC-SW5-01	FRC-SW6-01	FRC-SW6-01	FRC-TB-120792
	(1)	(1)	SUR	SUR-DUP	MID	SUR	MID	SUR	MID	SUR	MID	SUR	MID	SUR	MID	
Sample Date:			12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92
Parameter: (Concentrations in ug/																
Dichlorodifluoromethane	5	5	0.04JC	1.00UC	0.04JC	1.00U	1.00U	1.00U	1.00U	0.06JC	0.03JC	1.00U	0.01JC	0.02JC	0.17J	0.04JC
Chloromethane	5	5	1.00UC	1.00UC	1.00UC	1.00U	1.00U	1.00U	1.00U	1.00UC	1.00UC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
Vinyl Chloride	0.3	2	1.00UC	1.00UC	1.00UC	1.00U	1.00U	1.00U	1.00U	1.00UC	1.00UC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
Bromomethane	5	5	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC
Chloroethane	5	5	1.00UC	1.00UC	1.00UC	1.00U	1.00U	1.00U	1.00U	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC
Trichlorofloromethane	5	5	1.00UC	1.00UC	1.00UC	1.00U	1.00U	1.00U	1.00U	1.00UC	1.00UC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
Methylene Chloride	5	5	1.00UC	0.20JC	0.2JC	1.00UC	1.00U	1.00UC	0.30J	0.3JC	2JC	1.00U	0.22JC	0.2JC	1.00UC	0.6JC
1,1-Dichloroethene	0.7	5	0.2JC	0.20JC	1.00UC	1.00U	1.00U	1.00U	1.00U	1.00UC	1.00UC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
trans-1,2-Dichloroethene	5	5	1.00UC	1.00UC	1.00UC	1.00U	1.00U	1.00U	1.00U	1.00UC	1.00UC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
1,1-Dichloroethane	5	5	0.3JC	0.3JC	0.4JC	0.3J	1.00U	0.3J	0.20J	1.00UC	1.00UC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
1,2-Dichloropropane	5	5	1.00UC	1.00UC	0.07JC	1.00U	1.00U	1.00U	1.00U	1.00UC	07JC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
cis-1,2-Dichloroethene	5	5	0.3JC	0.3JC	0.3JC	0.2J	0.2J	0.2J	0.30J	1.1C	1.00UC	0.8J	0.74JC	1C	1.5J	1.00UC
Bromochloromethane	5	5	1.00UC	1.00UC	1.00UC	1.00U	1.00U	1.00U	1.00U	1.00UC	1.00UC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
Chloroform	7	7	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00U	1.00UC	1.00UC	1.00UC	0.2JC
1,1,1-Trichloroethane	5	5	1.8C	2.0C	2.9C	1.5J	1.4J	1.6J	1.3J	1.00UC	1.00UC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
1,1-Dichloropropene	5	5	1.00UC	1.00UC	1.00UC	1.00U	1.00U	1.00U	1.00U	1.00UC	1.00UC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
Carbon Tetrachloride	0.4	5	0.26JC	0.31JC	0.38JC	1.00U	1.00U	1.00U	1.00U	1.00UC	1.00UC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
Benzene	0.7	0.7	1.00UC	0.06JC	1.00UC	1.00U	1.00U	1.00U	1.00U	1.00UC	0.09JC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
1,2-Dichloroethane	0.8	5	1.00UC	1.00UC	1.00UC	1.00U	1.00U	1.00U	1.00U	0.40JC	1.00UC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
Trichloroethene	5	5	0.3JC	0.4JC	0.6JC	0.2J	0.2J	1.00U	0.20J	0.6JC	0.8JC	0.3J	0.30JC	0.4JC	0.91J	1.00UC
1,2-Dichloropropane	0.5	5	1.00UC	1.00UC	1.00UC	1.00U	1.00U	1.00U	1.00U	1.00UC	1.00UC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
Dibromomethane	5	5	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
Bromodichloromethane	50	50	1.00UC	1.00UC	1.00UC	1.00U	1.00U	1.00U	1.00U	1.00UC	1.00UC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
cis-1,3-Dichloropropene	5	5	1.00UC	1.00UC	1.00UC	1.00U	1.00U	1.00U	1.00U	1.00UC	1.00UC	1.00U	1.00UC	1.00UC	5.06J	1.00UC
Toluene	5	5	1.00UC	1.00UC	1.00UC	1.00U	1.00U	1.00U	1.00U	1.00UC	1.00UC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
trans-1,3-Dichloropropene	5	5	1.00UC	1.00UC	1.00UC	1.00U	1.00U	1.00U	1.00U	1.00UC	1.00UC	1.00U	0.11JC	1.00UC	1.00UC	0.16JC
1,1,2-Trichloroethane	0.2	5	1.00UC	1.00UC	1.00UC	1.00U	1.00U	1.00U	1.00U	1.00UC	1.00UC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
Tetrachloroethene	0.7	5	0.2JC	0.2JC	0.4JC	0.2J	0.2J	0.2J	0.20J	1.0C	0.9JC	0.80J	0.61JC	0.9JC	2.0J	1.00UC
1,3-Dichloropropane	5	5	1.00UC	1.00UC	1.00UC	1.00U	1.00U	1.00U	1.00U	1.00UC	0.4JC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC

U - Compound was analyzed for but not detected
J - The concentration listed is an estimated value, which is less than the specified minimum detection limit but is greater than zero.
C - Laboratory calibration requirements are not met.
(1) - 6 NYCRR 703 Groundwater and Surface Water Standards.

eder associates

FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 9

VALIDATED DATA SUMMARY
SURFACE WATER ANALYTICAL RESULTS FOR TCL VOLATILE ORGANIC COMPOUNDS

Sample Location:	Surf. Water	Groundwater	SW1	SW1	SW1	SW2	SW2	SW3	SW3	SW4	SW4	SW5	SW5	SW6	SW6	
Sample Designation:	Standards	Standards	FRC-SW1-01	FRC-SW1-01	FRC-SW1-01	FRC-SW2-01	FRC-SW2-01	FRC-SW3-01	FRC-SW3-01	FRC-SW4-01	FRC-SW4-01	FRC-SW5-01	FRC-SW5-01	FRC-SW6-01	FRC-SW6-01	FRC-TB-120792
	(1)	(1)	SUR	SUR-DUP	MID	SUR	MID	SUR	MID	SUR	MID	SUR	MID	SUR	MID	
Sample Date:			12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92
Parameter: (Concentrations in ug/l																
Dibromochloromethane	50	50	0.5JC	0.68JC	0.89JC	1.00U	1.00U	1.00U	1.00U	2.59JC	2.08JC	1.00U	1.65JC	2.49JC	1.00UC	1.00UC
1,2-Dibromoethane	5	5	1.00UC	1.00UC	1.00UC	1.00U	1.00U	1.00U	1.00U	1.00UC	1.00UC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
Chlorobenzene	20	5	1.00UC	1.00UC	1.00UC	1.00U	1.00U	1.00U	1.00U	1.00UC	1.00UC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
1,1,1,2-Tetrachloroethane	5	5	1.00UC	1.00UC	1.00UC	1.00U	1.00U	1.00U	1.00U	1.00UC	1.00UC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
Ethylbenzene	5	5	1.00UC	1.00UC	1.00UC	1.00U	1.00U	1.00U	1.00U	1.00UC	1.00UC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
meta and/or para-Xylene	tot 5	tot 5	1.00UC	1.00UC	1.00UC	1.00U	1.00U	1.00U	1.00U	0.06JC	0.08JC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
ortho-Xylene	tot 5	tot 5	1.00UC	1.00UC	1.00UC	1.00U	1.00U	1.00U	1.00U	1.00UC	1.00UC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
Styrene	50	5	1.00UC	1.00UC	1.00UC	1.00U	1.00U	1.00U	1.00U	1.00UC	1.00UC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
Bromoform	50	50	1.00UC	1.00UC	1.00UC	1.00UC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
Isopropylbenzene	5	5	1.00UC	1.00UC	1.00UC	1.00U	1.00U	1.00U	1.00U	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	0.63J	1.00UC
Bromobenzene	5	5	1.00UC	1.00UC	1.00UC	1.00U	1.00U	1.00U	1.00U	1.00UC	1.00UC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
1,1,2,2-Tetrachloroethane	5	5	1.00UC	1.00UC	1.00UC	1.00U	1.00U	1.00U	1.00U	1.00UC	1.00UC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
1,2,3-Trichloropropane	5	5	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
Propylbenzene	5	5	1.00UC	1.00UC	1.00UC	1.00U	1.00U	1.00U	1.00U	1.00UC	1.00UC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
2-Chlorotoluene	5	5	1.00UC	1.00UC	1.00UC	1.00U	1.00U	1.00U	1.00U	1.00UC	1.00UC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
4-Chlorotoluene	5	5	1.00UC	1.00UC	1.00UC	1.00U	1.00U	1.00U	1.00U	1.00UC	0.06JC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
1,3,5-Trimethylbenzene	5	5	1.00UC	1.00UC	1.00UC	1.00U	1.00U	1.00U	1.00U	1.00UC	1.00UC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
tert-Butylbenzene	5	5	1.00UC	1.00UC	1.00UC	1.00U	1.00U	1.00U	1.00U	0.08JC	0.08JC	0.06J	0.06JC	1.00UC	1.00UC	1.00UC
1,2,4-Trimethylbenzene	5	5	1.00UC	1.00UC	1.00UC	1.00U	1.00U	1.00U	1.00U	1.00UC	1.00UC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
sec-Butylbenzene	5	5	1.00UC	1.00UC	1.00UC	1.00U	1.00U	1.00U	1.00U	1.00UC	0.09JC	1.00U	0.06JC	1.00UC	1.00UC	1.00UC
1,3-Dichlorobenzene	20	5	1.00UC	1.00UC	1.00UC	1.00U	1.00U	1.00U	1.00U	1.00UC	1.00UC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
p-Isopropyltoluene	5	5	1.00UC	1.00UC	1.00UC	1.00U	1.00U	1.00U	1.00U	0.2JC	0.21JC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
1,4-Dichlorobenzene	30	4.7	1.00UC	1.00UC	1.00UC	1.00U	1.00U	1.00U	1.00U	1.00UC	1.00UC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
1,2-Dichlorobenzene	30	4.7	1.00UC	1.00UC	1.00UC	1.00U	1.00U	1.00U	1.00U	1.00UC	0.20JC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
Butylbenzene	5	5	1.00UC	1.00UC	1.00UC	1.00U	1.00U	1.00U	1.00U	0.36JC	0.31JC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
1,2-Dibromo-3-Chloropropane	0.2	5	0.85JC	1.63JC	3.07JC	1.00UC	1.00UC	1.00UC	1.00UC	3.75JC	3.55JC	1.00U	0.89JC	1.50JC	1.00UC	0.17JC
1,2,4-Trichlorobenzene	5	5	1.00UC	1.00UC	0.2JC	1.00U	1.00U	1.00U	1.00U	1.7C	1.0JC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
Hexachlorobutadiene	0.5	5	1.00UC	0.08JC	1.00UC	1.00U	1.00U	1.00U	1.00U	1.1C	1.0JC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
Naphthalene	10	10	1.00UC	1.00UC	1.00UC	1.00U	1.00U	1.00U	1.00U	0.9JC	0.8JC	1.00U	1.00UC	1.00UC	1.00UC	1.00UC
1,2,3-Trichlorobezene	5	5	1.00UC	1.00UC	1.00UC	1.00U	1.00U	1.00U	1.00U	2.2C	1.6C	1.00U	1.00UC	1.00UC	1.00UC	1.00UC

U - Compound was analyzed for but not detected
J - The concentration listed is an estimated value, which is less than the specified minimum detection limit but is greater than zero
C - Laboratory calibration requirements are not met.
(1) - 6 NYCRR 703 Groundwater and Surface Water Standards.

eder associates

FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 9

VALIDATED DATA SUMMARY
SURFACE WATER ANALYTICAL RESULTS FOR TCL VOLATILE ORGANIC COMPOUNDS

Sample Location:	Surf. Water	Groundwater	SW1	SW1	SW2	SW2	SW3	SW3	SW4	SW4	SW5	SW5	SW6	SW6	SW6
Sample Designation:	Standards	Standards	FRC-SW1-02	FRC-SW1-02	FRC-SW2-02	FRC-SW2-02	FRC-SW3-02	FRC-SW3-02	FRC-SW4-02	FRC-SW4-02	FRC-SW5-02	FRC-SW5-02	FRC-SW6-02	FRC-SW6-02	FRC-SW6-02
	(1)	(1)	SUR	MID	SUR	MID	SUR	MID	SUR	MID	SUR	MID	SUR	SUR-DUP	MID
Sample Date:			3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93
Parameter: (Concentrations in ug/l															
Chloromethane	5	5	0.28JC	0.16JC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	0.2J	1.00UC	1.00U	0.1JC	1.00UC	1.00UC
Vinyl Chloride	0.3	2	0.10JC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00U	1.00UC	1.00U	0.1JC	1.00UC	1.00UC
Bromomethane	5	5	1.00UC	0.17JC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	0.2J	1.00UC	1.00U	0.1JC	1.00UC	1.00UC
Chloroethane	5	5	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00U	1.00UC	1.00U	0.1JC	1.00UC	1.00UC
Acetone	50	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	5	5	0.18JC	0.14JC	1.00UC	0.2JBC	1.00UC	1.00UC	0.2JBC	1.00UC	0.3JBC	1.00UC	1.00UC	0.29JC	1.00UC
trans-1,2-Dichloroethene	5	5	0.09UC	1.00UC	1.00UC	0.3JC	1.00UC	0.3JC	1.00UC	1.00J	0.1JC	1.00U	1.00UC	0.13JC	0.18JC
1,1-Dichloroethane	5	5	0.2JC	0.13JC	1.00UC	0.08UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC
Carbon Disulfide	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.2U	1.00UC	1.00U	0.1JC	1.00UC	0.2JC
cis-1,2-Dichloroethene	5	5	0.4JC	0.37JC	1.00UC	0.3JC	0.3JC	0.4JC	0.7JC	1	0.6JC	0.9J	0.6JC	0.8JC	0.7JC
2-Butanone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	7	7	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00U	1.00UC	1.00U	1.00UC	1.00UC	1.00UC
1,1,1-Trichloroethane	5	5	1C	2C	0.6JC	1	0.6JC	2C	0.4U	0.8J	0.4JC	0.6J	0.2JC	0.3JC	0.4JC
Vinyl Acetate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride	0.4	5	0.16JC	0.27JC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00U	1.00UC	1.00U	1.00UC	1.00UC	1.00UC
Benzene	0.7	0.7	0.1JC	0.10JC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	0.1J	1.00UC	0.1U	0.1JC	0.2JC	0.2JC
1,2-Dichloroethane	0.6	5	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00U	1.00UC	1.00U	1.00UC	1.00UC	1.00UC
Trichloroethene	5	5	0.4JC	0.3JC	1.00UC	0.30JC	0.3JC	0.3JC	0.6JC	0.7J	0.5JC	0.5J	0.5JC	0.6JC	0.6JC
1,2-Dichloropropane	5	5	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00U	1.00UC	1.00U	1.00UC	1.00UC	1.00UC
4-Methyl-2-pentanone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	50	50	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00U	1.00UC	1.00U	1.00UC	1.00UC	1.00UC
cis-1,3-Dichloropropene	5	5	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00U	1.00UC	1.00U	1.00UC	1.00UC	1.00UC
Toluene	5	5	0.2JBC	0.1JBC	1.00UC	0.1JBC	1.00UC	1.00UC	0.1JBC	0.1JB	0.1JBC	1.00U	1.00UC	1.00UC	1.00UC
trans-1,3-Dichloropropene	5	5	1.00UC	0.12JC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00U	1.00UC	1.00U	1.00UC	1.00UC	1.00UC
1,1,2-Trichloroethane	0.2	5	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00U	1.00UC	1.00U	1.00UC	1.00UC	1.00UC
Tetrachloroethene	0.7	5	0.7JC	0.6JC	0.6JC	0.5JC	0.6JC	0.7JC	2C	2	2C	1	2C	2C	2.12JC
2-Hexanone	50	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	5	5	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	2.45JC	1.00UC	1.00U	1.00UC	1.00U	1.00UC	1.00UC	7.76JC
Chlorobenzene	20	5	0.11JC	0.17JC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00U	1.00UC	1.00U	1.00UC	1.00UC	1.00UC
Ethylbenzene	5	5	0.1JBC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00U	1.00UC	1.00U	1.00UC	1.00UC	1.00UC
meta and/or para-Xylene	tot 5	tot 5	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00U	1.00UC	1.00U	1.00UC	1.00UC	1.00UC
ortho-Xylene	tot 5	tot 5	0.12JC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00U	1.00UC	1.00U	1.00UC	1.00UC	1.00UC
Styrene	5	50	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00U	1.00UC	1.00U	1.00UC	1.00UC	1.00UC
Bromoform	50	50	1.00UC	0.16JC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00U	1.00UC	1.00U	1.00UC	1.00UC	1.00UC
1,1,2,2-Tetrachloroethane	5	5	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00UC	1.00U	1.00UC	0.1J	1.00UC	1.00UC	1.00UC

U - Compound was analyzed for but not detected
J - The concentration listed is an estimated value, which is less than the specified minimum detection limit but is greater than zero.
B - The analyte is found in the blanks as well as the sample.
C - Laboratory calibration requirements are not met.
NA - Not available
(1) - 6 NYCRR 703 Groundwater and Surface Water Standards.

eder associates

FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 9

VALIDATED DATA SUMMARY
SURFACE WATER ANALYTICAL RESULTS FOR VOLATILE ORGANIC COMPOUNDS

Sample Location:	SW1	SW1	SW1	SW2	SW2	SW3	SW3	SW4	SW4	SW5	SW5	SW6	SW6	
Sample Designation:	FRC-SW1-01	FRC-SW1-01	FRC-SW1-01	FRC-SW2-01	FRC-SW2-01	FRC-SW3-01	FRC-SW3-01	FRC-SW4-01	FRC-SW4-01	FRC-SW5-01	FRC-SW5-01	FRC-SW6-01	FRC-SW6-01	FRC-TB-120792
	SUR	SUR-DUP	MID	SUR	MID	SUR	MID	SUR	MID	SUR	MID	SUR	MID	
Sample Date:	12/7/92	12/7/92	12/10/92	12/7/92	12/7/92	12/7/92	12/10/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92
Tentatively Identified Compounds (TICs) (Concentrations in ug /l)														
total unknowns	1J	ND	2J	ND	ND	ND	ND	5J	ND	ND	3J	ND	2J	ND
total unknown siloxanes	ND	2J	2J	ND	ND	ND	ND	1J	3J	3J	1J	1J	3J	1J
total unknown branched alkanes	ND	1J	1J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
total unknown alkylbenzenes	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5J	ND	4J
1,1,2-trichlorotrifluoroethane	1JN	1JN	1JN	ND	ND	ND	ND	ND	1JN	ND	ND	ND	2JN	ND
unknown trichlorobenzene isomer	ND	ND	ND	ND	ND	ND	ND	1J	ND	ND	ND	ND	ND	ND

Sample Location:	SW1	SW1	SW2	SW3	SW3	SW-4	SW4	SW5	SW5	SW6	SW6	SW6		
Sample Designation:	FRC-SW1-02	FRC-SW1-02	FRC-SW2-02	FRC-SW3-02	FRC-SW3-02	FRC-SW4-02	FRC-SW4-02	FRC-SW5-02	FRC-SW5-02	FRC-SW6-02	FRC-SW6-02	FRC-SW6-02	FRC-RB-1	FRC-RB-01
	SUR	MID	MID	SUR	MID	MID	SUR	SUR	MID	SUR	SUR-DUP	MID		
Sample Date:	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	12/3/92	12/7/92
Tentatively Identified Compounds (TICs) (Concentrations in ug /l)														
total unknown siloxanes	ND	3J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5J
total unknown branched alkanes	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1J	ND	ND
unknown alkene	ND	ND	ND	ND	ND	ND	1J	ND	ND	ND	ND	ND	ND	ND
total unknown alkylbenzenes	ND	ND	ND	ND	ND	ND	ND	2J	ND	ND	ND	ND	ND	3J

ND - Not detected
J - The concentration listed is an estimated value, which is less than the specified minimum detection limit but is greater than zero.
N - Compound was analyzed for but not requested as an analyte

eder associates

FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN R.I.
EAST FARMINGDALE, NEW YORK

TABLE 10

VALIDATED DATA SUMMARY
SURFACE WATER ANALYTICAL RESULTS FOR TCL SEMIVOLATILE ORGANIC COMPOUNDS

Sample Location:	Surf. Water	Groundwater	SW1	SW1	SW1	SW2	SW2	SW3	SW3	SW4	SW4	SW5	SW5	SW6	SW6	
Sample Designation:	Standards	Standards	FRC-SW1-01	FRC-SW1-01	FRC-SW1-01	FRC-SW2-01	FRC-SW2-01	FRC-SW3-01	FRC-SW3-01	FRC-SW4-01	FRC-SW4-01	FRC-SW5-01	FRC-SW5-01	FRC-SW6-01	FRC-SW6-01	FRC-RB-01
	(1)	(1)	SUR	SUR-DUP	MID	SUR	MID	SUR	MID	SUR	MID	SUR	MID	SUR	MID	
Sample Date:			12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92
Parameter: (Concentrations in ug/l)																
Phenol			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chlorophenol)ether			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
2-Methylphenol			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
2,2'-oxybis(1-Chloropropane)			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
4-Methylphenol			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
N-Nitroso-di-n-propylamine			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
Hexachloroethane			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
Nitrobenzene			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
Isophorone			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethoxy)methane			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
Naphthalene	10	10	10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	0.9J
4-Chloro-3-methylphenol			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol			26 U	26 U	28 U	26 U	26 U	25 U	26 U	26 UC	26 U	26 U	26 U	25 U	26 U	26 U
2-Chloronaphthalene			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline			26 U	26 U	28 U	26 U	26 U	25 U	26 U	26 UC	26 U	26 U	26 U	25 U	26 U	26 U
Dimethylphthalate			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
Acenaphthylene			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
3-Nitroaniline			26 U	26 U	28 U	26 U	26 U	25 U	26 U	26 UC	26 U	26 U	26 U	25 U	26 U	26 U
Acenaphthene			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U

U - Compound was analyzed for but not detected.
J - The concentration is an estimated value, which is less than the specified detection limit but is greater than zero.
C - Laboratory calibration requirements are not met.
(1) - 6 NYCRR 703 Groundwater and Surface Water Standards. The standard is listed only if the compound was detected.

eder associates

FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN R.I.
EAST FARMINGDALE, NEW YORK

TABLE 10

VALIDATED DATA SUMMARY
SURFACE WATER ANALYTICAL RESULTS FOR TCL SEMIVOLATILE ORGANIC COMPOUNDS

Sample Location:	Surf. Water	Groundwater	SW1	SW1	SW1	SW2	SW2	SW3	SW3	SW4	SW4	SW5	SW5	SW6	SW6	
Sample Designation:	Standards	Standards	FRC-SW1-01	FRC-SW1-01	FRC-SW1-01	FRC-SW2-01	FRC-SW2-01	FRC-SW3-01	FRC-SW3-01	FRC-SW4-01	FRC-SW4-01	FRC-SW5-01	FRC-SW5-01	FRC-SW6-01	FRC-SW6-01	FRC-RB-01
	(1)	(1)	SUR	SUR-DUP	MID	SUR	MID	SUR	MID	SUR	MID	SUR	MID	SUR	MID	
Sample Date:			12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92
Parameter: (Concentrations in ug/l)																
2,4-Dinitrophenol			26 U	26 U	28 U	26 U	26 U	25 U	26 U	26 UC	26 U	26 U	26 U	25 U	26 U	26 U
4-Nitrophenol			26 U	26 U	28 U	26 U	26 U	25 U	26 U	26 UC	26 U	26 U	26 U	25 U	26 U	26 U
Dibenzofuran			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
Diethylphthalate	50	50	10 U	10 U	0.2J	0.2J	0.3J	0.2J	0.2J	0.2JB	11 U	0.2J	0.2J	10 U	10 U	10 U
4-Chlorophenyl-phenylether			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
Flourene			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
4-Nitroaniline			26 U	26 U	28 U	26 U	26 U	25 U	26 U	26 UC	26 U	26 U	26 U	25 U	26 U	26 U
4,6-Dinitro-2-methylphenol			26 U	26 U	28 U	26 U	26 U	25 U	26 U	26 UC	26 U	26 U	26 U	25 U	26 U	26 U
N-Nitrosodiphenylamine			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
4-Bromophenyl-phenylether			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobenzene			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol			26 U	26 U	28 U	26 U	26 U	25 U	26 U	26 UC	26 U	26 U	26 U	25 U	26 U	26 U
Phenanthrene			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
Anthracene			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
Carbazole			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
Di-n-butylphthalate	50	50	0.2JB	10 U	2JB	0.2JB	0.4JB	0.2JB	0.2JB	0.2J	0.2JB	0.2JB	10 U	10 U	10 U	10 U
Fluoranthene			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
Pyrene			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
Butylbenzylphthalate			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)anthracene			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
Chrysene			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
bis(2-Ethylhexyl)phthalate	4	50	0.5JB	1JB	0.7JB	0.6JB	4JB	0.6JB	0.6JB	1JB	0.6JB	0.7JB	2JB	1J	0.9J	2J
Di-n-octylphthalate	50	50	10 U	10 U	11 U	10 U	0.4J	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
Dibenzo(a,h)anthracene			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene			10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 UC	11 U	10 U	10 U	10 U	10 U	10 U

U - Compound was analyzed for but not detected.
J - The concentration is an estimated value, which is less than the specified detection limit but is greater than zero.
C - Laboratory calibration requirements are not met.
B - The analyte is is found in the blanks as well as the sample.
(1) - 6 NYCRR 703 Groundwater and Surface Water Standards. The standard is listed only if the compound was detected.

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN R.I.
EAST FARMINGDALE, NEW YORK

TABLE 10

VALIDATED DATA SUMMARY
SURFACE WATER ANALYTICAL RESULTS FOR TCL SEMIVOLATILE ORGANIC COMPOUNDS

Sample Location:	Surf. Water	Groundwater	SW1	SW1	SW2	SW2	SW3	SW3	SW4	SW4	SW5	SW5	SW6	SW6	SW6
Sample Designation:	Standards	Standards	FRC-SW1-02	FRC-SW1-02	FRC-SW2-02	FRC-SW2-02	FRC-SW3-02	FRC-SW3-02	FRC-SW4-02	FRC-SW4-02	FRC-SW5-02	FRC-SW5-02	FRC-SW6-02	FRC-SW6-02	FRC-SW6-02
	(1)	(1)	SUR	MID	SUR	MID	SUR	MID	SUR	MID	SUR	MID	SUR	SUR-DUP	MID
Sample Date:			3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93
Parameter: (Concentrations in ug/l															
Phenol			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
bis(2-Chloroethyl)ether			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
2-Chlorophenol	NA	NA	10 U	11 U	0.3J	11 U	10 U	11 U	0.3J	11 U	10 U	11 U	0.3J	10 U	11 U
1,3-Dichlorobenzene			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
1,4-Dichlorobenzene			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
1,2-Dichlorobenzene			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
2-Methylphenol			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
N-Nitroso-di-n-propylamine			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
Hexachloroethane			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
Nitrobenzene			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
Isophorone			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
2-Nitrophenol			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
2,4-Dimethylphenol			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
bis(2-Chloroethoxy)methane			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
2,4-Dichlorophenol			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
1,2,4-Trichlorobenzene			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
Naphthalene	10	10	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
4-Chloroaniline			10 U	11 U	10 U	11 U	10 U	11 U	0.1J	11 U	10 U	11 U	10 U	10 U	11 U
Hexachlorobutadiene			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
4-Chloro-3-methylphenol			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
2-Methylnaphthalene			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
Hexachlorocyclopentadiene			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
2,4,6-Trichlorophenol			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
2,4,5-Trichlorophenol			26 U	28 U	26 U	28 U	25 U	27 U	26 U	28 U	26 U	28 U	26 U	26 U	27 U
2-Chloronaphthalene			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
2-Nitroaniline			26 U	28 U	26 U	28 U	25 U	27 U	26 U	28 U	26 U	28 U	26 U	26 U	27 U
Dimethylphthalate			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
Acenaphthylene			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
2,6-Dinitrotoluene			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
3-Nitroaniline			26 U	28 U	26 U	28 U	25 U	27 U	26 U	28 U	26 U	28 U	26 U	26 U	27 U
Acenaphthene			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U

U - Compound was analyzed for but not detected.
J - The concentration is an estimated value, which is less than the specified detection limit but is greater than zero.
C - Laboratory calibration requirements are not met.
(1) - 6 NYCRR 703 Groundwater and Surface Water Standards. The standard is listed only if the compound was detected.
NA - Not Applicable

eder associates

FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN R.I.
EAST FARMINGDALE, NEW YORK

TABLE 10

VALIDATED DATA SUMMARY
SURFACE WATER ANALYTICAL RESULTS FOR TCL SEMIVOLATILE ORGANIC COMPOUNDS

Sample Location:	Surf. Water	Groundwater	SW1	SW1	SW2	SW2	SW3	SW3	SW4	SW4	SW5	SW5	SW6	SW6	SW6
Sample Designation:	Standards	Standards	FRC-SW1-02	FRC-SW1-02	FRC-SW2-02	FRC-SW2-02	FRC-SW3-02	FRC-SW3-02	FRC-SW4-02	FRC-SW4-02	FRC-SW5-02	FRC-SW5-02	FRC-SW6-02	FRC-SW6-02	FRC-SW6-02
	(1)	(1)	SUR	MID	SUR	MID	SUR	MID	SUR	MID	SUR	MID	SUR	SUR-DUP	MID
Sample Date:			3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93
Parameter: (Concentrations in ug/l)															
2,4-Dinitrophenol			26 U	28 U	26 U	28 U	25 U	27 U	26 U	28 U	26 U	28 U	26 U	26 U	27 U
4-Nitrophenol			26 U	28 U	26 U	28 U	25 U	27 U	26 U	28 U	26 U	28 U	26 U	26 U	27 U
Dibenzofuran			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
2,4-Dinitrotoluene			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
Diethylphthalate	50	50	0.1JB	0.2JB	1JB	0.2JB	0.2JB	0.2JB	1JB	1JB	1JB	0.3JB	1JB	10 U	0.2JB
4-Chlorophenyl-phenylether			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
Fluorene			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
4-Nitroaniline			26 U	28 U	26 U	28 U	25 U	27 U	26 U	28 U	26 U	28 U	26 U	26 U	27 U
4,6-Dinitro-2-methylphenol			26 U	28 U	26 U	28 U	25 U	27 U	26 U	28 U	26 U	28 U	26 U	26 U	27 U
N-Nitrosodiphenylamine(1)			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
4-Bromophenyl-phenylether			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
Hexachlorobenzene			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
Pentachlorophenol			26 U	28 U	26 U	28 U	25 U	27 U	26 U	11 U	26 U	28 U	26 U	26 U	27 U
Phenanthrene			10 U	11 U	0.1J	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
Anthracene			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
Carbazole			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
Di-n-butylphthalate	50	50	0.3JB	0.3JB	0.4JB	0.3JB	0.3JB	0.2JB	0.3JB	0.3JB	0.3JB	0.3JB	0.3JB	0.3JB	0.4JB
Fluoranthene			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
Pyrene	50	50	10 U	11 U	0.1J	11 U	10 U	11 U	0.1J	11 U	10 U	11 U	10 U	10 U	11 U
Butylbenzylphthalate	50	50	10 U	11 U	10 U	11 U	10 U	11 U	0.2J	0.3J	0.2J	11 U	10 U	0.2J	0.2J
3,3'-Dichlorobenzidine			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
Benzo(a)anthracene			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
Chrysene			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
bis(2-Ethylhexyl)phthalate	50	50	0.9JB	0.7JB	0.9JB	1JB	1JB	0.4JB	0.9JB	1JB	1JB	2JB	1JB	0.8JB	1JB
Di-n-octylphthalate	50	50	10 U	0.8J	10 U	11 U	10 U	11 U	10 U	11 U	0.2J	11 U	0.2J	10 U	11 U
Benzo(b)fluoranthene			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
Benzo(k)fluoranthene			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
Benzo(a)pyrene			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
Indeno(1,2,3-cd)pyrene			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
Dibenzo(a,h)anthracene			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U
Benzo(g,h,i)perylene			10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	11 U	10 U	10 U	11 U

U - Compound was analyzed for but not detected.
J - The concentration is an estimated value, which is less than the specified detection limit but is greater than zero.
C - Laboratory calibration requirements are not met.
B - The analyte is is found in the blanks as well as the sample.
(1) - 6 NYCRR 703 Groundwater Standards. The standard is listed only if the compound was detected.
** - 6 NYCRR 703 Guidance Value.

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN R.I.
EAST FARMINGDALE, NEW YORK

TABLE 10

VALIDATED DATA SUMMARY
SURFACE WATER ANALYTICAL RESULTS FOR SEMIVOLATILE ORGANIC COMPOUNDS

Sample Location:	SW1	SW1	SW1	SW2	SW2	SW3	SW3	SW4	SW4	SW5	SW5	SW6	SW6	
Sample Designation:	FRC-SW1-01	FRC-SW1-01	FRC-SW1-01	FRC-SW2-01	FRC-SW2-01	FRC-SW3-01	FRC-SW3-01	FRC-SW4-01	FRC-SW4-01	FRC-SW5-01	FRC-SW5-01	FRC-SW6-01	FRC-SW6-01	FRC-RB-01
	SUR	SUR-DUP	MID	SUR	MID	SUR	MID	SUR	MID	SUR	MID	SUR	MID	
Sample Date:	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92
Tentatively Identified Compounds (TICs) (Concentrations in ug/l)														
Total unknown	79J	ND	ND	ND	ND	ND	18J	ND	ND	ND	12J	ND	ND	7J
Unknown phthalate	ND	ND	2J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexanoic acid, 6-amino	ND	ND	ND	ND	3JN	ND	ND	ND	3JN	ND	3J	ND	ND	ND
Unknown siloxane	ND	ND	ND	ND	ND	ND	ND	2J	ND	ND	ND	ND	ND	ND
Total unknown alkane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	9J	ND	ND	ND
Ethanol, 2-butoxy-	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5JN
Total unknown amide	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6J
Unknown C8H8O3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3J

Sample Location:	SW1	SW1	SW2	SW2	SW3	SW3	SW4	SW4	SW5	SW5	SW6	SW6	SW6
Sample Designation:	FRC-SW1-02	FRC-SW1-02	FRC-SW2-02	FRC-SW2-02	FRC-SW3-02	FRC-SW3-02	FRC-SW4-02	FRC-SW4-02	FRC-SW5-02	FRC-SW5-02	FRC-SW6-02	FRC-SW6-02	FRC-SW6-02
	SUR	MID	SUR	MID	SUR	MID	SUR	MID	SUR	MID	SUR	SUR-DUP	MID
Sample Date:	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93
Tentatively Identified Compounds (TICs) (Concentrations in ug/l)													
Total unknown	97J	7J	ND	11J	67J	ND	15J	2J	80J	121J	13J	7J	ND
Total unknown alkane	12J	ND	3J	ND	6J	ND	ND	ND	13J	9J	3J	6J	4J
Total unknown amide	ND	ND	9J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyclopentasiloxane, decamethyl	ND	ND	ND	ND	ND	ND	ND	3JN	ND	ND	ND	ND	ND

J - Indicates that the compound was analyzed for and determined to be present in the sample. The concentration listed is an estimated value.
N - Indicates that the compound was analyzed for but not requested as an analyte. Value will not be listed on a tabular result sheet.
ND - Not Detected

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FAIRCHILD INDUSTRIES INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 11

VALIDATED DATA SUMMARY
SURFACE WATER ANALYTICAL WATER RESULTS FOR TCL PESTICIDES AND PCBs

Sample Location:	Surf. Water	Groundwater	SW1	SW1	SW1	SW2	SW2	SW3	SW3	SW4	SW4	SW5	SW5	SW6	SW6	
Sample Designation:	Standards	Standards	FRC-SW1-01	FRC-SW1-01	FRC-SW1-01	FRC-SW2-01	FRC-SW2-01	FRC-SW3-01	FRC-SW3-01	FRC-SW4-01	FRC-SW4-01	FRC-SW5-01	FRC-SW5-01	FRC-SW6-01	FRC-SW6-01	FRC-RB-01
	(1)	(1)	SUR	SUR-DUP	MID	SUR	MID	SUR	MID	SUR	MID	SUR	MID	SUR	MID	
Sample Date:			12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92
Parameter: (Concentration in ug/l)																
alpha-BHC			0.052 U	0.052 U	0.052 U	0.052 U	0.052 UC	0.052 UC	0.052 UC	0.052 U	0.052 UC	0.052 UC	0.052 U	0.052 U	0.050 U	0.052 U
beta-BHC			0.052 U	0.052 U	0.052 U	0.052 U	0.052 UC	0.052 UC	0.052 UC	0.052 U	0.052 UC	0.052 UC	0.052 U	0.052 U	0.050 U	0.052 U
delta-BHC			0.052 U	0.052 U	0.052 U	0.052 U	0.052 UC	0.052 UC	0.052 UC	0.052 U	0.052 UC	0.052 UC	0.052 U	0.052 U	0.050 U	0.052 U
gamma-BHC			0.052 U	0.052 U	0.052 U	0.052 U	0.052 UC	0.052 UC	0.052 UC	0.052 U	0.052 UC	0.052 UC	0.052 U	0.052 U	0.050 U	0.052 U
Heptachlor			0.052 U	0.052 U	0.052 U	0.052 U	0.052 UC	0.052 UC	0.052 UC	0.052 U	0.052 UC	0.052 UC	0.052 U	0.052 U	0.050 U	0.052 U
Aldrin			0.052 U	0.052 U	0.052 U	0.052 U	0.052 UC	0.052 UC	0.052 UC	0.052 U	0.052 UC	0.052 UC	0.052 U	0.052 U	0.050 U	0.052 U
Heptachlor Epoxide			0.052 U	0.052 U	0.052 U	0.052 U	0.052 UC	0.052 UC	0.052 UC	0.052 U	0.052 UC	0.052 UC	0.052 U	0.052 U	0.050 U	0.052 U
Endosulfin I			0.052 U	0.052 U	0.052 U	0.052 U	0.052 UC	0.052 UC	0.052 UC	0.052 U	0.052 UC	0.052 UC	0.052 U	0.052 U	0.050 U	0.052 U
Dieldrin			0.10 U	0.10 U	0.10 U	0.10 U	0.10 UC	0.10 UC	0.10 UC	0.10 U	0.10 UC	0.10 UC	0.10 U	0.10 U	0.10 U	0.10 U
4,4'-DDE			0.10 U	0.10 U	0.10 U	0.10 U	0.10 UC	0.10 UC	0.10 UC	0.10 U	0.10 UC	0.10 UC	0.10 U	0.10 U	0.10 U	0.10 U
Endrin			0.10 U	0.10 U	0.10 U	0.10 U	0.10 UC	0.10 UC	0.10 UC	0.10 U	0.10 UC	0.10 UC	0.10 U	0.10 U	0.10 U	0.10 U
Endosulfan II			0.10 U	0.10 U	0.10 U	0.10 U	0.10 UC	0.10 UC	0.10 UC	0.10 U	0.10 UC	0.10 UC	0.10 U	0.10 U	0.10 U	0.10 U
4,4'-DDD			0.10 U	0.10 U	0.10 U	0.10 U	0.10 UC	0.10 UC	0.10 UC	0.10 U	0.10 UC	0.10 UC	0.10 U	0.10 U	0.10 U	0.10 U
Endosulfan Sulfate			0.10 U	0.10 U	0.10 U	0.10 U	0.10 UC	0.10 UC	0.10 UC	0.10 U	0.10 UC	0.10 UC	0.10 U	0.10 U	0.10 U	0.10 U
4,4'-DDT			0.10 U	0.10 U	0.10 U	0.10 U	0.10 UC	0.10 UC	0.10 UC	0.10 U	0.10 UC	0.10 UC	0.10 U	0.10 U	0.10 U	0.10 U
Methoxychlor			0.52 U	0.52 U	0.52 U	0.52 U	0.52 UC	0.52 UC	0.52 UC	0.52 U	0.52 UC	0.52 U	0.52 U	0.52 U	0.50 U	0.52 U
Endrin Ketone			0.10 U	0.10 U	0.10 U	0.10 U	0.10 UC	0.10 UC	0.10 UC	0.10 U	0.10 UC	0.10 UC	0.10 U	0.10 U	0.10 U	0.10 U
Endrin Aldehyde			0.10 U	0.10 U	0.10 U	0.10 U	0.10 UC	0.10 UC	0.10 UC	0.10 U	0.10 UC	0.10 UC	0.10 U	0.10 U	0.10 U	0.10 U
alpha-Chlordane			0.052 U	0.052 U	0.052 U	0.052 U	0.052 UC	0.052 UC	0.052 UC	0.052 U	0.052 UC	0.052 UC	0.052 U	0.052 U	0.050 U	0.052 U
gamma-Chlordane			0.052 U	0.052 U	0.052 U	0.052 U	0.052 UC	0.052 UC	0.052 UC	0.052 U	0.052 UC	0.052 UC	0.052 U	0.052 U	0.050 U	0.052 U
Toxaphene			5.2 U	5.2 U	5.2 U	5.2 U	5.2 UC	5.2 UC	5.2 UC	5.2 U	5.2 UC	5.2 UC	5.2 U	5.2 U	5.0 U	5.2 U
Aroclor-1016			1.0 U	1.0 U	1.0 U	1.0 U	1.0 UC	1.0 UC	1.0 UC	1.0 U	1.0 UC	1.0 UC	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1221			2.1 U	2.1 U	2.1 U	2.1 U	2.1 UC	2.1 UC	2.1 UC	2.1 U	2.1 UC	2.1 UC	2.1 U	2.1 U	2.0 U	2.1 U
Aroclor-1232			1.0 U	1.0 U	1.0 U	1.0 U	1.0 UC	1.0 UC	1.0 UC	1.0 U	1.0 UC	1.0 UC	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1242			1.0 U	1.0 U	1.0 U	1.0 U	1.0 UC	1.0 UC	1.0 UC	1.0 U	1.0 UC	1.0 UC	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1248			1.0 U	1.0 U	1.0 U	1.0 U	1.0 UC	1.0 UC	1.0 UC	1.0 U	1.0 UC	1.0 UC	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1254			1.0 U	1.0 U	1.0 U	1.0 U	1.0 UC	1.0 UC	1.0 UC	1.0 U	1.0 UC	1.0 UC	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1260			1.0 U	1.0 U	1.0 U	1.0 U	1.0 UC	1.0 UC	1.0 UC	1.0 U	1.0 UC	1.0 UC	1.0 U	1.0 U	1.0 U	1.0 U

U - Compound was analyzed for but not detected.
C - Laboratory calibration requirements are not met.
(1) - 6 NYCRR 703 Groundwater and Surface Water Standards. The standard is listed only if the compound was detected.

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FAIRCHILD INDUSTRIES INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 11

VALIDATED DATA SUMMARY
SURFACE WATER ANALYTICAL WATER RESULTS FOR TCL PESTICIDES AND PCBs

Sample Location:	Surf. Water	Groundwater	SW1	SW1	SW2	SW2	SW3	SW3	SW4	SW4	SW5	SW5	SW6	SW6	SW6
Sample Designation:	Standards	Standards	FRC-SW1-02	FRC-SW1-02	FRC-SW2-02	FRC-SW2-02	FRC-SW3-02	FRC-SW3-02	FRC-SW4-02	FRC-SW4-02	FRC-SW5-02	FRC-SW5-02	FRCSW6-02	FRC-SW6-02	FRC-SW6-02
	(1)	(1)	SUR	MID	SUR	MID	SUR	MID	SUR	MID	SUR	MID	SUR	SUR-DUP	MID
Sample Date:			3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93
Parameter: (Concentrations in ug/l)															
alpha-BHC			0.053 UC	0.056 U	0.053 U	0.056 U	0.053 U	0.056 UC	0.050 U	0.053 UC	0.051 U	0.056 U	0.050 U	0.051 U	0.056 U
beta-BHC			0.053 UC	0.056 U	0.053 U	0.056 U	0.053 U	0.056 UC	0.050 U	0.053 UC	0.051 U	0.056 U	0.050 U	0.051 U	0.056 U
delta-BHC			0.053 UC	0.056 U	0.053 U	0.056 U	0.053 U	0.056 UC	0.050 U	0.053 UC	0.051 U	0.056 U	0.050 U	0.051 U	0.056 U
gamma-BHC			0.053 UC	0.056 U	0.053 U	0.056 U	0.053 U	0.056 UC	0.050 U	0.053 UC	0.051 U	0.056 U	0.050 U	0.051 U	0.056 U
Heptachlor			0.053 UC	0.056 U	0.053 U	0.056 U	0.053 U	0.056 UC	0.050 U	0.053 UC	0.051 U	0.056 U	0.050 U	0.051 U	0.056 U
Aldrin			0.053 UC	0.056 U	0.053 U	0.056 U	0.053 U	0.056 UC	0.050 U	0.053 UC	0.051 U	0.056 U	0.050 U	0.051 U	0.056 U
Heptachlor Epoxide			0.053 UC	0.056 U	0.053 U	0.056 U	0.053 U	0.056 UC	0.050 U	0.053 UC	0.051 U	0.056 U	0.050 U	0.051 U	0.056 U
Endosulfan I			0.053 UC	0.056 U	0.053 U	0.056 U	0.053 U	0.056 UC	0.050 U	0.053 UC	0.051 U	0.056 U	0.050 U	0.051 U	0.056 U
Dieldrin			0.10 UC	0.11 U	0.10 U	0.11 U	0.10 U	0.11 UC	0.10 U	0.10 UC	0.10 U	0.11 U	0.10 U	0.10 U	0.11 U
4,4'-DDD			0.10 UC	0.11 U	0.10 U	0.11 U	0.10 U	0.11 UC	0.10 U	0.10 UC	0.10 U	0.11 U	0.10 U	0.10 U	0.11 U
Endrin			0.10 UC	0.11 U	0.10 U	0.11 U	0.10 U	0.11 UC	0.10 U	0.10 UC	0.10 U	0.11 U	0.10 U	0.10 U	0.11 U
Endosulfan II			0.10 UC	0.11 U	0.10 U	0.11 U	0.10 U	0.11 UC	0.10 U	0.10 UC	0.10 U	0.11 U	0.10 U	0.10 U	0.11 U
4,4'-DDT			0.10 UC	0.11 U	0.10 U	0.11 U	0.10 U	0.11 UC	0.10 U	0.10 UC	0.10 U	0.11 U	0.10 U	0.10 U	0.11 U
Methoxychlor			0.53 UC	0.56 U	0.53 U	0.56 U	0.53 U	0.56 UC	0.50 U	0.53 UC	0.51 U	0.56 U	0.50 U	0.51 U	0.56 U
Endrin-Keytone			0.10 UC	0.11 U	0.10 U	0.11 U	0.10 U	0.11 UC	0.10 U	0.10 UC	0.10 U	0.11 U	0.10 U	0.10 U	0.11 U
Endrin Aldehyde			0.10 UC	0.11 U	0.10 U	0.11 U	0.10 U	0.11 UC	0.10 U	0.10 UC	0.10 U	0.11 U	0.10 U	0.10 U	0.11 U
alpha-Chlordane			0.053 UC	0.056 U	0.053 U	0.056 U	0.053 U	0.056 UC	0.050 U	0.053 UC	0.051 U	0.056 U	0.050 U	0.051 U	0.056 U
gamma-Chlordane			0.053 UC	0.056 U	0.053 U	0.056 U	0.053 U	0.056 UC	0.050 U	0.053 UC	0.051 U	0.056 U	0.050 U	0.051 U	0.056 U
Toxaphene			5.3 UC	5.6 U	5.3 U	5.6 U	5.3 U	5.6 UC	5.0 U	5.3 UC	5.1 U	5.6 U	5.0 U	5.1 U	5.6 U
Aroclor-1016			1.0 UC	1.1 U	1.0 U	1.1 U	1.0 U	1.1 UC	1.0 U	1.0 UC	1.0 U	1.1 U	1.0 U	1.0 U	1.1 U
Aroclor-1221			2.1 UC	2.2 U	2.1 U	2.2 U	2.1 U	2.2 UC	2.1 U	2.1 U	2.1 U	2.2 U	2.1 U	2.1 U	2.2 U
Aroclor-1232			1.0 UC	1.1 U	1.0 U	1.1 U	1.0 U	1.1 UC	1.0 U	1.0 UC	1.0 U	1.1 U	1.0 U	1.0 U	1.1 U
Aroclor-1242			1.0 UC	1.1 U	1.0 U	1.1 U	1.0 U	1.1 UC	1.0 U	1.0 UC	1.0 U	1.1 U	1.0 U	1.0 U	1.1 U
Aroclor-1248			1.0 UC	1.1 U	1.0 U	1.1 U	1.0 U	1.1 UC	1.0 U	1.0 UC	1.0 U	1.1 U	1.0 U	1.0 U	1.1 U
Aroclor-1254			1.0 UC	1.1 U	1.0 U	1.1 U	1.0 U	1.1 UC	1.0 U	1.0 UC	1.0 U	1.1 U	1.0 U	1.0 U	1.1 U
Aroclor-1260			1.0 UC	1.1 U	1.0 U	1.1 U	1.0 U	1.1 UC	1.0 U	1.0 UC	1.0 U	1.1 U	1.0 U	1.0 U	1.1 U

U - Compound was analyzed for but not detected.

C - Laboratory calibration requirements are not met.

(1) - 6 NYCRR 703 Groundwater and Surface Water Standards. The standard is listed only if the compound was detected.

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 12

VALIDATED DATA SUMMARY
SURFACE WATER ANALYTICAL RESULTS FOR TOTAL TAL METALS AND CYANIDE

Sample Location:	Surf. Water	Groundwater	SW1	SW1	SW1	SW1	SW2	SW2	SW3	SW3	SW3	SW4	SW4	SW5	SW5	SW6	SW6	
Sample Designation:	Standards	Standard	FRC-SW1-01	FRC-SW1-01	FRC-SW1-01	FRC-SW1-01	FRC-SW2-01	FRC-SW2-01	FRC-SW3-01	FRC-SW3-01	FRC-SW3-01	FRC-SW4-01	FRC-SW4-01	FRC-SW5-01	FRC-SW5-01	FRC-SW6-01	FRC-SW6-01	FRC-RB-01
Sample Date:	(1)	(1)	SUR	SUR-DUP	MID	MID	SUR	MID	SUR	MID	MID	SUR	MID	SUR	MID	SUR	MID	
Parameter: (Concentrations in ug/l)			12/7/92	12/7/92	12/7/92	12/10/92	12/7/92	12/7/92	12/7/92	12/7/92	12/10/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92
Aluminum	100	NA	26B	22.0U	NR	22.0U	23.0B	22.0U	20.8U	NR	22.0U	22.0U	32.6B	32.1B	41.0B	22.0U	22.0U	22.0U
Antimony	3	3**	21.0U	21.0U	NR	21.0U	21.0U	21.0U	21.0U	NR	33.8B	21.0U	21.0U	21.0U	21.0U	23.5B	21.4B	21.0U
Arsenic		25	2.0U	2.0U	NR	2.0U	2.0U	2.0U	2.0U	NR	2.0U	2.0U	2.0U	2.0 U	2.0 U	2.0U	2.0U	2.0U
Barium	1000	1000	40.4B	40.4B	NR	38.7B	39.9B	40.4B	39.9B	NR	36.2B	46.4B	46.6B	44.5B	46.8B	47.6B	48.6B	6.0U
Beryllium		3**	1.0U	1.0U	NR	1.0U	1.0U	1.0U	1.0U	NR	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Cadmium		10	2.0U	2.0U	NR	2.0U	2.0U	2.0U	2.0U	NR	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U
Calcium	NA	NA	23,930	23,911	NR	24,209	23,941	24,203	23,848	NR	16,414	24,842	24,781	24,596	25,082	26,263	27,396	104B
Chromium	50	50	3.0U	3.0U	NR	3.0U	3.0U	3.0U	3.0U	NR	3.0U	3.0U	3.0U	5.1B	9.6B	11.4	12.5	3.0U
Cobalt	5	NA	3.0U	3.0U	NR	3.0U	3.0U	3.0U	3.0U	NR	11.1B	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U
Copper	200	200	3.0U	3.0U	NR	3.0U	3.0U	3.0U	3.0U	NR	3.0U	3.0U	7.0B	3.0U	3.0U	4.3B	4.3B	8.8B
Iron	300	300	178	193	NR	111*	204	193	245	NR	2,955*	912	895	904	909	857*	884*	22.0U*
Lead	50	25	2.0UC	2.5BJ	NR	2.0U	2.0U	2.0U	2.0UC	NR	2.0U	2.0UC	2.0UC	2.0UC	2.0UJ	2.0U	2.0U	2.0U
Magnesium	35000	35000**	4,195B	4,183B	NR	4,196B	4,165B	4,190B	4,123B	NR	3,123B	4,124B	4,130B	4,078B	4,162B	4,325B	4,522B	42.0B
Manganese	300	300	391	380	NR	347.1	389	399	384	NR	1,947.7	516	519	509	524	517.0	540.8	1.0U
Mercury		2	0.20U	0.20U	NR	0.20U	0.20U	0.20U	0.20U	NR	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U
Nickel		NA	21.0U	21.0U	NR	21.0U	21.0U	21.0U	21.0U	NR	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U
Potassium	NA	NA	4,013B	3,505B	NR	4,344B	3,842B	3,570B	3,991B	NR	2,866B	3,676B	3,405B	3,592B	3,438B	4,218B	4,310B	626U
Selenium		10	2.0U	2.0U	NR	2.0U	2.0U	2.0U	2.0U	NR	2.0U	2.0U	2.0U	2.0U	2.0U	2.0UW	2.0UW	2.0U
Silver		50	3.0U	3.0U	NR	10.0UJ	3.0U	3.0U	3.0U	NR	10.0UC	3.0U	3.0U	3.0U	3.0U	10.0UC	10.0UC	10.0UC
Sodium	NA	20000	13,629	13,616	NR	13,234	13,549	13,600	13,485	NR	21,991	13,145	13,109	12,924	13,090	13,315	13,800	111B
Thallium		4**	2.0U	2.0U	NR	2.0U	2.0U	2.0U	2.0U	NR	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U
Vanadium		NA	6.0U	6.0U	NR	6.0U	6.0U	6.0U	6.0U	NR	6.0U	6.0U	6.0U	5.0U	6.0U	6.0U	6.0U	6.0U
Zinc	100	300	19.7B	17.6B	NR	23.8	20.2	26.9	18.7B	NR	19.3B	14.7B	17.0B	15.8B	19.0B	13.7B	15.8B	13.9B
Cyanide	100	100	10.0U	11.4	11.2	NR	13.2	10.0U	11.5	10.2	NR	10.0U	10.0U	10.0U	10.0U	10.0U	10.0U	10.0U

NR - Not Reported
B - Analyte results are between IDL and contract required detection limit.
U - Compound was analyzed for but not detected.
W - Post-digest spike recovery furnace analysis was out of 85-115 percent control limit, while sample absorbance was less than 50 percent of spike absorbance.
* - Duplicate analysis not within control limit
(1) - 6 NYCRR 703 Groundwater and Surface Water Standards. The standard is listed only if the compound v
NA - Not Aailable.

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 12

VALIDATED DATA SUMMARY
SURFACE WATER ANALYTICAL RESULTS FOR TOTAL TAL METALS AND CYANIDE

Sample Location:	Surf. Water	Groundwater	SW1	SW1	SW2	SW2	SW3	SW3	SW4	SW4	SW5	SW5	SW6	SW6	SW6
Sample Designation:	Standards	Standard	FRC-SW1-02	FRC-SW1-02	FRC-SW2-02	FRC-SW2-02	FRC-SW3-02	FRC-SW3-02	FRC-SW4-02	FRC-SW4-02	FRC-SW5-02	FRC-SW5-02	FRC-SW6-02	FRC-SW6-02	FRC-SW6-02
	(1)	(1)	SUR	MID	SUR	MID	SUR	MID	SUR	MID	SUR	MID	SUR	SUR-DUP	MID
Sample Date:			3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93
Parameter: (Concentrations in ug/l)															
Aluminum	100	NA	23.5B	24.0B	182B	22.0U	35.9B	22.0U	22.0U	22.8B	44.9B	22.0U	22.0U	22.0U	22.0U
Antimony	3	3**	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U
Arsenic		25	1.0U	1.0U	1.0U	1.0UW	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0UW
Barium	1000	1000	34.8B	35.9B	42.0B	35.5B	35.9B	35.9B	40.4B	42.0B	43.6B	43.1B	40.9B	42.1B	43.2B
Beryllium		3**	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Cadmium		10	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U
Calcium	NA	NA	24,939	25,363	25,779	25,301	25,137	25,611	27,005	27,842	27,998	27,828	27,061	27,481	28,044
Chromium	50	50	3.0U	3.0U	6.2B	3.0U	3.0U	3.0U	3.0U	5.7B	6.6B	3.0U	3.4B	3.0U	3.0U
Cobalt	5	NA	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.2B	3.0U	3.0U	3.0U	3.0U
Copper	200	200	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U
Iron	300	300	88.0B	95.0B	357	181	156	98.2B	347	393	383	383	289	291	335
Lead	50	25	1.0U	1.0U	3.8	1.4B	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0B	1.0U
Magnesium	35000	35000**	4,360B	4,409B	4,551B	4,368	4,357B	4,443B	4,479B	4,630B	4,635B	4,618B	4,503B	4,594B	4,586B
Manganese	300	300	299.8	320.4	306.2	289.9	299.2	304.2	557.8	576.9	583.4	583.1	562.7	575.8	588.4
Mercury		2	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U
Nickel		NA	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U
Potassium	NA	NA	4,416B	4,423B	4,042B	4,142B	46,152B	4,492B	3,836B	3,989B	3,743B	3,810B	4,115B	4,416B	4,341B
Selenium		10	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U
Silver		50	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U
Sodium	NA	20000	13,388	13,485	13,559	13,347	13,331	13,483	13,132	13,492	13,482	17,198	12,993	13,251	13,602
Thallium		4**	2.0UN	2.0UN	2.0UW	2.0UW	2.0UN	2.0UN	2.0UW	2.0UW	2.0UW	2.0UW	2.0UW	2.0UN	2.0UN
Vanadium		NA	6.0U	6.0U	6.0U	6.0U	6.0U	6.0U	6.0U	6.0U	6.0U	6.0U	6.0U	6.0U	6.0U
Zinc	100	300	7.5B	6.6B	15.8B	7.4B	6.8B	6.7B	15.8B	19.2B	15.4B	17.6B	13.2B	17.5B	12.6B
Cyanide	100	100	10.0U	10.0U	10.0U	10.0U	10.0U	10.0U	10.0U	10.0U	10.0U	10.0U	10.0U	10.0U	10.0U

NR - Not Reported
B - Analyte results are between IDL and contract required detection limit.
U - Compound was analyzed for but not detected.
W - Post-digest spike recovery furnace analysis was out of 85-115 percent control limit, while sample absorbance was less than 50 percent of spike absorbance.
N - Spiked sample recovery not within control limits
* - Duplicate analysis not within control limit
(1) - 6 NYCRR 703 Groundwater and Surface Water Standards. The standard is listed only if the compound was detected
NA - Not Available.

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 13

VALIDATED DATA SUMMARY
SURFACE WATER ANALYTICAL RESULTS FOR DISSOLVED TAL METALS

Sample Location:	Surf. Water	Groundwater	SW1	SW1	SW1	SW1	SW2	SW2	SW3	SW3	SW3	SW4	SW4	SW5	SW5	SW6	SW6	
Sample Designation:	Standards	Standard	FRC-SW1-01	FRC-SW1-01	FRC-SW1-01	FRC-SW1-01	FRC-SW2-01	FRC-SW2-01	FRC-SW3-01	FRC-SW3-01	FRC-SW3-01	FRC-SW4-01	FRC-SW4-01	FRC-SW5-01	FRC-SW5-01	FRC-SW6-01	FRC-SW6-01	FRC-RB-01
	(1)	(1)	SUR	SUR-DUP	MID	MID	SUR	MID	SUR	MID	MID	SUR	MID	SUR	MID	SUR	MID	
Sample Date:			12/7/92	12/7/92	12/7/92	12/10/92	12/7/92	12/7/92	12/7/92	12/7/92	12/10/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92
Parameter: (Concentrations in ug/l																		
Aluminum	100	NA	22.0U	22.0U	NR	22.0U	22.0U	22.0U	22.0U	NR	43.4B	22.0U	22.0U	22.0U	22.0U	22.0U	22.0U	22.0U
Antimony	3	3	21.0U	21.0U	NR	21.0U	21.0U	21.0U	21.0U	NR	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	123	21.0U
Arsenic	50	25	2.0U	2.0U	NR	2.0U	2.0U	2.0U	2.0U	NR	2.0U	2.0U	2.0U	2.0U	2.0U	2.0UW	2.0U	2.0U
Barium	1000	1000	41.5B	33.6B	NR	39.8B	40.2B	42.7B	40.2	NR	40.7B	42.7B	45.2B	49.0B	43.2B	42.0B	42.5B	6.0U
Beryllium	3	3	1.0U	1.0U	NR	1.0U	1.0U	1.0U	1.0U	NR	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Cadmium	10	10	2.0U	2.0U	NR	2.0U	2.0U	2.0U	2.0U	NR	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U
Calcium	NA	NA	26,995	22,463	NR	29,466	27,084	28,059	26,004	NR	27,082	24,990	25,680	28,171	25,533	24,175	24,256	101B
Chromium	50	50	3.0U	3.0U	NR	3.0U	3.0U	3.0U	3.0U	NR	3.0U	3.8B	3.0U	3.4B	3.0U	3.0U	3.0U	3.0U
Cobalt	5	NA	3.0U	3.0U	NR	3.0U	3.0U	3.0U	3.0U	NR	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U
Copper	200	200	3.0U	3.0U	NR	3.0U	3.0U	3.0U	3.0U	NR	4.2B	3.0U	3.0U	3.0U	3.0U	17.0B	10.9B	3.8B
Iron	300	300	82.0U	82.0U	NR	82.0U	42.9U	82.0U	62.0U	NR	82.0U	147	259	82.0U	82.0U	82.0U	82.0U	82.0U
Lead	50	25	2.0U	2.0U	NR	2.0U	2.0U	2.0U	2.0U	NR	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U
Magnesium	35000	35000	5,245	4,621B	NR	5,290	5,460	5,501	5,139	NR	5,386	4,847B	4,972B	5,327	4,936B	3,993B	3,995B	29.4B
Manganese	300	300	414	330	NR	405	410	429	394	NR	413	485	507	557	503	474.4	478	2.0B
Mercury	2	2	0.20U	0.20U	NR	0.20U	0.20U	0.20U	0.20U	NR	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U
Nickel	NA	NA	21.0U	21.0U	NR	21.0U	21.0U	21.0U	21.0U	NR	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U
Potassium	NA	NA	6,592	6,168	NR	6,213	7,414	6,892	5,933	NR	6,907	5,913	6,641	6,479	6,189	3,608B	3,391B	626U
Selenium	10	10	2.0U	2.0U	NR	2.0U	2.0U	2.0U	2.0U	NR	2.0U	2.0U	2.0UW	2.0U	2.0U	2.0UN	2.0UN	2.0UN
Silver	50	50	3.0U	3.0U	NR	3.0U	3.0U	3.0U	3.0U	NR	3.0U	3.0U	3.0U	3.0U	3.0U	10.0UC	10.0UC	10.0UC
Sodium	NA	20000	14,627	12,283	NR	14,343	14,461	15,181	14,111	NR	14,637	12,521	12,922	14,460	12,930	12,403	12,429	241B
Thallium	4	4	2.0U	2.0U	NR	2.0U	2.0U	2.0U	2.0U	NR	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U
Vanadium	14	NA	6.0U	6.0U	NR	6.0U	6.0U	6.0U	6.0U	NR	6.0U	6.0U	6.0U	6.0U	6.0U	6.0U	6.0U	6.0U
Zinc	100	300	12.9B	18.9B	NR	15.3B	12.9B	16.7B	11.4B	NR	28.8	12.5	11.9B	14.1B	15.3B	24.8	21.8	8.5B

NR - Not Reported
U - Compound was analyzed for but not detected.
B - Analyte results are between IDL and contract required detection limit.
W - Post-digest spike recovery furnace analysis was out of 85-115 percent control limit, while sample absorbance was less than 50 percent of spike absorbance.
N - The spiked sample recovery is not within control limits.
NA - Not Applicable
(1) - 6 NYCRR 703 Groundwater and Surface Water Standards.

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 13

VALIDATED DATA SUMMARY
SURFACE WATER ANALYTICAL RESULTS FOR DISSOLVED TAL METALS

Sample Location:	Surf. Water	Groundwater	SW1	SW1	SW2	SW2	SW3	SW3	SW4	SW4	SW5	SW5	SW6	SW6	SW6
Sample Designation:	Standards	Standard	FRC-SW1-02	FRC-SW1-02	FRC-SW2-02	FRC-SW2-02	FRC-SW3-02	FRC-SW3-02	FRC-SW4-02	FRC-SW4-02	FRC-SW5-02	FRC-SW5-02	FRC-SW6-02	FRC-SW6-02	FRC-SW6-02
	(1)	(1)	SUR	MID	SUR	MID	SUR	MID	SUR	MID	SUR	MID	SUR	SUR-DUP	MID
Sample Date:			3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93
Parameter: (Concentrations in ug/l															
Aluminum	100	NA	22.1B	22.0U	22.0U	23.7B	28.9B	22.3B	22.0U	22.0U	22.0U	22.0U	22.0U	22.0U	22.0U
Antimony	3	3	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U
Arsenic	50	25	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Barium	1000	1000	35.9B	35.3B	34.6B	35.9B	35.3B	36.5B	43.6B	44.1B	41.0B	43.0B	41.0B	42.6B	38.7B
Beryllium	3	3	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Cadmium	10	10	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U
Calcium	NA	NA	25,157	25,512	24,818	26,018	24,751	25,253	29,203	28,696	28,024	26,782	28,421	27,760	27,196
Chromium	50	50	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	4.8U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U
Cobalt	5	NA	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U
Copper	200	200	9.7B	3.0U	3.0U	3.0U	5.3B	4.3B	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U
Iron	300	300	77.7U	82.0U	82.0U	82.0U	82.0U	102	82.0U	82.0U	82.0U	82.0U	82.0U	82.0U	82.0U
Lead	50	25	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Magnesium	35000	35000	4,407B	4,434B	4,252B	4,480B	4,293B	4,390B	4,802B	4,747B	4,622B	4,749B	4,688B	4,631B	4,545B
Manganese	300	300	301	317	289	303	292	300	596	584	575	592	580	577	564
Mercury	2	2	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U
Nickel	NA	NA	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U
Potassium	NA	NA	4,286B	4,217B	3,940B	4,070B	4,348B	4,560B	4,115B	4,154B	4,249B	3,911B	3,015B	3,991B	4,355B
Selenium	10	10	2.0UW	2.0UW	2.0U	2.0U	2.0U	2.0UW	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U
Silver	50	50	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U
Sodium	NA	20000	13,495	13,530	13,329	13,697	13,198	13,999	13,999	13,708	13,484	13,852	13,668	13,605	13,074
Thallium	4	4	2.0UNW	2.0UNW	2.0UW	2.0U	2.0UNW	2.0UNW	2.0UW	2.0UW	2.0UW	2.0UW	2.0UW	2.0UN	2.0UNW
Vanadium	14	NA	6.0U	6.0U	6.0U	6.0U	6.0U	6.0U	6.0U	6.0U	6.0U	6.0U	6.0U	6.0U	6.0U
Zinc	100	300	15.1B	14.9B	15.4B	9.5B	12.4B	12.9B	14.3B	13.0B	17.1B	15.4B	12.2B	20.2	11.9B

U - Compound was analyzed for but not detected.
B - Analyte results are between IDL and contract required detection limit.
W - Post-digest spike recovery furnace analysis was out of 85-115 percent control limit, while sample absorbance was less than 50 percent of spike absorbance.
N - The spiked sample recovery is not within control limits.
NA - Not Applicable
(1) - 6 NYCRR 703 Groundwater and Surface Water Standards.

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FAIRCHILD INDUSTRIES INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 14

DATA SUMMARY
SURFACE WATER ANALYTICAL RESULTS FOR AKALINITY, NITRATE, PHOSPHORUS AND SULFATE

Sample Location:	Groundwater	SW1	SW1	SW1	SW2	SW2	SW3	SW3
Sample Designation:	Standard	FRC-SW1-01	FRC-SW1-01	FRC-SW1-01	FRC-SW2-01	FRC-SW2-01	FRC-SW3-01	FRC-SW3-01
	(1)	SUR	SUR-DUP	MID	SUR	MID	SUR	MID
Sample Date:		12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92
Parameter: (Concentration in mg/l)								
Alkalinity, as CaCO3	NA	69.1	67.7	67.3	68.3	68.1	69.3	69.3
Nitrate/Nitrite-Nitrogen	10	0.87	0.91	0.923	0.84	1.04	0.94	0.91
Phosphorus	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Sulfate	250	26.8	28.4	24.7	25.9	28	25.1	26.8

Sample Location:	Groundwater	SW4	SW5	SW5	SW6	SW6		
Sample Designation:	Standard	FRC-SW4-01	FRC-SW5-01	FRC-SW5-01	FRC-SW6-01	FRC-SW6-01	FRC-RB-01	FRC-RB-1
	(1)	MID	SUR	MID	SUR	MID		
Sample Date:		12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	
Parameter: (Concentration in mg/l)								
Alkalinity, as CaCO3	NA	75	77.2	75.6	75.2	74.4	2	1.00U
Nitrate/Nitrite-Nitrogen	10	0.154	0.16	0.22	0.17	0.19	0.10 U	0.10 U
Phosphorus	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.83
Sulfate	250	31.3	26.3	30.5	24.3	23	10.0U	0.10 U

U - See Appendix for definition

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FAIRCHILD INDUSTRIES INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 14

DATA SUMMARY
SURFACE WATER ANALYTICAL RESULTS FOR AKALINITY, NITRATE, PHOSPHORUS AND SULFATE

Sample Location:	Groundwater	SW1	SW1	SW2	SW2	SW3	SW3
Sample Designation:	Standard	FRC-SW1-02	FRC-SW1-02	FRC-SW2-02	FRC-SW2-02	FRC-SW3-02	FRC-SW3-02
	(1)	SUR	MID	SUR	MID	SUR	MID
Sample Date:		3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93
Parameter: (Concentration in mg/l)							
Alkalinity, as CaCO3	NA	61.2	62.6	61	63.2	61.2	62.2
Nitrate/Nitrite-Nitrogen	10	1.08	1.07	1.01	1.15	1.1	1.04
Phosphorus	NA	0.10 U	0.10 U	0.100U	0.100U	0.10 U	0.38
Sulfate	250	33.3	29.6	32.9	30.9	29.6	29.2

Sample Location:	Groundwater	SW4	SW5	SW5	SW6	SW6	SW6
Sample Designation:	Standard	FRC-SW4-02	FRC-SW5-02	FRC-SW5-02	FRC-SW6-02	FRC-SW6-02	FRC-SW6-02
	(1)	MID	SUR	MID	SUR	SUR-DUP	MID
Sample Date:		3/2/93	3/2/93	3/2/93	3/2/93	3/2/93	3/2/93
Parameter: (Concentration in mg/l)							
Alkalinity, as CaCO3	NA	67.3	66.9	66.9	64.5	64.7	64.4
Nitrate/Nitrite-Nitrogen	10	0.59	0.57	0.88	0.56	0.6	0.57
Phosphorus	NA	0.100U	0.100U	0.100U	0.100U	0.10 U	0.10 U
Sulfate	250	37.9	40.7	37.9	38.3	40.3	39.9

U - See Appendix for definition

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 15

VALIDATED DATA SUMMARY
GROUNDWATER ANALYTICAL RESULTS FOR VOLATILE ORGANIC COMPOUNDS

Sample Location:	Groundwater	1S	1D	2S	2D	2XD	3S	3D	4S	4D	5S	5D
Sample Designation:	Standard	FRC-1S-01	FRC-1D-01	FRC-2S-01	FRC-2D-01	FRC-2XD-01	FRC-3S-01	FRC-3D-01	FRC-4S-01	FRC-4D-01	FRC-5S-01	FRC-5D-01
	(1)											
Sample Date:		12/3/92	12/3/92	12/3/92	12/3/92	12/2/92	12/2/92	12/2/92	12/2/92	12/2/92	12/2/92	12/2/92
Parameter: (Concentrations in ug/l)												
Chloromethane	5	10 U	10 U	10 U	10 U	10 UC	10 U	10 U	10 U	10 U	10 UC	10 UC
Bromomethane	5	10 U	10 U	10 U	10 U	10 UC	10 U	10 U	10 U	10 U	10 UC	10 UC
Vinyl Chloride	2	10 U	10 U	10 U	10 U	10 UC	10 U	10 U	10 U	10 U	10 UC	10 UC
Chloroethane	5	10 U	10 U	10 U	10 U	10 UC	10 U	10 U	10 U	10 U	10 UC	10 UC
Methylene Chloride	5	10 U	10 U	10 U	10 U	4JB	10 U	10 U	10 U	10 U	4JB	2JB
Acetone	50	10 U	10 U	10 U	10 U	10 UC	10 U	10 U	10 U	10 U	10 UC	10 UC
Carbon Disulfide	50	10 U	10 U	10 U	10 U	10 UC	10 U	10 U	10 U	10 U	10 UC	10 UC
1,1-Dichloroethene	5	10 U	10 U	10 U	10 U	10 UC	10 U	10 U	10 U	10 U	10 UC	10 UC
1,1-Dichloroethane	5	10 U	10 U	10 U	10 U	10 UC	10 U	10 U	10 U	5J	10 UC	3J
1,2-Dichloroethene	10	10 U	10 U	10 U	10 U	2J	10 U	10 U	10 U	10 U	10 UC	10 UC
Chloroform	7	10 U	10 U	10 U	10 U	10 UC	10 U	10 U	10 U	10 U	10 UC	10 UC
1,2-Dichloroethane	5	10 U	10 U	10 U	10 U	10 UC	10 U	10 U	10 U	10 U	10 UC	10 UC
2-Butanone	50	10 U	10 U	10 U	10 U	10 UC	10 U	10 U	10 U	10 U	10 UC	14
1,1,1-Trichloroethane	5	10 U	10 U	10 U	10 U	10 UC	10 U	10 U	10 U	10 U	10 UC	10 UC
Carbon Tetrachloride	5	10 U	10 U	10 U	10 U	10 UC	10 U	10 U	10 U	10 U	10 UC	10 UC
Bromodichloromethane	50	10 U	10 U	10 U	10 U	10 UC	10 U	10 U	10 U	10 U	10 UC	10 UC
1,2-Dichloropropane	5	10 U	10 U	10 U	10 U	10 UC	10 U	10 U	10 U	10 U	10 UC	10 UC
cis-1,3-Dichloropropene	5	10 U	10 U	10 U	10 U	10 UC	10 U	10 U	10 U	10 U	10 UC	10 UC
Trichloroethene	5	10 U	10 U	10 U	10 U	10 UC	10 U	10 U	10 U	10 U	10 UC	10 UC
Dibromochloromethane	50	10 U	10 U	10 U	10 U	10 UC	10 U	10 U	10 U	10 U	10 UC	10 UC
1,1,2-Trichloroethane	50	10 U	10 U	10 U	10 U	10 UC	10 U	10 U	10 U	10 U	10 UC	10 UC
Benzene	0.7	10 U	10 U	10 U	10 U	10 UC	10 U	10 U	10 U	10 U	10 UC	10 UC
trans-1,3-Dichloropropene	5	10 U	10 U	10 U	10 U	10 UC	10 U	10 U	10 U	10 U	10 UC	10 UC
Bromoform	50	10 U	10 U	10 U	10 U	10 UC	10 U	10 U	10 U	10 U	10 UC	10 UC
4-Methyl-2-pentanone	5	10 U	10 U	10 U	10 U	10 UC	10 U	10 U	10 U	10 U	10 UC	10 UC
2-Hexanone	5	10 U	10 U	10 U	10 U	10 UC	10 U	10 U	10 U	10 U	10 UC	10 UC
Tetrachloroethene	5	10 U	10 U	10 U	10 U	2J	10 U	10 U	10 U	10 U	10 UC	10 UC
1,1,2,2-Tetrachloroethane	5	10 U	10 U	10 U	10 U	10 UC	10 U	10 U	10 U	10 U	10 UC	10 UC
Toluene	5	10 U	10 U	10 U	10 U	1J	10 U	10 U	10 U	10 U	10 UC	10 UC
Chlorobenzene	5	10 U	10 U	10 U	10 U	10 UC	10 U	10 U	10 U	10 U	10 UC	10 UC
Ethylbenzene	5	10 U	10 U	10 U	10 U	10 UC	10 U	10 U	10 U	10 U	10 UC	10 UC
Styrene	50	10 U	10 U	10 U	10 U	10 UC	10 U	10 U	10 U	10 U	10 UC	10 UC
Xylenes (total)	15	10 U	10 U	10 U	10 U	10 UC	10 U	10 U	10 U	1J	10 UC	10 UC

U - Compound was analyzed for but not detected
J - The concentration listed is an estimated value, which is less than the specified minimum detection limit but is greater than zero.
B - The analyte is found in the blanks as well as the sample.
C - Laboratory calibration requirements are not met.
(1) - 6 NYCRR 703 Groundwater Standards

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 15

VALIDATED DATA SUMMARY
GROUNDWATER ANALYTICAL RESULTS FOR VOLATILE ORGANIC COMPOUNDS

Sample Location:	Groundwater	6S	6D	6D	7S	7D	8S	8I	9S	9I	10S	10I
Sample Designation:	Standard	FRC-6S-01	FRC-6D-01	FRC-6D-01	FRC-7S-01	FRC-7D-01	FRC-8S-01	FRC-8I-01	FRC-9S-01	FRC-9I-01	FRC-10S-01	FRC-10I-01
Sample Date:	(1)	12/10/92	12/10/92	DUP 12/10/92	12/3/92	12/3/92	12/3/92	12/3/92	12/2/92	12/2/92	12/3/92	12/3/92
Parameter: (Concentration in ug/l)												
Chloromethane	5	40 UC	50 UC	50 UC	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane	5	40 UC	50 UC	50 UC	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Vinyl Chloride	2	40 UC	50 UC	50 UC	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane	5	40 UC	50 UC	50 UC	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methylene Chloride	5	40 UC	50 UC	50 UC	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	50	40 UC	50 UC	50 UC	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon Disulfide	50	40 UC	50 UC	50 UC	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	5	37J	48J	52 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	5	40 UC	12J	11J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene	10	40 UC	28J	29J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroform	7	40 UC	50 UC	50 UC	10 U	10 U	6J	10 U	10 U	10 U	10 U	3J
1,2-Dichloroethane	5	40 UC	50 UC	50 UC	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Butanone	50	40 UC	50 UC	50 UC	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	5	550	548	585	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon Tetrachloride	5	40 UC	50 UC	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	50	40 UC	50 UC	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	5	40 UC	50 UC	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene	5	40 UC	50 UC	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene	5	27J	25J	29 J	28	28	10 U	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane	50	40 UC	50 UC	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	50	40 UC	50 UC	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	0.7	40 UC	50 UC	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene	5	40 UC	50 UC	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromoform	50	40 UC	50 UC	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone	5	40 UC	50 UC	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	5	40 UC	50 UC	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	5	40 UC	10J	14J	10 U	3J	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	5	40 UC	50 UC	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Toluene	5	40 UC	50 UC	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	5	40 UC	50 UC	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	5	40 UC	50 UC	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Styrene	50	40 UC	50 UC	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Xylenes (total)	15	40 UC	50 UC	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U

U - Compound was analyzed for but not detected

J - The concentration listed is an estimated value, which is less than the specified minimum detection limit but is greater than zero.

C - Laboratory calibration requirements are not met.

(1) - 6 NYCRR 703 Groundwater Standards

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 15

VALIDATED DATA SUMMARY
GROUNDWATER ANALYTICAL RESULTS FOR VOLATILE ORGANIC COMPOUNDS

Sample Location:	Groundwater	10D	11D	11S	11I	11D	MW12S		
Sample Designation:	Standard	FRC-10D-01	FRC-10D-01	FRC-11S-01	FRC-11I-01	FRC-11D-01	FRC-MW12S-0	FRC-TB-01	FRC-TB-921204
	(1)		DUP						
Sample Date:		12/3/92	12/3/92	12/4/92	12/4/92	12/4/92	12/7/92	---	---
Parameter: (Concentrations in ug/l)									
Chloromethane	5	10 U	10 UC	10 U	10 U	10 U	10 UC	10 U	10 U
Bromomethane	5	10 U	10 UC	10 U	10 U	10 U	10 UC	10 U	10 U
Vinyl Chloride	2	10 U	10 UC	10 U	10 U	10 U	10 UC	10 U	10 U
Chloroethane	5	10 U	10 UC	10 U	10 U	10 U	10 UC	10 U	10 U
Methylene Chloride	5	10 U	10 UC	10 U	10 U	10 U	10 UC	10 U	10 U
Acetone	50	15 J	10 UC	10 U	21 J	10 U	10 UC	10 U	10 U
Carbon Disulfide	50	10 U	10 UC	10 U	10 U	10 U	10 UC	10 U	10 U
1,1-Dichloroethene	5	10 U	10 UC	10 U	10 U	10 U	10 UC	10 U	10 U
1,1-Dichloroethane	5	10 U	10 UC	10 U	10 U	10 U	10 UC	10 U	10 U
1,2-Dichloroethene	10	11	13C	10 U	10 U	10 U	4JC	10 U	10 U
Chloroform	7	10 U	10 UC	10 U	10 U	10 U	10 UC	2J	10 U
1,2-Dichloroethane	5	10 U	10 UC	10 U	10 U	10 U	10 UC	10 U	10 U
2-Butanone	50	10 U	10 UC	10 U	10 U	10 U	10 UC	10 U	10 U
1,1,1-Trichloroethane	5	10 U	10 UC	10 U	10 U	10 U	10 UC	10 U	10 U
Carbon Tetrachloride	5	10 U	10 UC	10 U	10 U	10 U	10 UC	10 U	10 U
Bromodichloromethane	50	10 U	10 UC	10 U	10 U	10 U	10 UC	10 U	10 U
1,2-Dichloropropane	5	10 U	10 UC	10 U	10 U	10 U	10 UC	10 U	10 U
cis-1,3-Dichloropropene	5	10 U	10 UC	10 U	10 U	10 U	10 UC	10 U	10 U
Trichloroethene	5	8J	8JC	10 U	10 U	10 U	10 UC	10 U	10 U
Dibromochloromethane	50	10 U	10 UC	10 U	10 U	10 U	10 UC	10 U	10 U
1,1,2-Trichloroethane	50	10 U	10 UC	10 U	10 U	10 U	10 UC	10 U	10 U
Benzene	0.7	10 U	10 UC	10 U	10 U	10 U	10 UC	10 U	10 U
trans-1,3-Dichloropropene	5	10 U	10 UC	10 U	10 U	10 U	10 UC	10 U	10 U
Bromoform	50	10 U	10 UC	10 U	10 U	10 U	10 UC	10 U	10 U
4-Methyl-2-pentanone	5	10 U	10 UC	10 U	10 U	10 U	10 UC	10 U	10 U
2-Hexanone	5	10 U	10 UC	10 U	10 U	10 U	10 UC	10 U	10 U
Tetrachloroethene	5	19	20C	10 U	10 U	10 U	10 UC	10 U	10 U
1,1,2,2-Tetrachloroethane	5	10 U	10 UC	10 U	10 U	10 U	10 UC	10 U	10 U
Toluene	5	10 U	10 UC	10 U	10 U	10 U	10 UC	10 U	10 U
Chlorobenzene	5	10 U	10 UC	10 U	10 U	10 U	10 UC	10 U	10 U
Ethylbenzene	5	10 U	10 UC	10 U	10 U	10 U	10 UC	10 U	10 U
Styrene	50	10 U	10 UC	10 U	10 U	10 U	10 UC	10 U	10 U
Xylenes (total)	15	10 U	10 UC	10 U	10 U	10 U	10 UC	10 U	10 U

U - Compound was analyzed for but not detected
J - The concentration listed is an estimated value, which is less than the specified minimum detection limit but is greater than zero.
C - Laboratory calibration requirements are not met.
(1) - 6 NYCRR 703 Groundwater Standards

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 15

VALIDATED DATA SUMMARY
GROUNDWATER ANALYTICAL RESULTS FOR VOLATILE ORGANIC COMPOUNDS

Sample Location:	Groundwater	1S	1D	2S	2S	2D	2XD	3S	3D	4S	4D
Sample Designation:	Standard	FRC-1S-02	FRC-1D-02	FRC-2S-02	FRC-2S-02 DUP	FRC-2D-02	FRC-2XD-02	FRC-3S-02	FRC-3D-02	FRC-4S-02	FRC-4D-02
	(1)										
Sample Date:		3/1/93	3/1/93	3/1/93	3/1/93	3/1/93	2/26/93	2/25/93	2/26/93	2/26/93	2/26/93
Parameter: (Concentrations in ug/l)											
Chloromethane	5	1.00 U	0.31JC	0.14J	1.00 UC	0.5 JC	1.00 UC	0.22 JC	15.15 C	1.00 UC	10 U
Vinyl Chloride	2	1.00 U	1.00 UC	0.3J	0.6JC	2C	0.7J	1.00 UC	1.00 U	1.00 UC	10 U
Bromomethane	5	1.00 U	1.00 UC	1.00 U	1.00 UC	1.00 UC	1.00 UC	1.00 UC	1.00 UC	1.00 UC	10 U
Chloroethane	5	1.00 U	1.00 UC	1.00 U	1.00 UC	1.00 UC	1.00 UC	1.00 UC	1.00 UC	1.00 UC	10 U
Acetone	50	NA	NA	NA	NA	NA	NA	NA	5B	NA	10 U
Methylene Chloride	5	1.00 U	1.00 UC	1.00 U	1.00 UC	1.00 UC	1.00 UC	1.00 UC	1.00 U	1.00 UC	10 U
1,1-Dichloroethene	5	0.2J	0.5JC	1.00 U	1.00 UC	1.00 UC	0.2J	1.00 UC	1.00 U	1.00 UC	10 U
trans-1,2-Dichloroethene	5	U	1.00 UC	0.1J	1.00 UC	1.00 UC	1.00 UC	1.00 UC	1.00 U	1.00 UC	10 U
1,1-Dichloroethane	5	0.2J	0.5 J	1	1	2C	0.9 JC	1.00 UC	1	0.2J	4J
Carbon Disulfide	50	NA	NA	NA	NA	NA	NA	NA	1.00 U	NA	10 U
cis-1,2-Dichloroethene	5	1.00 U	1.00 UC	0.3J	1.00 UC	0.3JC	0.2 J	1.00 UC	1.00 U	1.00 U	10 U
2-Butanone	50	NA	NA	NA	NA	NA	NA	NA	1.00 U	NA	10 U
Chloroform	7	1.00 U	1.00 UC	1.00 U	1.00 UC	1.00 UC	1.00 UC	1.00 UC	1.00 UC	1.00 UC	10 U
1,1,1-Trichloroethane	5	1.00 U	0.07JC	1.00 U	1.00 UC	1.00 UC	0.1J	1.00 UC	1.00 U	0.6 JC	10 U
Vinyl Acetate	5	NA	NA	NA	NA	NA	NA	NA	1.00 U	NA	10 U
Carbon Tetrachloride	5	1.00 U	1.00 UC	1.00 U	1.00 UC	1.00 UC	1.00 UC	1.00 UC	1.00 U	1.00 UC	10 U
Benzene	0.7	0.8J	2	0.2J	0.1JC	1.00 UC	0.2J	1.00 UC	0.4 J	1.00 UC	10 U
1,2-Dichloroethane	5	1.00 U	1.00 UC	1.00 U	1.00 UC	1.00 UC	0.5J	1.00 UC	1.00 U	1.00 UC	10 U
Trichloroethene	5	0.3J	0.2JC	1.00 U	1.00 UC	1.00 UC	1.20 JC	0.3 JC	0.4 J	0.4J	10 U
1,2-Dichloropropane	5	1.00 U	1.00 UC	1.00 U	1.00 UC	1.00 UC	1.00 UC	1.00 UC	1.00 U	1.00 UC	10 U
4-Methyl-2-pentanone	5	NA	NA	NA	NA	NA	NA	NA	1.00 U	NA	10 U
Bromodichloromethane	50	1.00 U	1.00 UC	1.00 U	1.00 UC	1.00 UC	1.00 UC	1.00 UC	1.00 U	1.00 UC	10 U
cis-1,3-Dichloropropene	5	1.00 U	1.00 UC	1.00 U	1.00 UC	1.00 UC	1.00 UC	1.00 UC	1.00 U	1.00 UC	10 U
Toluene	5	1.00 U	1.00 UC	0.2JB	1.00 UC	1.00 UC	0.2 JC	1.00 UC	1.00 U	1.00 UC	10 U
trans-1,3-Dichloropropene	5	1.00 U	1.00 UC	1.00 U	1.00 UC	1.00 UC	1.00 UC	1.00 UC	1.00 U	1.00 UC	10 U
1,1,2-Trichloroethane	50	1.00 U	1.00 UC	1.00 U	1.00 UC	1.00 UC	1.00 UC	1.00 UC	1.00 U	1.00 UC	10 U
Tetrachloroethene	5	0.6J	1.00 UC	0.1J	1.00 UC	1.00 UC	2	1.00 UC	1.00 U	0.2J	10 U
2-Hexanone	5	NA	NA	NA	NA	NA	NA	NA	1.00 U	NA	10 U
Dibromochloromethane	50	NA	1.00 UC	1.00 U	1.00 UC	1.00 UC	5.26 JC	1.00 UC	1.00 U	1.00 UC	10 U
Chlorobenzene	5	1.00 U	1.00 UC	0.5J	1.00 UC	1.00 UC	0.15 JC	1.00 UC	0.2 J	1.00 UC	10 U
Ethylbenzene	5	0.04J	0.11JC	1.00 U	1.00 UC	1.00 UC	1.00 UC	1.00 UC	1.00 U	1.00 UC	10 U
meta and/or para-Xylene	15	1.00 U	1.00 UC	1.00 U	1.00 UC	1.00 UC	1.00 UC	1.00 UC	1.00 U	1.00 UC	10 U
ortho-Xylene	15	1.00 U	1.00 UC	1.00 U	1.00 UC	1.00 UC	1.00 UC	1.00 UC	1.00 U	1.00 UC	10 U
Styrene	50	1.00 U	1.00 UC	1.00 U	1.00 UC	1.00 UC	0.2 JC	1.00 UC	1.00 U	1.00 UC	10 U
Bromoform	50	1.00 U	1.00 UC	0.18 J	1.00 UC	1.00 UC	0.75 JC	1.00 UC	1.00 UC	1.00 UC	10 U
1,1,2,2-Tetrachloroethane	5	1.00 U	1.00 UC	1.00 U	1.00 UC	1.00 UC	1.00 UC	1.00 UC	1.00 U	1.00 UC	10 U

U - Compound was analyzed for but not detected
J - The concentration listed is an estimated value, which is less than the specified minimum detection limit but is greater than zero.
B - The analyte is found in the blanks as well as the sample.
C - Laboratory calibration requirements are not met.
NA - Not available
(1) - 6 NYCRR 703 Groundwater Standards

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 15

VALIDATED DATA SUMMARY
GROUNDWATER ANALYTICAL RESULTS FOR VOLATILE ORGANIC COMPOUNDS

Sample Location:	Groundwater	5S	5D	6S	6D	7S	7D	8S	8I	9S	9I
Sample Designation:	Standard	FRC-5S-02	FRC-5D-02	FRC-6S-02	FRC-6D-02	FRC-7S-02	FRC-7D-02	FRC-8S-02	FRC-8I-02	FRC-9S-02	FRC-9I-02
Sample Date:	(1)	3/1/93	3/1/93	3/1/93	3/1/93	3/1/93	3/1/93	2/26/93	2/26/93	2/26/93	2/26/93
Parameter: (Concentrations in ug/l)											
Chloromethane	5	1.00 UC	10 U	1.00 UC	50 U	10 U	10 U	10 U	0.47 JC	1.00 UC	1.00 UC
Vinyl Chloride	2	1.00 UC	10 U	1.00 UC	50 U	10 U	10 U	10 U	0.2J	1.00 UC	1.00 UC
Bromomethane	5	1.00 UC	10 U	1.00 UC	50 U	10 U	10 U	10 U	1.00 UC	1.00 UC	1.00 UC
Chloroethane	5	1.00 UC	10 U	1.00 UC	50 U	10 U	10 U	10 U	1.00 UC	1.00 UC	1.00 UC
Acetone	50	NA	10 U	1.00 UC	50 U	10 U	8J	10 U	1.00 UC	1.00 UC	1.00 UC
Methylene Chloride	5	1.00 UC	10 U	16JB	50 U	10 U	10 U	10 U	1.00 UC	1.00 UC	1.00 UC
1,1-Dichloroethene	5	1.00 UC	10 U	12JC	70	10 U	10 U	10 U	1.00 UC	1.00 UC	1.00 UC
trans-1,2-Dichloroethene	5	1.00 UC	10 U	1.00 UC	NA	NA	NA	10 U	NA	1.00 UC	1.00 UC
1,1-Dichloroethane	5	0.7JC	10 U	3JC	10J	10 U	10 U	10 U	0.9J	0.1J	0.8J
Carbon Disulfide	50	NA	10 U	1JC	50 U	10 U	10 U	10 U	1.00 UC	1.00 UC	0.06J
cis-1,2-Dichloroethene	5	1.00 UC	10 U	4JC	NA	NA	NA	10 U	1	1.00 UC	1.00 UC
2-Butanone	50	NA	10 U	1.00 UC	50 U	10 U	10 U	10 U	1.00 UC	1.00 UC	1.00 UC
Chloroform	7	1.00 UC	10 U	1.00 UC	50 U	10 U	10 U	10 U	1.00 UC	0.08JB	0.08JB
1,1,1-Trichloroethane	5	0.3JC	10 U	131C	662	10 U	10 U	10 U	1.00 UC	1.00 UC	0.1J
Vinyl Acetate	5	NA	NA	1.00 UC	NA	NA	NA	10 U	NA	NA	1.00 UC
Carbon Tetrachloride	5	1.00 UC	10 U	1.00 UC	50 U	10 U	10 U	10 U	1.00 UC	1.00 UC	1.00 UC
Benzene	0.7	0.09JC	10 U	1.00 UC	50 U	10 U	10 U	10 U	0.4J	0.06J	0.2J
1,2-Dichloroethane	5	1.00 UC	10 U	1.00 UC	50 U	10 U	10 U	10 U	0.37 JC	1.00 UC	1.00 UC
Trichloroethene	5	0.3JC	10 U	9JC	32J	22	38	10 U	0.4J	1	0.2J
1,2-Dichloropropane	5	1.00 UC	10 U	1.00 UC	50 U	10 U	10 U	10 U	1.00 UC	1.00 UC	1.00 UC
4-Methyl-2-pentanone	5	NA	NA	1.00 UC	50 U	10 U	10 U	10 U	1.00 UC	1.00 UC	1.00 UC
Bromodichloromethane	50	1.00 UC	10 U	1.00 UC	50 U	10 U	10 U	10 U	1.00 UC	1.00 UC	1.00 UC
cis-1,3-Dichloropropene	5	1.00 UC	10 U	1.00 UC	50 U	10 U	10 U	10 U	1.00 UC	1.00 UC	1.00 UC
Toluene	5	0.2JC	10 U	3JBC	50 U	10 U	10 U	10 U	0.2J	1.00 UC	0.3J
trans-1,3-Dichloropropene	5	1.00 UC	10 U	1.00 UC	50 U	10 U	10 U	10 U	1.00 UC	1.00 UC	1.00 UC
1,1,2-Trichloroethane	50	1.00 UC	10 U	1.00 UC	50 U	10 U	10 U	10 U	1.00 UC	1.00 UC	1.00 UC
Tetrachloroethene	5	0.6JC	10 U	6JC	14J	10 U	10 U	10 U	0.4J	0.6J	1.00 UC
2-Hexanone	5	NA	10 U	1.00 UC	50 U	10 U	10 U	10 U	1.00 UC	1.00 UC	1.00 UC
Dibromochloromethane	50	1.00 UC	10 U	1.00 UC	50 U	10 U	10 U	10 U	1.00 UC	1.00 UC	1.00 UC
Chlorobenzene	5	1.00 UC	10 U	1.00 UC	50 U	10 U	10 U	10 U	1.00 UC	1.00 UC	1.00 UC
Ethylbenzene	5	0.09JC	10 U	1.8JBC	50 U	10 U	10 U	10 U	1.00 UC	1.00 UC	0.1JB
meta and/or para-Xylene	15	1.00 UC	10 U	2JBC	NA	NA	NA	10 U	NA	NA	0.3J
ortho-Xylene	15	1.00 UC	10 U	1.00 UC	NA	NA	NA	10 U	NA	NA	0.2J
Styrene	50	1.00 UC	10 U	1.00 UC	50 U	10 U	10 U	10 U	1.00 UC	1.00 UC	1.00 UC
Bromoform	50	1.00 UC	10 U	0.95 UC	50 U	10 U	10 U	10 U	1.00 UC	1.00 UC	1.00 UC
1,1,2,2-Tetrachloroethane	5	1.00 UC	10 U	1.00 UC	50 U	10 U	10 U	10 U	1.00 UC	1.00 UC	1.00 UC

U - Compound was analyzed for but not detected
J - The concentration listed is an estimated value, which is less than the specified minimum detection limit but is greater than zero.
B - The analyte is found in the blanks as well as the sample.
C - Laboratory calibration requirements are not met.
NA - Not available
(1) - 6 NYCRR 703 Groundwater Standards

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 15

VALIDATED DATA SUMMARY
GROUNDWATER ANALYTICAL RESULTS FOR VOLATILE ORGANIC COMPOUNDS

Sample Location:	Groundwater	10S	10I	10D	11S	11I	11I	11D	MW12S
Sample Designation:	Standard	FRC-10S-02	FRC-10I-02	FRC-10D-02	FRC-11S-02	FRC-11I-02	FRC-11I-02	FRC-11D-02	FRC-MW12S-02
	(1)								
Sample Date:		2/26/93	2/26/93	2/26/93	2/24/93	2/24/93	2/24/93	2/24/93	3/1/93
Parameter: (Concentrations in ug/l)									
Chloromethane	5	1.00 UC	1.00 UC	10 U	1.00 U	1.00 U	1.00 U	0.22 J	0.4 JC
Vinyl Chloride	2	1.00 UC	3	10 U	1.00 U	1.00 U	1.00 U	1.00 U	0.9 JC
Bromomethane	5	1.00 UC	1.00 UC	10 U	1.00 UC	1.00 UC	1.00 UC	1.00 U	0.1 JC
Chloroethane	5	1.00 UC	1.00 UC	10 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 UC
Acetone	50	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	5	1.00 UC	1.00 UC	10 U	1.00 U	1.00 U	1.00 U	1.00 U	0.2JB
1,1-Dichloroethene	5	1.00 UC	0.3J	10 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
trans-1,2-Dichloroethene	5	0.3J	1	15 (TOTAL)	1.00 U	1.00 U	1.00 U	1.00 U	0.3JC
1,1-Dichloroethane	5	0.7J	2	10 U	0.08J	0.3J	0.4J	0.3J	0.4JC
Carbon Disulfide	50	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	5	0.3J	12	10 U	1.00 U	1.00 U	1.00 U	2	1.4
2-Butanone	50	NA	NA	10 U	NA	NA	NA	NA	NA
Chloroform	7	1.00 UC	1.00 UC	10 U	0.2 JB	0.3JB	0.4JB	0.3JB	1.00 UC
1,1,1-Trichloroethane	5	1.00 UC	0.2J	10 U	0.15 JB	0.2J	0.2J	0.4J	1.00 UC
Vinyl Acetate	5	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride	5	1.00 UC	1.00 UC	10 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 UC
Benzene	0.7	0.06J	0.2J	10 U	1.00 U	1.00 U	1.00 U	1.00 U	0.7JC
1,2-Dichloroethane	5	1.00 UC	1.00 UC	10 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 UC
Trichloroethene	5	0.2J	5	7J	1.00 U	1.00 U	1.00 U	2	0.1JC
1,2-Dichloropropane	5	1.00 UC	1.00 UC	10 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
4-Methyl-2-pentanone	5	NA	NA	10 U	NA	NA	NA	NA	NA
Bromodichloromethane	50	1.00 UC	1.00 UC	10 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 UC
cis-1,3-Dichloropropene	5	1.00 UC	1.00 UC	10 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 UC
Toluene	5	1.00 UC	0.2J	10 U	1.00 U	1.00 U	1.00 U	1.00 U	0.1JB
trans-1,3-Dichloropropene	5	1.00 UC	1.00 UC	10 U	1.00 U	1.00 U	1.00 U	0.12 J	1.00 UC
1,1,2-Trichloroethane	50	1.00 UC	1.00 UC	10 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 UC
Tetrachloroethene	5	1.00 UC	4	17	0.2J	1.00 U	1.00 U	1.00 U	1.00 UC
2-Hexanone	5	NA	NA	10 U	NA	NA	NA	NA	NA
Dibromochloromethane	50	2.77 JC	9.05 JC	10 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 UC
Chlorobenzene	5	1.00 UC	1.00 UC	10 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 UC
Ethylbenzene	5	1.00 UC	0.05JB	10 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 UC
meta and/or para-Xylene	15	1.00 UC	0.2J	10 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 UC
ortho-Xylene	15	1.00 UC	1.00 UC	10 U	1.00 U	1.00 U	1.00 U	1.00 U	0.4JC
Styrene	50	1.00 UC	1.00 UC	10 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 UC
Bromoform	50	1.00 UC	1.00 UC	10 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 UC
1,1,2,2-Tetrachlorethane	5	1.00 UC	1.00 UC	10 U	1.00 U	1.00 U	1.00 U	1.00 U	0.7 C

U - Compound was analyzed for but not detected

J - The concentration listed is an estimated value, which is less than the specified minimum detection limit but is greater than zero.

B - The analyte is found in the blanks as well as the sample.

C - Laboratory calibration requirements are not met.

NA - Not available

(1) - 6 NYCRR 703 Groundwater Standards

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 15

VALIDATED DATA SUMMARY
GROUNDWATER ANALYTICAL RESULTS FOR VOLATILE ORGANIC COMPOUNDS

Sample Designation:	Groundwater	FRC-930224	TB-02
Sample Date:	Standard	2/24/93	2/26/93
Parameter: (Concentrations in ug/l)	(1)		
Chloromethane	5	10 U	10 U
Vinyl Chloride	2	10 U	10 U
Bromomethane	5	10 U	10 U
Chloroethane	5	10 U	10 U
Acetone	50	10 U	15B
Methylene Chloride	5	0.2JB	0.4JB
1,1-Dichloroethene	5	10 U	10 U
trans-1,2-Dichloroethene	5	10 U	10 U
1,1-Dichloroethane	5	10 U	10 U
Carbon Disulfide	50	10 U	10 U
cis-1,2-Dichloroethene	5	10 U	10 U
2-Butanone	50	10 U	10 U
Chloroform	7	2B	1
1,1,1-Trichloroethane	5	10 U	10 U
Vinyl Acetate	5	10 U	10 U
Carbon Tetrachloride	5	10 U	10 U
Benzene	0.7	10 U	10 U
1,2-Dichloroethane	5	10 U	10 U
Trichloroethene	5	10 U	10 U
1,2-Dichloropropane	5	10 U	10 U
4-Methyl-2-pentanone	5	10 U	10 U
Bromodichloromethane	50	10 U	0.4J
cis-1,3-Dichloropropene	5	10 U	10 U
Toluene	5	0.1J	0.2JB
trans-1,3-Dichloropropene	5	10 U	10 U
1,1,2-Trichloroethane	50	10 U	10 U
Tetrachloroethene	5	10 U	10 U
2-Hexanone	5	10 U	10 U
Dibromochloromethane	50	10 U	10 U
Chlorobenzene	5	10 U	10 U
Ethylbenzene	5	10 U	10 U
meta and/or para-Xylene	15	10 U	10 U
ortho-Xylene	15	10 U	10 U
Styrene	50	10 U	10 U
Bromoform	50	10 U	10 U
1,1,2,2-Tetrachlorethane	5	10 U	10 U

U - Compound was analyzed for but not detected
J - The concentration listed is an estimated value, which is less than the specified minimum detection limit but is greater than zero.
B - The analyte is found in the blanks as well as the sample.
C - Laboratory calibration requirements are not met.
NA - Not available
(1) - 6 NYCRR 703 Groundwater Standards

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 15

VALIDATED DATA SUMMARY
GROUNDWATER ANALYTICAL RESULTS FOR VOLATILE ORGANIC COMPOUNDS

Sample Location:	1S	1D	2D	2XD	3D	4S	4D	5S	5D	6S
Sample Designation:	FRC-1S-01	FRC-1D-01	FRC-2D-01	FRC-2XD-01	FRC-3D-01	FRC-4S-01	FRC-4D-01	FRC-5S-01	FRC-5D-01	FRC-6S-01
Sample Date:	12/3/92	12/3/92	12/3/92	12/2/92	12/2/92	12/2/92	12/2/92	12/2/92	12/2/92	12/10/92
Tentatively Identified Compounds (TICs) (Concentrations in ug /l)										
total unknowns	14J	5J	ND	ND	11J	ND	ND	ND	ND	ND
total unknown siloxanes	8J	14J	21J	18J	9J	ND	ND	49J	69J	47J
total unknown alkanes	9J	62J	ND	ND	ND	ND	ND	ND	ND	ND
total unknown branched alkanes	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
unknown cycloalkane	ND	11J	ND	ND	ND	ND	ND	ND	ND	ND
butane, 2-methoxy-2-methyl	ND	ND	ND	ND	55JN	ND	ND	ND	ND	ND
cyclotetrasiloxane, octamethyl	ND	ND	ND	18JN	ND	ND	ND	68JN	62JN	ND
cyclotrisiloxane, hexamethyl	ND	ND	ND	ND	ND	ND	ND	35JN	ND	ND

Sample Location:	6D	6D	7S	7D	8I	9S	9I	10S	10I	10D
Sample Designation:	FRC-6D-01	FRC-6D-01 DUP	FRC-7S-01	FRC-7D-01	FRC-8I-01	FRC-9S-01	FRC-9I-01	FRC-10S-01	FRC-10I-01	FRC-10D-01
Sample Date:	12/10/92	12/10/92	12/3/92	12/3/92	12/3/92	12/2/92	12/2/92	12/3/92	12/3/92	12/3/92
Tentatively Identified Compounds (TICs) (Concentrations in ug /l)										
total unknown siloxanes	ND	ND	24J	ND	ND	ND	ND	8J	ND	ND

Sample Location:	10D	11S	11I	MW12S		
Sample Designation:	FRC-10D-01 DUP	FRC-11S-01	FRC-11I-01	FRC-MW12S-01	FRC-TB-01	FRC-TB-921204
Sample Date:	12/3/92	12/4/92	12/4/92	12/7/92	---	---
Tentatively Identified Compounds (TICs) (Concentrations in ug /l)						
total unknowns	35J	ND	ND	ND	ND	ND
total unknown siloxanes	10J	ND	ND	10J	ND	ND

ND - Not detected
J - The concentration listed is an estimated value, which is less than the specified minimum detection limit but is greater than zero
N - Compound was analyzed for but not requested as an analyte

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 15

VALIDATED DATA SUMMARY
GROUNDWATER ANALYTICAL RESULTS FOR VOLATILE ORGANIC COMPOUNDS

Sample Location:	1S	1D	2S	2S	2XD	3S	3D	4S	4D	5S
Sample Designation:	FRC-1S-02	FRC-1D-02	FRC-2S-02	FRC-2S-02 DUP	FRC-2XD-02	FRC-3S-02	FRC-3D-02	FRC-4S-02	FRC-4D-02	FRC-5S-02
Sample Date:	3/1/93	3/1/93	3/1/93	3/1/93	3/1/93	2/25/93	2/26/93	2/26/93	2/26/93	3/1/93
Tentatively Identified Compounds (TICs) (concentrations in ug /l)										
total unknowns	4J	4J	ND	ND	ND	ND	34J	ND	ND	ND
total unknown siloxanes	ND	ND	ND	ND	ND	ND	ND	ND	10D	1J
total unknown alkanes	ND	ND	ND	ND	ND	ND	8J	ND	ND	ND
total unknown branched alkanes	39J	26J	ND	ND	ND	ND	ND	ND	ND	ND
unknown cycloalkane	ND	4J	ND	ND	ND	ND	ND	ND	ND	ND
unknown branched cycloalkane	ND	3J	ND	ND	ND	ND	ND	ND	ND	ND
unknown alkene	ND	ND	ND	ND	ND	ND	52J	ND	ND	ND
unknown branched alkene	2J	ND	ND	ND	ND	ND	4J	ND	ND	ND
total unknown cycloalkenes	8J	ND	ND	ND	ND	ND	ND	ND	ND	ND
total unknown alkylbenzenes	ND	4J	ND	ND	ND	ND	ND	ND	ND	ND
cyclotrisiloxane, hexamethyl	ND	ND	ND	ND	ND	ND	2JN	ND	ND	ND
unknown alchohol	ND	ND	ND	ND	ND	ND	4J	ND	ND	ND
unknown aromatic	3J	ND	ND	ND	ND	ND	ND	ND	ND	ND

Sample Location:	5D	6S	6D	7S	7D	8S	8I	9S	9I	10S
Sample Designation:	FRC-5D-02	FRC-6S-02	FRC-6D-02	FRC-7S-02	FRC-7D-02	FRC-8S-02	FRC-8I-02	FRC-9S-02	FRC-9I-02	FRC-10S-02
Sample Date:	3/1/93	3/1/93	3/1/93	3/1/93	3/1/93	2/26/93	2/26/93	2/26/93	2/26/93	2/26/93
Tentatively Identified Compounds (TICs) (Concentrations in ug /l)										
total unknowns	1J	ND	ND	ND	ND	ND	1J	ND	ND	ND
total unknown siloxanes	ND	ND	ND	ND	ND	ND	2J	ND	ND	ND
unknown alkene	ND	ND	ND	ND	ND	ND	1J	ND	ND	ND

Sample Location:	10I	10D	11S	11I	11I	11D	MW12S		
Sample Designation:	FRC-10I-02	FRC-10D-02	FRC-11S-02	FRC-11I-02	FRC-11I-02-D DUP	FRC-11D-02	FRC-MW12S-02	FRC-TB-02	FRC-930224
Sample Date:	2/26/93	2/26/93	2/24/93	2/24/93	2/24/93	2/24/93	3/1/93	---	---
Tentatively Identified Compounds (TICs) (Concentrations in ug /l)									
total unknowns	ND	ND	ND	ND	ND	1J	ND	ND	ND
total unknown siloxanes	ND	ND	ND	2J	1J	ND	ND	ND	ND
total unknown alkylbenzenes	ND	ND	ND	ND	ND	ND	4J	ND	ND
total unknown carboxylic acids	ND	ND	ND	ND	ND	ND	ND	110J	ND

ND - Not detected
J - The concentration listed is an estimated value, which is less than the specified minimum detection limit but is greater than zero
N - Compound was analyzed for but not requested as an analyte

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 16

VALIDATED DATA SUMMARY
GROUNDWATER ANALYTICAL RESULTS FOR SEMIVOLATILE ORGANIC COMPOUNDS

Sample Location:	Groundwater	1S	1D	2S	2D	2XD	3S	3D	4S	4D
Sample Designation:	Standards	FRC-1S-01	FRC-1D-01	FRC-2S-01	FRC-2D-01	FRC-2XD-01	FRC-3S-01	FRC-3D-01	FRC-4S-01	FRC-4D-01
	(1)									
Sample Date:		12/3/92	12/3/92	12/3/92	12/3/92	12/2/92	12/2/92	12/2/92	12/2/92	12/2/92
Parameter: (Concentrations in ug/l										
Phenol		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
bis(2-Chlorophenol)ether		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
2-Chlorophenol		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
1,3-Dichlorobenzene		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
1,4-Dichlorobenzene		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
1,2-Dichlorobenzene		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
2-Methylphenol		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
2,2'-oxybis(1-Chloropropane)		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
4-Methylphenol		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
N-Nitroso-di-n-propylamine		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
Hexachloroethane		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
Nitrobenzene		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
Isophorone		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
2-Nitrophenol		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
2,4-Dimethylphenol		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
bis(2-Chloroethoxy)methane		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
2,4-Dichlorophenol		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
1,2,4-Trichlorobenzene		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
Naphthalene		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
4-Chloroaniline		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
Hexachlorobutadiene		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
4-Chloro-3-methylphenol		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
2-Methylnaphthalene		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
Hexachlorocyclopentadiene		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
2,4,6-Trichlorophenol		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
2,4,5-Trichlorophenol		27 U	25 U	26 U	26 U	26 U	26 U	25 U	26 UC	25 U
2-Chloronaphthalene		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
2-Nitroaniline		27 U	25 U	26 U	26 U	26 U	26 U	25 U	26 UC	25 U
Dimethylphthalate		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
Acenaphthylene		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
2,6-Dinitrotoluene		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
3-Nitroaniline		27 U	25 U	26 U	26 U	26 U	26 U	25 U	26 UC	25 U
Acenaphthene		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U

U - Compound was analyzed for but not detected

J - The concentration listed is an estimated value, which is less than the specified detection limit but is greater than zero

C - Laboratory calibration requirements are not met.

(1) - 6 NYCRR 703 Groundwater Standards. The standard is listed only if the compound was detected.

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 16

VALIDATED DATA SUMMARY
GROUNDWATER ANALYTICAL RESULTS FOR SEMIVOLATILE ORGANIC COMPOUNDS

Sample Location:	Groundwater	1S	1D	2S	2D	2XD	3S	3D	4S	4D
Sample Designation:	Standards	FRC-1S-01	FRC-1D-01	FRC-2S-01	FRC-2D-01	FRC-2XD-01	FRC-3S-01	FRC-3D-01	FRC-4S-01	FRC-4D-01
	(1)									
Sample Date:		12/3/92	12/3/92	12/3/92	12/3/92	12/2/92	12/2/92	12/2/92	12/2/92	12/2/92
Parameter: (Concentrations in ug/l										
2,4-Dinitrophenol		27 U	25 U	26 U	26 U	26 U	26 U	25 U	26 UC	25 U
4-Nitrophenol		27 U	25 U	26 U	26 U	26 U	26 U	25 U	26 UC	25 U
Dibenzofuran		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
2,4-Dinitrotoluene		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
Diethylphthalate	50*	0.2JB	0.5JB	0.3JB	0.2JB	0.3JB	0.3JB	0.4JB	0.3JB	0.3JB
4-Chlorophenyl-phenylether		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
Flourene		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
4-Nitroaniline		27 U	25 U	26 U	26 U	26 U	26 U	26 U	26 UC	25 U
4,6-Dinitro-2-methylphenol		27 U	25 U	26 U	26 U	26 U	26 U	26 U	26 UC	25 U
N-Nitrosodiphenylamine		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
4-Bromophenyl-phenylether		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
Hexachlorobenzene		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
Pentachlorophenol		27 U	25 U	26 U	26 U	26 U	26 U	26 U	26 UC	25 U
Phenanthrene		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
Anthracene		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
Carbazole		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
Di-n-butylphthalate	NA	11 U	0.6JB	0.2JB	0.2JB	1JB	0.5JB	0.4JB	0.4JB	0.5JB
Fluoranthene	50*	11 U	10 U	0.2J	10 U	10 U	10 U	10 U	10 UC	10 U
Pyrene		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
Butylbenzylphthalate	50*	11 U	0.2J	0.3J	10 U	0.2J	10 U	10 U	10 UC	10 U
3,3'-Dichlorobenzidine		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
Benzo(a)anthracene		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
Chrysene		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
bis(2-Ethylhexyl)phthalate	50	0.7JB	1JB	1JB	2JB	3JB	0.4JB	0.5JB	0.6JB	2JB
Di-n-octylphthalate		11 U	10 U	10 U	2JB	0.2J	10 U	10 U	10 UC	10 U
Benzo(b)fluoranthene		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
Benzo(k)fluoranthene		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
Benzo(a)pyrene		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
Indeno(1,2,3-cd)pyrene		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
Dibenzo(a,h)anthracene		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U
Benzo(g,h,i)perylene		11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UC	10 U

U - Compound was analyzed for but not detected

J - The concentration listed is an estimated value, which is less than the specified detection limit but is greater than zero.

C - Laboratory calibration requirements are not met.

B - The analyte is found in the blanks as well as the sample

NA - Not Applicable

(1) - 6 NYCRR 703 Groundwater Standards. The standard is listed only if the compound was detected.

* - 6 NYCRR 703 Groundwater Guidance Values.

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 16

VALIDATED DATA SUMMARY
GROUNDWATER ANALYTICAL RESULTS FOR SEMIVOLATILE ORGANIC COMPOUNDS

Sample Location:	Groundwater	5D	6S	6D	6D	7S	7D	8S	8i	9S
Sample Designation:	Standards	FRC-5D-01	FRC-6S-01	FRC-6D-01	FRC-6D-01 DUP	FRC-7S-01	FRC-7D-01	FRC-8S-01	FRC-8I-01	FRC-9S-01
Sample Date:	(1)	12/2/92	12/3/92	12/10/92	12/10/92	12/3/92	12/3/92	12/2/92	12/2/92	12/3/92
Parameter: (Concentrations in ug/l										
Phenol		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chlorophenol)ether		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Methylphenol		10 U	10 U	11 U	10 U	10 U	0.2J	10 U	10 U	10 U
2,2'-oxybis(1-Chloropropane)		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methylphenol		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
N-Nitroso-di-n-propylamine		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachloroethane		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Nitrobenzene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Isophorone	50*	10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethoxy)methane		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-methylphenol		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol		25 U	26 U	28 U	26 U	26 U	26 U	26 U	26 U	26 U
2-Chloronaphthalene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline		25 U	26 U	28 U	26 U	26 U	26 U	26 U	26 U	26 U
Dimethylphthalate		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Acenaphthylene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
3-Nitroaniline		25 U	26 U	28 U	26 U	26 U	26 U	26 U	26 U	26 U
Acenaphthene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U

U - Compound was analyzed for but not detected
J - The concentration listed is an estimated value, which is less than the specified detection limit but is greater than zero.
C - Laboratory calibration requirements are not met.
(1) - 6 NYCRR 703 Groundwater Standards. The standard is listed only if the compound was detected.

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 16

VALIDATED DATA SUMMARY
GROUNDWATER ANALYTICAL RESULTS FOR SEMIVOLATILE ORGANIC COMPOUNDS

Sample Location:	Groundwater	5D	6S	6D	6D	7S	7D	8S	8I	9S
Sample Designation:	Standards	FRC-5D-01	FRC-6S-01	FRC-6D-01	FRC-6D-01	FRC-7S-01	FRC-7D-01	FRC-8S-01	FRC-8I-01	FRC-9S-01
	(1)				DUP					
Sample Date:		12/2/92	12/3/92	12/10/91	12/10/92	12/3/92	12/3/92	12/2/92	12/2/92	12/3/92
Parameter: (Concentrations in ug/l										
2,4-Dinitrophenol		26 U	26 U	28 U	26 U	26 U	26 U	26 U	26 U	26 U
4-Nitrophenol		26 U	26 U	28 U	26 U	26 U	26 U	26 U	26 U	26 U
Dibenzofuran		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Diethylphthalate	50*	0.2JB	0.4JB	11 U	10 U	0.2JB	0.7JB	0.5JB	0.5JB	0.2JB
4-Chlorophenyl-phenylether		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Flourene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Nitroaniline		26 U	26 U	28 U	26 U	26 U	26 U	26 U	26 U	26 U
4,6-Dinitro-2-methylphenol		26 U	26 U	28 U	26 U	26 U	26 U	26 U	26 U	26 U
N-Nitrosodiphenylamine		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Bromophenyl-phenylether		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobenzene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol		26 U	26 U	28 U	26 U	26 U	26 U	26 U	26 U	26 U
Phenanthrene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Anthracene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbazole		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-butylphthalate	NA	0.6JB	0.4JB	1J	1J	10 U	1JB	0.8JB	0.7JB	0.2JB
Fluoranthene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Pyrene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Butylbenzylphthalate	50*	0.2J	10 U	11 U	10 U	10 U	10 U	0.2J	10 U	10 U
3,3'-Dichlorobenzidine		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)anthracene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Ethylhexyl)phthalate	50	2JB	1JB	1J	3J	0.8JB	2JB	0.5JB	2JB	0.8JB
Di-n-octylphthalate	50*	10 U	10 U	0.1J	10 U	10 U	10 U	10 U	0.1J	10 U
Benzo(b)fluoranthene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibenzo(a,h)anthracene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U

U - Compound was analyzed for but not detected

J - The concentration listed is an estimated value, which is less than the specified detection limit but is greater than zero.

C - Laboratory calibration requirements are not met.

B - The analyte is found in the blanks as well as the sample

NA - Not Applicable

(1) - 6 NYCRR 703 Groundwater Standards. The standard is listed only if the compound was detected.

* - 6 NYCRR 703 Groundwater Guidance Values

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN R
EAST FARMINGDALE, NEW YORK

TABLE 16

VALIDATED DATA SUMMARY
GROUNDWATER ANALYTICAL RESULTS FOR SEMIVOLATILE ORGANIC COMPOUNDS

Sample Location:	Groundwater	10S	10I	10D	10D	11S	11I	11D	MW12S	
Sample Designation:	Standards	FRC-10S-01	FRC-10I-01	FRC-10D-01	FRC-10D-01 DUP	FRC-11S-01	FRC-11I-01	FRC-11D-01	FRC-MW12S-01	FRC-RB-01
Sample Date:	(1)	12/3/92	12/3/92	12/3/92	12/3/92	12/4/92	12/4/92	12/3/92	12/7/92	12/7/92
Parameter: (Concentrations in ug/l										
Phenol		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chlorophenol)ether		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Methylphenol	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,2'-oxybis(1-Chloropropane)		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methylphenol		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
N-Nitroso-di-n-propylamine		10 U	10 U	10 U	10 U	10 U	10 U	10 U	0.3J	10 U
Hexachloroethane		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Nitrobenzene		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Isophorone		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethoxy)methane		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline		10 U	10 U	10 U	10 U	10 U	10 U	10 U	4J	0.9J
Hexachlorobutadiene		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-methylphenol		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene		10 U	10 U	10 U	10 U	10 U	10 U	10 U	5J	10 U
2,4,6-Trichlorophenol		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol		26 U	26 U	26 U	26 U	26 U	26 U	26 U	25 U	25 U
2-Chloronaphthalene		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline		26 U	26 U	26 U	26 U	26 U	26 U	26 U	25 U	25 U
Dimethylphthalate		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acenaphthylene	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U	0.3J	10 U
2,6-Dinitrotoluene		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
3-Nitroaniline		26 U	26 U	26 U	26 U	26 U	26 U	26 U	25 U	25 U
Acenaphthene	20	10 U	10 U	10 U	10 U	10 U	10 U	10 U	7J	10 U

U - Compound was analyzed for but not detected.
J - The concentration listed is an estimated value, which is less than the specified detection limit but is greater than zero.
C - Laboratory calibration requirements are not met.
NA - Not Applicable
(1) - 6 NYCRR 703 Groundwater Standards. The standard is listed only if the compound was detected.
* - 6 NYCRR 703 Groundwater Guidance Values.

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 16

VALIDATED DATA SUMMARY
GROUNDWATER ANALYTICAL RESULTS FOR SEMIVOLATILE ORGANIC COMPOUNDS

Sample Location:	Groundwater	1S	1D	2S	2S	2D	2XD	3S	3D	4S
Sample Designation:	Standards	FRC-1S-02	FRC-1D-02	FRC-2S-02	FRC-2S-02	FRC-2D-02	FRC-2XD-02	FRC-3S-02	FRC-3D-02	FRC-4S-02
	(1)			DUP						
Sample Date:		3/1/93	3/1/93	3/1/93	3/1/93	3/1/93	3/1/93	2/25/93	2/26/93	2/26/93
Parameter: (Concentrations in ug/l										
Phenol		10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethyl)ether		10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol		10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene		10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene		10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene		10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U
2-Methylphenol		10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U
N-Nitroso-di-n-propylamine		10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U
Hexachloroethane		10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U
Nitrobenzene		10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U
Isophorone		10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol		10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol		10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethoxy)methane		10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol		10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene		10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U
Naphthalene		10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline		10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene		10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-methylphenol		10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene		10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene		10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol		10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol		26 U	26 U	26 U	28 U	26 U	25 U	26 U	26 U	26 U
2-Chloronaphthalene		10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline		26 U	26 U	26 U	28 U	26 U	25 U	26 U	26 U	26 U
Dimethylphthalate		10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U
Acenaphthylene		10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene		10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U
3-Nitroaniline		26 U	26 U	26 U	28 U	26 U	25 U	26 U	26 U	26 U
Acenaphthene		10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U

U - Compound was analyzed for but not detected

(1) - 6 NYCRR 703 Groundwater Standards. The standard is listed only if the compound was detected.

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 16

VALIDATED DATA SUMMARY
GROUNDWATER ANALYTICAL RESULTS FOR SEMIVOLATILE ORGANIC COMPOUNDS

Sample Location:	Groundwater	10S	10I	10D	10D	11S	11I	11D	MW12S	
Sample Designation:	Standards	FRC-10S-01	FRC-10I-01	FRC-10D-01	FRC-10D-01-DUP	FRC-11S-01	FRC-11I-01	FRC-11D-01	FRC-MW12S-01	FRC-RB-01
	(1)									
Sample Date:		12/3/92	12/3/92	12/3/92	12/3/92	12/4/92	12/4/92	12/3/92	12/7/92	12/7/92
Parameter: (Concentrations in ug/l										
2,4-Dinitrophenol		26 U	26 U	26 U	26 U	26 U	26 U	26 U	25 U	25 U
4-Nitrophenol		26 U	26 U	26 U	26 U	26 U	26 U	26 U	25 U	25 U
Dibenzofuran		10 U	10 U	10 U	10 U	10 U	10 U	10 U	3 J	10 U
2,4-Dinitrotoluene		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Diethylphthalate	50*	0.4JB	0.3JB	0.3JB	0.5JB	0.1JB	0.5JB	0.3JB	10 U	10 U
4-Chlorophenyl-phenylether		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Flourene	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	6J	10 U
4-Nitroaniline		26 U	26 U	26 U	26 U	26 U	26 U	26 U	25 U	25 U
4,6-Dinitro-2-methylphenol		26 U	26 U	26 U	26 U	26 U	26 U	26 U	25 U	25 U
N-Nitrosodiphenylamine		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Bromophenyl-phenylether		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol		26 U	26 U	26 U	26 U	26 U	26 U	26 U	25 U	25 U
Phenanthrene	50*	10 U	10 U	10 U	0.1J	10 U	10 U	10 U	3J	10 U
Anthracene	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	0.5J	10 U
Carbazole	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U	1J	10 U
Di-n-butylphthalate	50	0.5JB	0.3JB	0.3JB	0.4JB	0.3JB	0.5JB	0.4JB	0.4JB	10 U
Fluoranthene	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	1J	10 U
Pyrene	50*	10 U	10 U	10 U	0.1J	10 U	10 U	10 U	0.9J	10 U
Butylbenzylphthalate	50*	10 U	0.3J	10 U	10 U	10 U	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)anthracene		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	0.002*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	0.6J	10 U
bis(2-Ethylhexyl)phthalate	50	1JB	3JB	1JB	3JB	1JB	1JB	0.8JB	2JB	2J
Di-n-octylphthalate	50*	10 U	2J	1J	2J	10 U	1JB	0.4JB	10 U	10 U
Benzo(b)fluoranthene	0.002*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	0.5J	10 U
Benzo(k)fluoranthene	0.002*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	0.6J	10 U
Benzo(a)pyrene	ND	10 U	10 U	10 U	10 U	10 U	10 U	10 U	0.6J	10 U
Indeno(1,2,3-cd)pyrene	0.002*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	0.2J	10 U
Dibenzo(a,h)anthracene		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U	0.6J	10 U

U - Compound was analyzed for but not detected
J - The concentration listed is an estimated value, which is less than the specified detection limit but is greater than zero.
C - Laboratory calibration requirements are not met.
B - The analyte is found in the blanks as well as the sample
NA - Not Applicable
(1) - 6 NYCRR 703 Groundwater Standards The standard is listed only if the compound was detected.
* - 6 NYCRR 703 Groundwater Guidance Values.

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 16

VALIDATED DATA SUMMARY
GROUNDWATER ANALYTICAL RESULTS FOR SEMIVOLATILE ORGANIC COMPOUNDS

Sample Location:	Groundwater	1S	1D	2S	2S	2D	2XD	3S	3D	4S
Sample Designation:	Standards	FRC-1S-02	FRC-1D-02	FRC-2S-02	FRC-2S-02 DUP	FRC-2D-02	FRC-2XD-02	FRC-3S-02	FRC-3D-02	FRC-4S-02
	(1)									
Sample Date:		3/1/93	3/1/93	3/1/93	3/1/93	3/1/93	3/1/93	2/25/93	2/26/93	2/26/93
Parameter: (Concentrations in ug/l										
2,4-Dinitrophenol		10 U	26 U	28 U	26 U	26 U	25 U	26 U	10 U	26 U
4-Nitrophenol		26 U	26 U	28 U	26 U	26 U	25 U	26 U	10 U	26 U
Dibenzofuran		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Diethylphthalate	50*	10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl-phenylether		10 U	10 U	11 U	10 U	10 U	0.2J	10 U	10 U	10 U
Fluorene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Nitroaniline		26 U	26 U	28 U	26 U	26 U	25 U	26 U	10 U	26 U
4,6-Dinitro-2-methylphenol		26 U	26 U	28 U	26 U	26 U	25 U	26 U	10 U	26 U
N-Nitrosodiphenylamine(1)		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Bromophenyl-phenylether		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobenzene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol		26 U	26 U	28 U	26 U	26 U	25 U	26 U	10 U	26 U
Phenanthrene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Anthracene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbazole		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-butylphthalate	NA	0.4JB	0.4JB	0.4JB	10 U	10 U	0.5JB	0.5JB	0.6JB	0.6JB
Fluoranthene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Pyrene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Butylbenzylphthalate	50*	0.2JB	0.2JB	0.1JB	0.4JB	10 U	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	0.3J
Benzo(a)anthracene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Ethylhexyl)phthalate	50	0.5JB	0.8JB	1.2JB	0.8JB	0.7JB	0.2JB	0.6JB	0.7JB	0.8JB
Di-n-octylphthalate	50*	0.2J	10 U	11 U	10 U	10 U	10 U	10 U	10 U	0.4J
Benzo(b)fluoranthene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibenzo(a,h)anthracene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U

U - Compound was analyzed for but not detected

J - The concentration listed is an estimated value, which is less than the specified detection limit but is greater than zero.

B - The analyte is found in the blanks as well as the sample

NA - Not Applicable

(1) - 6 NYCRR 703 Groundwater Standards. The standard is listed only if the compound was detected.

* - 6 NYCRR 703 Groundwater Guidance Values.

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 16

VALIDATED DATA SUMMARY
GROUNDWATER ANALYTICAL RESULTS FOR SEMIVOLATILE ORGANIC COMPOUNDS

Sample Location:	Groundwater	5S	5D	6S	6D	7S	7D	8S	8I	9S
Sample Designation:	Standards	FRC-5S-02	FRC-5D-02	FRC-6S-02	FRC-6D-02	FRC-7S-02	FRC-7D-02	FRC-8S-02	FRC-8I-02	FRC-9S-02
Sample Date:	(1)	3/1/93	3/1/93	3/1/93	3/1/93	3/1/93	3/1/93	2/26/93	2/26/93	2/26/93
Parameter: (Concentrations in ug/l										
Phenol		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethyl)ether		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	5	10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Methylphenol		10 U	10 U	11 U	10 U	10 U	0.2J	10 U	10 U	10 U
N-Nitroso-di-n-propylamine		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachloroethane		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Nitrobenzene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Isophorone	50*	10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethoxy)methane		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-methylphenol		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol		26 U	26 U	28 U	26 U	26 U	26 U	26 U	26 U	26 U
2-Chloronaphthalene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline		26 U	26 U	28 U	26 U	26 U	26 U	26 U	26 U	26 U
Dimethylphthalate		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Acenaphthylene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
3-Nitroaniline		26 U	26 U	28 U	26 U	26 U	26 U	26 U	26 U	26 U
Acenaphthene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U

U - Compound was analyzed for but not detected
J - The concentration listed is an estimated value, which is less than the specified detection limit but is greater than zero.
(1) - 6 NYCRR 703 Groundwater Standards. The standard is listed only if the compound was detected.
* - 6 NYCRR 703 Groundwater Guidance Values

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 16

VALIDATED DATA SUMMARY
GROUNDWATER ANALYTICAL RESULTS FOR SEMIVOLATILE ORGANIC COMPOUNDS

Sample Location:	Groundwater	5S	5D	6S	6D	7S	7D	8S	8I	9S
Sample Designation:	Standards	FRC-5S-02	FRC-5D-02	FRC-6S-02	FRC-6D-02	FRC-7S-02	FRC-7D-02	FRC-8S-02	FRC-8I-02	FRC-9S-02
	(1)									
Sample Date:		3/1/93	3/1/93	3/1/93	3/1/93	3/1/93	3/1/93	2/26/93	2/26/93	2/26/93
Parameter: (Concentrations in ug/l										
2,4-Dinitrophenol		26 U	26 U	28 U	26 U	26 U	26 U	10 U	10 U	10 U
4-Nitrophenol		26 U	26 U	28 U	26 U	26 U	26 U	10 U	10 U	10 U
Dibenzofuran		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Diethylphthalate	50*	10 U	0.6J	11 U	10 U	0.6J	2J	0.3J	0.3J	10 U
4-Chlorophenyl-phenylether		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Fluorene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Nitroaniline		26 U	26 U	28 U	26 U	26 U	26 U	10 U	10 U	10 U
4,6-Dinitro-2-methylphenol		26 U	26 U	28 U	26 U	26 U	26 U	10 U	10 U	10 U
N-Nitrosodiphenylamine(1)		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Bromophenyl-phenylether		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobenzene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol	1	26 U	26 U	28 U	26 U	26 U	26 U	10 U	10 U	10 U
Phenanthrene	50*	10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Anthracene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbazole		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-butylphthalate	NA	0.6JB	0.6JB	11 U	10 U	0.6JB	0.3JB	0.5JB	0.5JB	0.4JB
Fluoranthene	50*	10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Pyrene	50*	10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Butylbenzylphthalate	50*	10 U	10 U	11 U	10 U	0.4JB	0.2JB	10 U	10 U	0.1J
3,3'-Dichlorobenzidine		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)anthracene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Ethylhexyl)phthalate	50	0.7JB	2JB	0.6JB	0.3JB	0.8JB	1JB	0.3JB	1JB	0.5JB
Di-n-octylphthalate	NA	10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibenzo(a,h)anthracene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene		10 U	10 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U

U - Compound was analyzed for but not detected.
J - The concentration listed is an estimated value, which is less than the specified detection limit but is greater than zero.
B - The analyte is found in the blanks as well as the sample.
NA - Not Applicable
(1) - 6 NYCRR 703 Groundwater Standards. The standard is listed only if the compound was detected.
* - 6 NYCRR 703 Groundwater Guidance Values.

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 16

VALIDATED DATA SUMMARY
GROUNDWATER ANALYTICAL RESULTS FOR SEMIVOLATILE ORGANIC COMPOUNDS

Sample Location:	Groundwater	10S	10I	10D	11S	11I	11I	11D	MW-12S
Sample Designation:	Standards	FRC-10S-02	FRC-10I-02	FRC-10D-02	FRC-11S-02	FRC-11I-02	FRC-11I-02 DUP	FRC-11D-02	FRC-MW12S-02
Sample Date:	(1)	2/26/93	2/26/93	2/26/93	2/24/93	2/24/93	2/24/93	2/24/93	3/1/93
Parameter: (Concentrations in ug/l)									
Phenol		10 U	10 UC	10 U	11 U	11 U	10 U	10 U	10 U
bis(2-Chloroethyl)ether		10 U	10 UC	10 U	11 U	11 U	10 U	10 U	10 U
2-Chlorophenol		10 U	10 UC	10 U	11 U	11 U	10 U	10 U	10 U
1,3-Dichlorobenzene		10 U	10 UC	10 U	11 U	11 U	10 U	10 U	10 U
1,4-Dichlorobenzene		10 U	10 UC	10 U	11 U	11 U	10 U	10 U	10 U
1,2-Dichlorobenzene		10 U	10 UC	10 U	11 U	11 U	10 U	10 U	10 U
2-Methylphenol		10 U	10 UC	10 U	11 U	11 U	10 U	10 U	10 U
N-Nitroso-di-n-propylamine		10 U	10 UC	10 U	11 U	11 U	10 U	10 U	10 U
Hexachloroethane		10 U	10 UC	10 U	11 U	11 U	10 U	10 U	10 U
Nitrobenzene		10 U	10 UC	10 U	11 U	11 U	10 U	10 U	10 U
Isophorone		10 U	10 UC	10 U	11 U	11 U	10 U	10 U	10 U
2-Nitrophenol		10 U	10 UC	10 U	11 U	11 U	10 U	10 U	10 U
2,4-Dimethylphenol		10 U	10 UC	10 U	11 U	11 U	10 U	10 U	10 U
bis(2-Chloroethoxy)methane		10 U	10 UC	10 U	11 U	11 U	10 U	10 U	10 U
2,4-Dichlorophenol		10 U	10 UC	10 U	11 U	11 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene		10 U	10 UC	10 U	11 U	11 U	10 U	10 U	10 U
Naphthalene	10	10 U	10 UC	10 U	11 U	11 U	10 U	10 U	10 U
4-Chloroaniline		10 U	10 UC	10 U	11 U	11 U	10 U	10 U	10 U
Hexachlorobutadiene		10 U	10 UC	10 U	11 U	11 U	10 U	10 U	2J
4-Chloro-3-methylphenol		10 U	10 UC	10 U	11 U	11 U	10 U	10 U	10 U
2-Methylnaphthalene	NA	10 U	10 UC	10 U	11 U	11 U	10 U	10 U	10 U
Hexachlorocyclopentadiene		10 U	10 UC	10 U	11 U	11 U	10 U	10 U	10 U
2,4,6-Trichlorophenol		10 U	10 UC	10 U	11 U	11 U	10 U	10 U	4J
2,4,5-Trichlorophenol		26 U	26 UC	26 U	28 U	28 U	26 U	26 U	26 U
2-Chloronaphthalene		10 U	10 UC	10 U	11 U	11 U	10 U	10 U	10 U
2-Nitroaniline		26 U	26 UC	26 U	28 U	28 U	26 U	26 U	26 U
Dimethylphthalate		10 U	10 UC	10 U	11 U	11 U	10 U	10 U	10 U
Acenaphthylene	NA	10 U	10 UC	10 U	11 U	11 U	10 U	10 U	10 U
2,6-Dinitrotoluene		10 U	10 UC	10 U	11 U	11 U	10 U	10 U	0.2J
3-Nitroaniline		26 U	26 UC	26 U	28 U	28 U	26 U	26 U	26 U
Acenaphthene	20	10 U	10 UC	10 U	11 U	11 U	10 U	10 U	5J

U - Compound was analyzed for but not detected.
J - The concentration listed is an estimated value, which is less than the specified detection limit but is greater than zero.
C - Laboratory calibration requirements are not met.
NA - Not Applicable
(1) - 6 NYCRR 703 Groundwater Standards. The standard is listed only if the compound was detected.

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 16

VALIDATED DATA SUMMARY
GROUNDWATER ANALYTICAL RESULTS FOR SEMIVOLATILE ORGANIC COMPOUNDS

Sample Location:	Groundwater	10S	10I	10D	11S	11I	11I	11D	MW-12S
Sample Designation:	Standards	FRC-10S-02	FRC-10I-02	FRC-10D-02	FRC-11S-02	FRC-11I-02	FRC-11I-02	FRC-11D-02	FRC-MW12S-02
	(1)						DUP		O2
Sample Date:		2/26/93	2/26/93	2/26/93	2/24/93	2/24/93	2/24/93	2/24/93	3/1/93
Parameter: (Concentrations in ug/l									
4-Nitrophenol		26 U	26 UC	26 U	28 U	28 U	26 U	26 U	26 U
Dibenzofuran		10 U	10 U	10 U	11 U	11 U	10 U	10 U	2J
2,4-Dinitrotoluene		10 U	10 U	10 U	11 U	11 U	10 U	10 U	10 U
Diethylphthalate	50*	10 U	0.2J	0.3J	11 U	0.4J	10 U	0.6J	2J
4-Chlorophenyl-phenylether		10 U	10 U	10 U	11 U	11 U	10 U	10 U	10 U
Fluorene	50*	10 U	10 U	10 U	11 U	11 U	10 U	10 U	4J
4-Nitroaniline		26 U	26 U	26 U	28 U	28 U	26 U	26 U	26 U
4,6-Dinitro-2-methylphenol		26 U	26 U	26 U	28 U	28 U	26 U	26 U	26 U
N-Nitrosodiphenylamine	50*	10 U	10 U	10 U	11 U	11 U	10 U	10 U	0.3J
4-Bromophenyl-phenylether		10 U	10 U	10 U	11 U	11 U	10 U	10 U	10 U
Hexachlorobenzene		10 U	10 U	10 U	11 U	11 U	10 U	10 U	10 U
Pentachlorophenol		26 U	26 U	26 U	28 U	28 U	26 U	26 U	26 U
Phenanthrene	50*	10 U	10 U	10 U	11 U	11 U	10 U	10 U	2J
Anthracene		10 U	10 U	10 U	11 U	11 U	10 U	10 U	0.3J
Carbazole		10 U	10 U	10 U	11 U	11 U	10 U	10 U	0.7J
Di-n-butylphthalate	NA	0.6JB	0.7JB	0.7JB	0.6JB	0.6JB	1JB	0.7JB	0.4JB
Fluoranthene	50*	10 U	10 U	10 U	11 U	11 U	10 U	0.4J	0.9J
Pyrene	50*	10 U	10 U	10 U	11 U	11 U	10 U	10 U	0.7J
Butylbenzylphthalate	50*	10 U	0.4J	0.5J	11 U	0.4J	0.4J	0.6J	10 U
3,3'-Dichlorobenzidine		10 U	10 U	10 U	11 U	11 U	10 U	10 U	10 U
Benzo(a)anthracene		10 U	10 U	10 U	11 U	11 U	10 U	10 U	10 U
Chrysene	0.002*	10 U	0.2J	10 U	11 U	11 U	10 U	10 U	0.4J
bis(2-Ethylhexyl)phthalate	50	0.7JB	1JB	3JB	3 JB	2JB	3JB	5JB	0.6JB
Di-n-octylphthalate	50*	10 U	0.4J	0.4J	11 U	11 U	10 U	10 U	10 U
Benzo(b)fluoranthene	0.002*	10 U	0.4J	10 U	11 U	11 U	10 U	10 U	0.3J
Benzo(k)fluoranthene	0.002*	10 U	0.3J	10 U	11 U	11 U	10 U	10 U	0.3J
Benzo(a)pyrene	ND	10 U	0.4J	10 U	11 U	11 U	10 U	10 U	0.3J
Indeno(1,2,3-cd)pyrene		10 U	10 U	10 U	11 U	11 U	10 U	10 U	10 U
Dibenzo(a,h)anthracene		10 U	10 U	10 U	11 U	11 U	10 U	10 U	10 U
Benzo(g,h,i)perylene		10 U	10 U	10 U	11 U	11 U	10 U	10 U	10 U

U - Compound was analyzed for but not detected
J - The concentration listed is an estimated value, which is less than the specified detection limit but is greater than zero.
C - Laboratory calibration requirements are not met.
B - The analyte is found in the blanks as well as the sample
NA - Not Applicable
ND - Not Detected
(I) - 6 NYCRR 703 Groundwater Standards. The standard is listed only if the compound was detected.
* - 6 NYCRR 703 Groundwater Guidance Values.

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 16

VALIDATED DATA SUMMARY
GROUNDWATER ANALYTICAL RESULTS FOR SEMIVOLATILE ORGANIC COMPOUNDS

Sample Location:	1S	1D	2S	2D	2XD	3S	3D	4S	4D	5S
Sample Designation:	FRC-1S-01	FRC-1D-01	FRC-2S-01	FRC-2D-01	FRC-2XD-01	FRC-3S-01	FRC-3D-01	FRC-4S-01	FRC-4D-01	FRC-5S-01
Sample Date:	12/3/92	12/3/92	12/3/92	12/3/92	12/2/92	12/2/92	12/2/92	12/2/92	12/2/92	12/2/92
Tentatively Identified Compounds (TICs): (Concentrations in ug/l)										
Total unknown	3J	9J	ND	ND	9J	ND	ND	ND	120J	8J
Hexanoic acid, 6-amino	ND	ND	ND	ND	45JN	35JN	100JN	41JN	ND	ND
Unknown acid	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Unknown C8H18)3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Unknown phthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene sulfonamide, 2-methyl	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total unknown alkane	ND	4J	9J	ND	47J	ND	8J	ND	ND	20J
Unknown amide	ND	5J	ND	ND	ND	ND	ND	ND	2J	ND
Phenol, 4,4-butylidenebis[2-(1,1-	ND	ND	ND	ND	ND	ND	ND	ND	ND	7JN
Hexanedioic acid, dioctyl ester	ND	ND	3JN	4JN	ND	ND	ND	ND	ND	ND
Ethanol, 2-butoxy, phosphate	ND	ND	ND	2JN	ND	ND	ND	ND	ND	ND
Unknown C11H14	ND	2J	ND	ND	ND	ND	ND	ND	ND	ND

Sample Location:	5D	6S	6D	6D	7S	7D	8S	8I	9S	9I
Sample Designation:	FRC-5D-01	FRC-6S-01	FRC-6D-01	FRC-6D-01 DUP	FRC-7S-01	FRC-7D-01	FRC-8S-01	FRC-8I-01	FRC-9S-01	FRC-9I-01
Sample Date:	12/2/92	12/3/92	12/10/92	12/10/92	12/3/92	12/3/92	12/2/92	12/2/92	12/3/92	12/3/92
Tentatively Identified Compounds (TICs): (Concentrations in ug/l)										
Total unknown	15J	3J	ND	ND	ND	6J	2J	21J	ND	268J
Hexanoic acid, 6-amino	78JN	ND	ND	ND	ND	ND	38JN	42JN	15JN	19JN
Total unknown acid	ND	ND	ND	ND	ND	ND	ND	8J	ND	6J
Unknown C8H18)3	ND	ND	ND	ND	ND	ND	ND	ND	ND	6J
Unknown phthalate	ND	ND	ND	ND	ND	ND	3J	ND	ND	12J
Benzene sulfonamide, 2-methyl	ND	ND	ND	ND	ND	ND	ND	ND	ND	12JN
Total unknown alkane	29J	ND	ND	ND	ND	36J	ND	19J	ND	3J
Unknown alcohol	ND	ND	ND	ND	ND	ND	3J	ND	ND	ND
3-penten-2-one, 4-methyl	ND	ND	ND	ND	ND	ND	3JN	ND	ND	ND
Unknown amide	3J	ND	ND	ND	ND	6J	ND	ND	ND	ND
Phenol, 4,4-butylidenebis[2-(1,1-	2JN	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexanedioic acid, dioctyl ester	ND	ND	ND	ND	2JN	ND	ND	ND	ND	ND

ND - Not Detected

J - The concentration listed is an estimated value, which is less than the specified detection limit but is greater than zero.

N - Indicates that the compound was analyzed for but not requested as an analyte. Value will no be listed on a tabular result sheet.

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 16

VALIDATED DATA SUMMARY
GROUNDWATER ANALYTICAL RESULTS FOR SEMIVOLATILE ORGANIC COMPOUNDS

Sample Location:	10S	10I	10D	10D	11S	11I	11D	MW12S		
Sample Designation:	FRC-10S-01	FRC-10I-01	FRC-10D-01	FRC-10D-01 DUP	FRC-11S-01	FRC-11I-01	FRC-11D-01	FRC-MW12S-01	FRC-RB-01	FRC-RB-1
Sample Date:	12/3/92	12/3/92	12/3/92	12/3/92	12/4/92	12/4/92	12/3/92	12/7/92	12/7/92	12/3/92
Tentatively Identified Compounds (TICs): (Concentrations in ug/l)										
Ethanol, 2-butoxy-	ND	ND	ND	ND	ND	ND	ND	ND	5JN	ND
Total unknown	ND	6J	22J	57J	ND	ND	9J	12J	7J	46J
Unknown amide	ND	ND	ND	ND	ND	ND	ND	ND	6J	ND
Unknown C8H8O3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexanoic acid, 6-amino-	16JN	110JN	180JN	3JN	24JN	140JN	ND	ND	ND	ND
Total unknown phthalate	ND	28J	15J	45J	ND	15J	ND	ND	ND	ND
Unknown acid ester	ND	10J	ND	ND	ND	ND	ND	ND	ND	ND
Total unknown alkane	ND	ND	11J	26J	ND	34J	ND	ND	ND	ND
Total unknown acid	ND	ND	ND	72J	ND	ND	ND	ND	ND	ND
Unknown C11H10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenol, 4,4-butylidenebi[2-(1,1	ND	ND	ND	ND	ND	ND	ND	7J	ND	ND
Total unknown dimethyl naphthalene	ND	ND	ND	ND	ND	ND	ND	4JN	ND	ND
Unknown C10H14O	ND	ND	ND	ND	ND	ND	ND	6J	ND	ND
Unknown C18H18	ND	ND	ND	ND	ND	ND	ND	3J	ND	ND

Sample Location:	1S	1D	2S	2S	2D	2XD	3S	3D	4S	4D
Sample Designation:	FRC-1S-02	FRC-1D-02	FRC-2S-02	FRC-2S-02 DUP	FRC-2D-02	FRC-2XD-02	FRC-3S-02	FRC-3D-02	FRC-4S-02	FRC-4D-02
Sample Date:	3/1/93	3/1/93	3/1/93	3/1/93	3/1/93	3/1/93	2/25/93	2/26/93	2/26/93	2/26/93
Tentatively Identified Compounds (TICs): (Concentrations in ug/l)										
Total unknown	ND	ND	ND	ND	ND	ND	3J	10J	3J	70J
Total unknown alkane	ND	19J	ND	ND	19J	ND	ND	14J	ND	3J
Caprolactam	ND	ND	ND	ND	ND	2JN	ND	ND	ND	ND
Ethanol,2-butoxy, phosphate	ND	ND	ND	3JN	ND	ND	ND	ND	ND	ND
Hexanoic acid 6-amino-	ND	ND	ND	ND	ND	ND	14JN	ND	21JN	4JN
Unknown C7H5NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,5-cyclohexadiene-1,4-dione	ND	ND	ND	ND	ND	ND	ND	ND	ND	3JN

ND - Not Detected

J - The concentration listed is an estimated value, which is less than the specified detection limit but is greater than zero.

N - Indicates that the compound was analyzed for but not requested as an analyte. Value will no be listed on a tabular result sheet

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 16

VALIDATED DATA SUMMARY
GROUNDWATER ANALYTICAL RESULTS FOR SEMIVOLATILE ORGANIC COMPOUNDS

Sample Location:	5S	5D	6S	6D	7S	7D	8S	8I	9S	9I
Sample Designation:	FRC-5S-02	FRC-5D-02	FRC-6S-02	FRC-6D-02	FRC-7S-02	FRC-7D-02	FRC-8S-02	FRC-8I-02	FRC-9S-02	FRC-9I-02
Sample Date:	3/1/93	3/1/93	3/1/93	3/1/93	3/1/93	3/1/93	2/26/93	2/26/93	2/26/93	2/26/93
Tentatively Identified Compounds (TICs): (Concentrations in ug/l)										
Total unknown	63J	9J	2J	5J	14J	15J	ND	85J	ND	37J
Total unknown alkane	6J	30J	6J	4J	ND	50J	ND	ND	ND	ND
Hexanoic acid 6-amino-	ND	7JN	ND	ND	ND	ND	ND	ND	ND	ND
Unknown C7H5NS	ND	3J	ND	ND	ND	ND	ND	ND	ND	2J
Benzene sulfonamide, 4-m	ND	ND	ND	ND	ND	ND	ND	ND	ND	12JN
Benzene sulfonamide, 2-methyl	ND	ND	ND	ND	ND	ND	ND	ND	ND	7JN

Sample Location:	10S	10I	10D	11S	11I	11I	11D	MW-12S
Sample Designation:	FRC-10S-02	FRC-10I-02	FRC-10D-02	FRC-11S-02	FRC-11I-02	FRC-11I-02 DUP	FRC-11D-02	FRC-MW12S-02
Sample Date:	2/26/93	2/26/93	2/26/93	2/24/93	2/24/93	2/24/93	2/24/93	3/1/93
Tentatively Identified Compounds (TICs): (Concentrations in ug/l)								
Total unknown	8J	120J	54J	ND	5J	3J	12J	13J
Total unknown alkane	ND	ND	15J	ND	40J	32J	12J	5J
Unknown C11H10	ND	ND	ND	ND	ND	ND	ND	4J
Unknown dimethyl naphthalene	ND	ND	ND	ND	ND	ND	ND	2J
Phenol, 4-(1,1-dimethylethyl)-	ND	ND	ND	ND	ND	ND	ND	2JN
Caprolactam	ND	ND	ND	ND	ND	ND	3JN	ND
Phosphoric acid, triphenyl	ND	ND	ND	ND	ND	ND	3JN	ND
Unknown acid	ND	ND	ND	ND	3J	ND	ND	ND
Unknown C7H5NS	ND	ND	ND	ND	3J	ND	ND	ND
Benzothiozole, 2,2'-dithio	ND	ND	2JN	ND	7JN	ND	ND	ND
Hexanoic acid, 6-Amino	48JN	ND	220JN	ND	ND	ND	ND	ND
2-Fluoro-4-nitrophenol	3JN	ND	ND	ND	ND	ND	ND	ND

ND - Not Detected

J - The concentration listed is an estimated value, which is less than the specified detection limit but is greater than zero.

N - Indicates that the compound was analyzed for but not requested as an analyte. Value will no be listed on a tabular result sheet.

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 17

VALIDATED DATA SUMMARY
GROUNDWATER ANALYTICAL RESULTS FOR PESTICIDES AND PCBs

Sample Location:	Groundwater	1S	1D	2S	2D	2XD	3S	3D	4S	4D	5S
Sample Designation:	Standards	FRC-1S-01	FRC-1D-01	FRC-2S-01	FRC-2D-01	FRC-2XD-01	FRC-3S-01	FRC-3D-01	FRC-4S-01	FRC-4D-01	FRC-5S-01
	(1)										
Sample Date:		12/3/92	12/3/92	12/3/92	12/3/92	12/2/92	12/2/92	12/2/92	12/2/92	12/2/92	12/2/92
Parameter: (Concentrations in ug/l)											
alpha-BHC		0.052 U	0.052 U	0.053 U	0.056 U	0.050 U	0.051 U	0.052 U	0.051 U	0.051 U	0.051 U
beta-BHC		0.052 U	0.052 U	0.053 U	0.056 U	0.050 U	0.051 U	0.052 U	0.051 U	0.051 U	0.051 U
delta-BHC		0.052 U	0.052 U	0.053 U	0.056 U	0.050 U	0.051 U	0.052 U	0.051 U	0.051 U	0.051 U
gamma-BHC		0.052 U	0.052 U	0.053 U	0.056 U	0.050 U	0.051 U	0.052 U	0.051 U	0.051 U	0.051 U
Heptachlor		0.052 U	0.052 U	0.053 U	0.056 U	0.050 U	0.051 U	0.052 U	0.051 U	0.051 U	0.051 U
Aldrin		0.052 U	0.052 U	0.053 U	0.056 U	0.050 U	0.051 U	0.052 U	0.051 U	0.051 U	0.051 U
Heptachlor Epoxide		0.052 U	0.052 U	0.053 U	0.056 U	0.050 U	0.051 U	0.052 U	0.051 U	0.051 U	0.051 U
Endosulfin I		0.052 U	0.052 U	0.053 U	0.056 U	0.050 U	0.051 U	0.052 U	0.051 U	0.051 U	0.051 U
Dieldrin	ND	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.0071 JP	0.10 U
4,4'-DDE		0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Endrin		0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Endosulfan II		0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
4,4'-DDD		0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Endosulfan Sulfate		0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
4,4'-DDT		0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Methoxychlor		0.52 U	0.52 U	0.53 U	0.56 U	0.53 U	0.51 U	0.52 U	0.51 U	0.51 U	0.51 U
Endrin-Ketone		0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Endrin Aldehyde		0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
alpha-Chlordane		0.052 U	0.052 U	0.053 U	0.056 U	0.050 U	0.051 U	0.052 U	0.051 U	0.051 U	0.051 U
gamma-Chlordane		0.052 U	0.052 U	0.053 U	0.056 U	0.050 U	0.051 U	0.052 U	0.051 U	0.051 U	0.051 U
Toxaphene		5.2 U	5.2 U	5.3 U	5.6 U	5.0 U	5.1 U	5.2 U	5.1 U	5.1 U	5.1 U
Aroclor-1016		1.0 U	1.0 U	1.0 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1221		2.1 U	2.1 U	2.1 U	2.2 U	2.0 U	2.0 U	2.1 U	2.0 U	2.0 U	2.0 U
Aroclor-1232		1.0 U	1.0 U	1.0 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1242		1.0 U	1.0 U	1.0 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1248		1.0 U	1.0 U	1.0 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1254		1.0 U	1.0 U	1.0 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1260		1.0 U	1.0 U	1.0 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U

U - The compound was analyzed for but not detected
J - The concentration listed is an estimated value, which is less than the specified detection limit but is greater than zero.
P - There was a greater than 25 percent difference for detected concentrations between the two GC columns.
ND - Not Detected
(1) - 6 NYCRR 703 Groundwater Standards.The standard is only listed if the compound was detected.

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 17

VALIDATED DATA SUMMARY
GROUNDWATER ANALYTICAL RESULTS FOR PESTICIDES AND PCBs

Sample Location:	Groundwater	5D	6S	6D	6D	7S	7D	8S	8I	9S	9I
Sample Designation:	Standards	FRC-5D-01	FRC-6S-01	FRC-6D-01	FRC-6D-01	FRC-7S-01	FRC-7D-01	FRC-8S-01	FRC-8I-01	FRC-9S-01	FRC-9I-01
	(1)				DUP						
Sample Date:		12/2/92	12/3/92	12/10/92	12/10/92	12/3/92	12/3/92	12/2/92	12/2/92	12/3/92	12/3/92
Parameter: (Concentrations in ug/l)											
alpha-BHC		0.051 U	0.05U	0.056 U	0.054 U	0.053 U	0.052 U	0.051 U	0.051 U	0.051 U	0.052 U
beta-BHC		0.051 U	0.05U	0.056 U	0.054 U	0.053 U	0.052 U	0.051 U	0.051 U	0.051 U	0.052 U
delta-BHC		0.051 U	0.05U	0.056 U	0.054 U	0.053 U	0.052 U	0.051 U	0.051 U	0.051 U	0.052 U
gamma-BHC		0.051 U	0.05U	0.056 U	0.054 U	0.053 U	0.052 U	0.051 U	0.051 U	0.051 U	0.052 U
Heptachlor		0.051 U	0.05U	0.056 U	0.054 U	0.053 U	0.052 U	0.051 U	0.051 U	0.051 U	0.052 U
Aldrin		0.051 U	0.05U	0.056 U	0.054 U	0.053 U	0.052 U	0.051 U	0.051 U	0.051 U	0.052 U
Heptachlor Epoxide		0.051 U	0.05U	0.056 U	0.054 U	0.053 U	0.052 U	0.051 U	0.051 U	0.051 U	0.052 U
Endosulfin I		0.051 U	0.05U	0.056 U	0.054 U	0.053 U	0.052 U	0.051 U	0.051 U	0.051 U	0.052 U
Dieldrin	ND	0.10 U	0.10 U	0.0067JP	0.0096JP	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
4,4'-DDE		0.10 U	0.10 U	0.11 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Endrin		0.10 U	0.10 U	0.11 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Endosulfan II		0.10 U	0.10 U	0.11 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
4,4'-DDD		0.10 U	0.10 U	0.11 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Endosulfan Sulfate		0.10 U	0.10 U	0.11 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
4,4'-DDT		0.10 U	0.10 U	0.11 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Methoxychlor		0.51 U	0.51U	0.56 U	0.54 U	0.53 U	0.52 U	0.51 U	0.51 U	0.51 U	0.52 U
Endrin-Ketone		0.10 U	0.10 U	0.11 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Endrin Aldehyde		0.10 U	0.10 U	0.11 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
alpha-Chlordane	0.1	0.013JP	0.05U	0.013JP	0.016J	0.012JP	0.052 U	0.051 U	0.051 U	0.051 U	0.052 U
gamma-Chlordane	0.1	0.025J	0.05U	0.016JP	0.017J	0.017JP	0.052 U	0.051 U	0.051 U	0.051 U	0.052 U
Toxaphene		5.1 U	5.1U	5.6 U	5.4 U	5.3 U	5.2 U	5.1 U	5.1 U	5.1 U	5.2 U
Aroclor-1016		1.0 U	1.0 U	1.1 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1221		2.0 U	2.0 U	2.2 U	2.2 U	2.1 U	2.1 U	2.0 U	2.0 U	2.0 U	2.1 U
Aroclor-1232		1.0 U	1.0 U	1.1 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1242		1.0 U	1.0 U	1.1 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1248		1.0 U	1.0 U	1.1 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1254	0.1	1.0 U	0.12JP	1.1 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1260		1.0 U	1.0 U	1.1 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U

U - The compound was analyzed for but not detected
J - The concentration listed is an estimated value, which is less than the specified detection limit but is greater than zero.
P - There was a greater than 25 percent difference for detected concentrations between the two GC columns.
ND - Not Detected
(1) - 6 NYCRR 703 Groundwater Standards.The standard is only listed if the compound was detected.

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 17

VALIDATED DATA SUMMARY
GROUNDWATER ANALYTICAL RESULTS FOR PESTICIDES AND PCBs

Sample Location:	Groundwater	10S	10I	10D	10D	11S	11I	11D	12S		
Sample Designation:	Standards	FRC-10S-01	FRC-10I-01	FRC-10D-01	FRC-10D-01	FRC-11S-01	FRC-11I-01	FRC-11D-01	FRC-MW12S-01	FRC-RB-1	FRC-RB-01
	(1)				DUP						
Sample Date:		12/3/92	12/3/92	12/3/92	12/3/92	12/4/92	12/4/92	12/3/92	12/3/92	12/3/92	12/07/92
Parameter: (Concentrations in ug/l)											
alpha-BHC		0.051 U	0.053 U	0.052 U	0.053 U	0.062 U	0.051 U	0.056U	0.051U	0.062 U	0.05U
beta-BHC	ND	0.051 U	0.053 U	0.052 U	0.053 U	0.062 U	0.051 U	0.056U	0.031JP	0.062 U	0.05U
delta-BHC		0.051 U	0.053 U	0.052 U	0.053 U	0.062 U	0.051 U	0.056U	0.051U	0.062 U	0.05U
gamma-BHC		0.051 U	0.053 U	0.052 U	0.053 U	0.062 U	0.051 U	0.056U	0.051U	0.062 U	0.05U
Heptachlor		0.051 U	0.053 U	0.052 U	0.053 U	0.062 U	0.051 U	0.056U	0.051U	0.062 U	0.05U
Aldrin		0.051 U	0.053 U	0.052 U	0.053 U	0.062 U	0.051 U	0.056U	0.051U	0.062 U	0.05U
Heptachlor Epoxide		0.051 U	0.053 U	0.052 U	0.053 U	0.062 U	0.051 U	0.056U	0.051U	0.062 U	0.05U
Endosulfin I		0.051 U	0.053 U	0.052 U	0.053 U	0.062 U	0.051 U	0.056U	0.051U	0.062 U	0.05U
Dieldrin	ND	0.10 U	0.10 U	0.10 U	0.11 U	0.12 U	0.10 U	0.11 U	0.012JP	0.12 U	0.10 U
4,4'-DDE		0.10 U	0.10 U	0.10 U	0.11 U	0.12 U	0.10 U	0.11 U	0.10 U	0.12 U	0.10 U
Endrin		0.10 U	0.10 U	0.10 U	0.11 U	0.12 U	0.10 U	0.11 U	0.10 U	0.12 U	0.10 U
Endosulfan II		0.10 U	0.10 U	0.10 U	0.11 U	0.12 U	0.10 U	0.11 U	0.10 U	0.12 U	0.10 U
4,4'-DDD	ND	0.10 U	0.10 U	0.10 U	0.11 U	0.12 U	0.10 U	0.11 U	0.083JP	0.12 U	0.10 U
Endosulfan Sulfate		0.10 U	0.10 U	0.10 U	0.11 U	0.12 U	0.10 U	0.11 U	0.10 U	0.12 U	0.10 U
4,4'-DDT		0.10 U	0.10 U	0.10 U	0.11 U	0.12 U	0.10 U	0.11 U	0.10 U	0.12 U	0.10 U
Methoxychlor		0.51 U	0.53 U	0.52 U	0.53 U	0.62 U	0.51 U	0.56 U	0.51U	0.62 U	0.51U
Endrin-Ketone		0.10 U	0.10 U	0.10 U	0.11 U	0.12 U	0.10 U	0.11 U	0.10 U	0.12 U	0.10 U
Endrin Aldehyde		0.10 U	0.10 U	0.10 U	0.11 U	0.12 U	0.10 U	0.11 U	0.10 U	0.12 U	0.10 U
alpha-Chlordane	0.1	0.051 U	0.053 U	0.052 U	0.053 U	0.062 U	0.051 U	0.056U	1.2J	0.062 U	0.05U
gamma-Chlordane	0.1	0.051 U	0.053 U	0.052 U	0.053 U	0.062 U	0.051 U	0.056U	0.89JP	0.062 U	0.05U
Toxaphene		5.1 U	5.3 U	5.2 U	5.3 U	6.2 U	5.1 U	5.6 U	5.1U	6.2 U	5.1U
Aroclor-1016		1.0 U	1.0 U	1.0 U	1.1 U	1.2 U	1.0 U	1.1 U	1.0 U	1.2 U	1.0 U
Aroclor-1221		2.0 U	2.1 U	2.1 U	2.1 U	2.5 U	2.0 U	2.2 U	2.0 U	2.5 U	2.0 U
Aroclor-1232		1.0 U	1.0 U	1.0 U	1.1 U	1.2 U	1.0 U	1.1 U	1.0 U	1.2 U	1.0 U
Aroclor-1242		1.0 U	1.0 U	1.0 U	1.1 U	1.2 U	1.0 U	1.1 U	1.0 U	1.2 U	1.0 U
Aroclor-1248		1.0 U	1.0 U	1.0 U	1.1 U	1.2 U	1.0 U	1.1 U	1.0 U	1.2 U	1.0 U
Aroclor-1254	0.1	1.0 U	1.0 U	1.0 U	1.1 U	1.2 U	1.0 U	1.1 U	0.92JP	1.2 U	1.0 U
Aroclor-1260		1.0 U	1.0 U	1.0 U	1.1 U	1.2 U	1.0 U	1.1 U	1.0 U	1.2 U	1.0 U

U - The compound was analyzed for but not detected
J - The concentration listed is an estimated value, which is less than the specified detection limit but is greater than zero.
P - There was a greater than 25 percent difference for detected concentrations between the two GC columns.
ND - Not Detected
(1) - 6 NYCRR 703 Groundwater Standards.The standard is only listed if the compound was detected.

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 17

VALIDATED DATA SUMMARY
GROUNDWATER ANALYTICAL RESULTS FOR PESTICIDES AND PCBs

Sample Location:	Groundwater	1S	1D	2S	2S	2D	2XD	3S	3D	4S	4D
Sample Designation:	Standards	FRC-1S-02	FRC-1D-02	FRC-2S-02	FRC-2S-02	FRC-2D-02	FRC-2XD-02	FRC-3S-02	FRC-3D-02	FRC-4S-02	FRC-4D-02
	(1)				DUP						
Sample Date:		3/1/93	3/1/93	3/1/93	3/1/93	3/1/93	3/1/93	2/25/93	2/26/93	2/26/93	2/26/93
Parameter: (Concentrations in ug/l)											
alpha-BHC		0.053 U	0.053 U	0.053 U	0.051 U	0.051 UC	0.05U	0.052 U	0.052 U	0.054 U	0.053 U
beta-BHC		0.053 U	0.053 U	0.053 U	0.051 U	0.051 UC	0.05U	0.052 UC	0.052 U	0.054 U	0.053 U
delta-BHC		0.053 U	0.053 U	0.053 U	0.051 U	0.051 UC	0.05U	0.052 UC	0.052 U	0.054 U	0.053 U
gamma-BHC		0.053 U	0.053 U	0.053 U	0.051 U	0.051 UC	0.05U	0.052 UC	0.052 U	0.054 U	0.053 U
Heptachlor		0.053 U	0.053 U	0.053 U	0.051 U	0.051 UC	0.05U	0.052 UC	0.052 U	0.054 U	0.053 U
Aldrin		0.053 U	0.053 U	0.053 U	0.051 U	0.051 UC	0.05U	0.052 UC	0.052 U	0.054 U	0.053 U
Heptachlor Epoxide		0.053 U	0.053 U	0.053 U	0.051 U	0.051 UC	0.05U	0.052 UC	0.052 U	0.054 U	0.053 U
Endosulfan I		0.053 U	0.053 U	0.053 U	0.051 U	0.051 UC	0.05U	0.052 UC	0.052 U	0.054 U	0.053 U
Dieldrin		0.10 U	0.10 U	0.10 U	0.10 U	0.10 UC	0.10 U	0.10 UC	0.10 U	0.10 U	0.10 U
4,4'-DDD		0.10 U	0.10 U	0.10 U	0.10 U	0.10 UC	0.10 U	0.10 UC	0.10 U	0.10 U	0.10 U
Endrin		0.10 U	0.10 U	0.10 U	0.10 U	0.10 UC	0.10 U	0.10 UC	0.10 U	0.10 U	0.10 U
Endosulfan II		0.10 U	0.10 U	0.10 U	0.10 U	0.10 UC	0.10 U	0.10 UC	0.10 U	0.10 U	0.10 U
4,4'-DDT		0.10 U	0.10 U	0.10 U	0.10 U	0.10 UC	0.10 U	0.10 UC	0.10 U	0.10 U	0.10 U
Methoxychlor		0.53 U	0.53 U	0.53 U	0.51 U	0.51 U	0.10 U	0.52 UC	0.52 U	0.51 U	0.53 U
Endrin-Ketone		0.10 U	0.10 U	0.10 U	0.10 U	0.10 UC	0.10 U	0.10 UC	0.10 U	0.10 U	0.10 U
Endrin Aldehyde		0.10 U	0.10 U	0.10 U	0.10 U	0.10 UC	0.51U	0.10 UC	0.10 U	0.10 U	0.10 U
alpha-Chlordane		0.053 U	0.053 U	0.053 U	0.051 U	0.051 U	0.010 U	0.052 UC	0.052 U	0.051 U	0.053 U
gamma-Chlordane		0.053 U	0.053 U	0.053 U	0.051 U	0.051 U	0.010 U	0.052 UC	0.052 U	0.051 U	0.053 U
Toxaphene		5.3 U	5.3 U	5.3 U	5.1 U	5.1 UC	0.05U	5.2 UC	5.2 U	5.1 U	5.3 U
Aroclor-1016		1.0 U	1.0 U	1.0 U	1.0 U	1.0 UC	0.05U	1.0 UC	1.0 U	1.0 U	1.0 U
Aroclor-1221		2.1 U	2.1 U	2.1 U	2.0 U	2.0 UC	5.1U	2.1 UC	2.1 U	2.0 U	2.1 U
Aroclor-1232		1.0 U	1.0 U	1.0 U	1.0 U	1.0 UC	1.0 U	1.0 UC	1.0 U	1.0 U	1.0 U
Aroclor-1242		1.0 U	1.0 U	1.0 U	1.0 U	1.0 UC	2.0 U	1.0 UC	1.0 U	1.0 U	1.0 U
Aroclor-1248		1.0 U	1.0 U	1.0 U	1.0 U	1.0 UC	1.0 U	1.0 UC	1.0 U	1.0 U	1.0 U
Aroclor-1254		1.0 U	1.0 U	1.0 U	1.0 U	1.0 UC	1.0 U	1.0 UC	1.0 U	1.0 U	1.0 U
Aroclor-1260		1.0 U	1.0 U	1.0 U	1.0 U	1.0 UC	1.0 U	1.0 UC	1.0 U	1.0 U	1.0 U

U - The compound was analyzed for but not detected
C - The laboratory calibration requirements were no
ND - Not Detected
(1) - 6 NYCRR 703 Groundwater Standards.The standard is only listed if the compound was detected.

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 17

VALIDATED DATA SUMMARY
GROUNDWATER ANALYTICAL RESULTS FOR PESTICIDES AND PCBs

Sample Location:	Groundwater	5S	5D	6S	6D	7S	7D	8S	8I	9S	9I
Sample Designation:	Standards	FRC-5S-02	FRC-5D-02	FRC-6S-02	FRC-6D-02	FRC-7S-02	FRC-7D-02	FRC-8S-02	FRC-8I-02	FRC-9S-02	FRC-9I-02
	(1)										
Sample Date:		3/1/93	3/1/93	3/1/93	3/1/93	3/1/93	3/1/93	2/26/93	2/26/93	2/26/93	2/26/93
Parameter: (Concentrations in ug/l)											
alpha-BHC		0.051 U	0.051 UC	0.051 U	0.053 U	0.053 U	0.053 UC	0.052 U	0.051 U	0.052 UC	0.052 U
beta-BHC		0.051 U	0.051 UC	0.051 U	0.053 U	0.053 U	0.053 UC	0.052 U	0.051 U	0.052 UC	0.052 U
delta-BHC		0.051 U	0.051 UC	0.051 U	0.053 U	0.053 U	0.053 UC	0.052 U	0.051 U	0.052 UC	0.052 U
gamma-BHC		0.051 U	0.051 UC	0.051 U	0.053 U	0.053 U	0.053 UC	0.052 U	0.051 U	0.052 UC	0.052 U
Heptachlor		0.051 U	0.051 UC	0.051 U	0.053 U	0.053 U	0.053 UC	0.052 U	0.051 U	0.052 UC	0.052 U
Aldrin		0.051 U	0.051 UC	0.051 U	0.053 U	0.053 U	0.053 UC	0.052 U	0.051 U	0.052 UC	0.052 U
Heptachlor Epoxide		0.051 U	0.051 UC	0.051 U	0.053 U	0.053 U	0.053 UC	0.052 U	0.051 U	0.052 UC	0.052 U
Endosulfan I		0.051 U	0.051 UC	0.051 U	0.053 U	0.053 U	0.053 UC	0.052 U	0.051 U	0.052 UC	0.052 U
Dieldrin		0.10 U	0.10 UC	0.10 U	0.10 U	0.10 U	0.10 UC	0.10 U	0.10 U	0.10 UC	0.10 U
4,4'-DDD		0.10 U	0.10 UC	0.10 U	0.10 U	0.10 U	0.10 UC	0.10 U	0.10 U	0.10 UC	0.10 U
Endrin		0.10 U	0.10 UC	0.10 U	0.10 U	0.10 U	0.10 UC	0.10 U	0.10 U	0.10 UC	0.10 U
Endosulfan II		0.10 U	0.10 UC	0.10 U	0.10 U	0.10 U	0.10 UC	0.10 U	0.10 U	0.10 UC	0.10 U
4,4'-DDT		0.10 U	0.10 UC	0.10 U	0.10 U	0.10 U	0.10 UC	0.10 U	0.10 U	0.10 UC	0.10 U
Methoxychlor		0.51 U	0.51 UC	0.51 U	0.53 U	0.53 U	0.53 U	0.52 U	0.51 U	0.52 UC	0.52 U
Endrin-Ketone		0.10 U	0.10 UC	0.10 U	0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.10 UC	0.10 U
Endrin Aldehyde		0.10 U	0.10 UC	0.10 U	0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.10 UC	0.10 U
alpha-Chlordane	0.1	0.051 U	0.051 UC	0.051 U	0.014J	0.053 U	0.053 UC	0.052 U	0.051 U	0.052 UC	0.052 U
gamma-Chlordane	0.1	0.051 U	0.0099JP	0.051 U	0.014J	0.053 U	0.053 UC	0.052 U	0.051 U	0.052 UC	0.052 U
Toxaphene		5.1 U	5.1 UC	5.1 U	5.3 U	5.3 U	5.3 UC	5.2 U	5.1 U	5.2 UC	5.2 U
Aroclor-1016	0.1	1.0 U	1.0 UC	1.0 U	1.0 U	1.0 U	1.0 UC	1.0 U	1.0 U	1.0 UJ	1.0 U
Aroclor-1221		2.0 U	2.0 UC	2.0 U	2.1 U	2.1 U	2.1 UC	2.1 U	2.0 U	2.1 UC	2.1 U
Aroclor-1232	0.1	1.0 U	1.0 UC	1.0 U	1.0 U	1.0 U	1.0 UC	1.0 U	1.0 U	1.0 UJ	1.0 U
Aroclor-1242		1.0 U	1.0 UC	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UC	1.0 U	1.0 UC	1.0 U
Aroclor-1248		1.0 U	1.0 UC	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UC	1.0 U	1.0 UC	1.0 U
Aroclor-1254		1.0 U	1.0 UC	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UC	1.0 U	1.0 UC	1.0 U
Aroclor-1260		1.0 U	1.0 UC	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UC	1.0 U	1.0 UC	1.0 U

U - The compound was analyzed for but not detected
C - The laboratory calibration requirements were not met.
J - The concentration listed is an estimated value, which is less than the specified detection limit but is greater than zero.
P - There was a greater than 25 percent difference for detected concentrations between the two GC columns.
ND - Not Detected
(1) - 6 NYCRR 703 Groundwater Standards.The standard is only listed if the compound was detected.

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 17

VALIDATED DATA SUMMARY
GROUNDWATER ANALYTICAL RESULTS FOR PESTICIDES AND PCBs

Sample Location:	Groundwater	10S	10I	10D	11S	11I	11I	11D	MW12
Sample Designation:	Standards	FRC-10S-02	FRC-10I-02	FRC-10D-02	FRC-11S-02	FRC-11I-02	FRC-11I-02 DUP	FRC-11D-02	FRC-MW12-02
	(1)								
Sample Date:		2/26/93	2/26/93	2/26/93	2/24/93	2/24/93	2/24/93	2/24/93	3/1/93
Paramete (Concentrations in ug/l)									
alpha-BHC		0.053 U	0.052 U	0.050 UC	0.051 UC	0.051 UC	0.051 UC	0.051 UC	0.053 UC
beta-BHC		0.053 U	0.052 U	0.050 UC	0.051 UC	0.051 UC	0.051 UC	0.051 UC	0.053 UC
delta-BHC		0.053 U	0.052 U	0.050 UC	0.051 UC	0.051 UC	0.051 UC	0.051 UC	0.053 UC
gamma-BHC		0.053 U	0.052 U	0.050 UC	0.051 UC	0.051 UC	0.051 UC	0.051 UC	0.053 UC
Heptachlor		0.053 U	0.052 U	0.050 UC	0.051 UC	0.051 UC	0.051 UC	0.051 UC	0.053 UC
Aldrin		0.053 U	0.052 U	0.050 UC	0.051 UC	0.051 UC	0.051 UC	0.051 UC	0.053 UC
Heptachlor Epoxide		0.053 U	0.052 U	0.050 UC	0.051 UC	0.051 UC	0.051 UC	0.051 UC	0.053 UC
Endosulfan I		0.053 U	0.052 U	0.050 UC	0.051 UC	0.051 UC	0.051 UC	0.051 UC	0.053 UC
Dieldrin		0.10 U	0.10 U	0.10 UC	0.10 UC	0.10 UC	0.10 UC	0.10 UC	0.10 UC
4,4'-DDD	ND	0.10 U	0.10 U	0.10 UC	0.10 UC	0.10 UC	0.10 UC	0.10 UC	0.042JP
Endrin		0.10 U	0.10 U	0.10 UC	0.10 UC	0.10 UC	0.10 UC	0.10 UC	0.10 UC
Endosulfan II		0.10 U	0.10 U	0.10 UC	0.10 UC	0.10 UC	0.10 UC	0.10 UC	0.10 UC
4,4'-DDT		0.10 U	0.10 U	0.10 UC	0.10 UC	0.10 UC	0.10 UC	0.10 UC	0.10 UC
Methoxychlor		0.51 U	0.52 U	0.50 UC	0.51 UC	0.51 UC	0.51 UC	0.51 UC	0.53 U
Endrin-Keytone		0.10 U	0.10 U	0.10 UC	0.10 UC	0.10 UC	0.10 UC	0.10 UC	0.10 UC
Endrin Aldehyde		0.10 U	0.10 U	0.10 UC	0.10 UC	0.10 UC	0.10 UC	0.10 UC	0.10 UC
alpha-Chlordane	0.1	0.053 U	0.052 U	0.050 UC	0.051 UC	0.051 UC	0.051 UC	0.051 UC	0.48JP
gamma-Chlordane	0.1	0.053 U	0.052 U	0.050 UC	0.051 UC	0.051 UC	0.051 UC	0.051 UC	0.41J
Toxaphene		5.1 U	5.1 U	5.0 UC	5.1 UC	5.1 UJ	5.1 UJ	5.1 UJ	5.3 UC
Aroclor-1016		1.0 U	1.0 U	1.0 UC	1.0 UC	1.0 UC	1.0 UC	1.0 UC	1.0 UC
Aroclor-1221		2.0 U	2.0 U	2.0 UC	2.0 UC	2.0 UC	2.0 UC	2.0 UC	2.1 UC
Aroclor-1232		1.0 U	1.0 U	1.0 UC	1.0 UC	1.0 UC	1.0 UC	1.0 UC	1.0 UC
Aroclor-1242		1.0 U	1.0 U	1.0 UC	1.0 UC	1.0 UC	1.0 UC	1.0 UC	1.0 UC
Aroclor-1248		1.0 U	1.0 U	1.0 UC	1.0 UC	1.0 UC	1.0 UC	1.0 UC	1.0 UC
Aroclor-1254	0.1	1.0 U	1.0 U	1.0 UC	1.0 UC	1.0 UC	1.0 UC	1.0 UC	1.7JP
Aroclor-1260		1.0 U	1.0 U	1.0 UC	1.0 UC	1.0 UC	1.0 UC	1.0 UC	1.0 UC

U - The compound was analyzed for but not detected
C - The laboratory calibration requirements were not met.
J - The concentration listed is an estimated value, which is less than the specified detection limit but is greater than zero.
P - There was a greater than 25 percent difference for detected concentrations between the two GC columns.
ND - Not Detected
(1) - 6 NYCRR 703 Groundwater Standards.The standard is only listed if the compound was detected.

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 18

VALIDATED DATA SUMMARY
GROUNDWATER ANALYTICAL RESULTS FOR TOTAL METALS AND CYANIDE

Sample Location:	Groundwater	1S	1D	2S	2D	2XD	3S	3D	4S	4D	5S
Sample Designation:	Standard	FRC-1S-01	FRC-1D-01	FRC-2S-01	FRC-2D-01	FRC-2XD-01	FRC-3S-01	FRC-3D-01	FRC-4S-01	FRC-4D-01	FRC-5S-01
	(1)										
Sample Date:		12/3/92	12/3/92	12/3/92	12/3/92	12/2/92	12/2/92	12/2/92	12/2/92	12/2/92	12/2/92
Parameter: (Concentrations in ug/l)											
Aluminum	NA	781	147B	627	619	651	2,053	180B	666	22.0U	260
Antimony	3**	18.0U	18.0U	18.0U	18.5B	18.0U	31.7B	18.0U	18.0U	21.0U	18.0U
Arsenic	25	2.0U	9.7B	50.5S	6.1BW	2.0U	9.1B	8.9B	2.0U	2.0U	5.2B
Barium	1000	50.7B	62.8B	265	89.9B	14.5B	33.7B	58.4B	32.2B	35.8B	49.3B
Beryllium	3**	1.0U	5.0UJ	6.9J	1.0U	1.0UJ	5.0UJ	5.0UJ	1.0UJ	1.0U	1.0U
Cadmium	10	2.0U	2.0U	2.0U	2.0U	2.0U	1.8U	2.0U	4.4B	2.0U	2.0U
Calcium	NA	26,831	26,551	89,397	76,067	23,009	12,739	25,068	12,815	18,800	36,507
Chromium	50	3.0U	3.0U	3.0U	3.0U	18.1	3.7B	3.0U	3.0U	3.0U	3.0U
Cobalt	NA	5.7B	24.9B	3.0U	4.7B	3.0U	7.8B	11.6B	3.0U	9.7B	8.4B
Copper	200	3.3B	2.0U	5.8B	2.0U	26.4	15.0B	8.3B	6.8B	8.1B	10.2B
Iron	300	2,862	25,067	55,973	9,583	796	15,263	23,886	1,039	2,180	9,160
Lead	25	2.9B	2.6B	10.3	7.4	7.3	11.9	1.5B	5.0	2.0U	2.7B
Magnesium	35000**	4,116B	4,918B	9,566	7,936	1,729B	4,462B	4,321B	3,148B	3,210B	4,821B
Manganese	300	1,203	1,165	1,240	2,377	465	479	2,481	1,016	1,940	5,582
Mercury	2	0.21U	0.20U	0.20U	0.21U	0.20U	0.21U	0.20U	0.20U	0.20U	0.20U
Nickel	NA	8.0U	8.0U	8.0U	8.0U	8.0U	8.0U	8.0U	8.0U	21.0U	8.0U
Potassium	NA	2,778B	4,375B	6,467	4,270B	6,560	1,389B	2,874B	1,611B	4,260B	3,555B
Selenium	10	1.0UW	1.0UW	1.2BW	1.0U	1.0UW	1.0UW	1.0U	1.0U	2.0UW	1.0U
Silver	50	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U
Sodium	20000	40,462	49,134	72,408	26,879	19,229	5,594	33,601	6,022	24,500	69,404
Thallium	4**	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0UW	1.3B	2.0U	1.0UW
Vanadium	NA	4.0U	4.0U	39.7B	4.0U	4.0U	12.8B	4.0U	4.0U	6.0U	4.1B
Zinc	300	9.1B	10.7B	44.7	22.0	216	33.1	23.8	35.7	31.9	26.5
Cyanide	100	10.0U	10.0U	10.0U	10.0U	10.0U	10.0U	10.0U	10.0U	NR	10.0U

U - Compound was analyzed for but not detected

B - Analyte results are between IDL and contract required detection limit.

S - The reported value was determined by the method of standard additions.

W - Post-digest spike recovery furnace analysis was out of 85-115 percent control limit, while sample absorbance was less than 50 percent of spike absorbance.

(1) - 6 NYCRR 703 Groundwater Standards.

NA - Not Applicable

** - 6 NYCRR 703 Guidance Values

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 18

VALIDATED DATA SUMMARY
GROUNDWATER ANALYTICAL RESULTS FOR TOTAL METALS AND CYANIDE

Sample Location:	Groundwater	5D	6S	6D	6D	7S	7D	8S	8I	9S	9I
Sample Designation:	Standard	FRC-5D-01	FRC-6S-01	FRC-6D-01	FRC-6D-01	FRC-7S-01	FRC-7D-01	FRC-8S-01	FRC-8I-01	FRC-9S-01	FRC-9I-01
	(1)				DUP						
Sample Date:		12/2/92	12/3/92	12/10/92	12/10/92	12/3/92	12/3/92	12/2/92	12/2/92	12/3/92	12/3/92
Parameter: (Concentrations in ug/l)											
Aluminum	NA	194B	5,402	89.2B	86.1B	2,230	114B	6,392	342	6,468	210
Antimony	3**	18.9B	21.0U	21.0U	21.0U	18.0U	18.0U	18.0U	18.0	21.0U	21.0U
Arsenic	25	2.0U	3.6B	2.0U	2.0U	2.0U	2.0U	22.2	2.0U	4.4B	2.0U
Barium	1000	24.2B	101B	21.7B	21.2B	45.8B	55.2B	98.5B	17.3B	55.6B	23.4B
Beryllium	3**	1.0UJ	5.0U	1.0U	1.0U	1.0UJ	1.0U	5.0UJ	1.0UJ	5.0U	1.0U
Cadmium	10	2.0U	3.7B	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U
Calcium	NA	9,781	12,810	13,810	13,779	21,327	18,505	42,058	23,321	6,790	29,065
Chromium	50	3.0U	60.1	3.0U	3.8B	3.0U	3.0U	20.3	16.3	20.4	37.9
Cobalt	NA	3.0U	7.2B	3.0U	3.0U	3.0U	3.0U	4.8B	3.0U	5.7B	3.0U
Copper	200	4.4B	28.7	3.0U	3.0U	5.4B	6.8B	12.9B	15.1B	21.4B	27.4
Iron	300	590	7,984	147	82.0U	3,725	294	30,284	1,886	12,047	564
Lead	25	5.5	8.5	2.0U	2.0U	6.7	3.1	10.5	3.7	7.8W	3.8
Magnesium	35000**	1,848B	3,068B	2,990B	2,992B	3,376B	2,940B	5,611	1,252B	2,409B	347B
Manganese	300	594	383	1,204.1	1,200.5	137	1,607	577	473	98.4	31.8
Mercury	2	0.21U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U
Nickel	NA	8.0U	21.0U	21.0U	21.0U	8.0U	8.0U	8.0U	8.0U	21.0U	21.0U
Potassium	NA	1,796B	2,534B	1,748B	1,662B	3,144B	2,750B	3,966B	7,225	1,440B	37,370
Selenium	10	1.0UW	2.0U	2.0UW	2.0U	1.0UW	1.0UW	1.0U	1.0UW	2.0U	2.0UW
Silver	50	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U
Sodium	20000	11,338	15,878	18,108	18,067	13,009	21,413	25,516	22,242	5,045	41,025
Thallium	4**	1.0U	2.0UW	2.0U	2.0U	1.0U	1.0U	1.0U	1.0UW	2.0U	2.0UW
Vanadium	NA	4.0U	6.4B	6.0U	6.0U	4.0U	4.0U	7.7B	7.5B	8.9B	12.0B
Zinc	300	22.8	60.8	23.5	13.7B	22.7	14.0B	37.6	84.5	93.5	78.2
Cyanide	100	10.0U	10.0U	10.0U	10.0	10.0U	10.0U	10.0U	10	10.0U	10.0U

U - Compound was analyzed for but not detected

B - Analyte results are between IDL and contract required detection limit

* - Duplicate analysis not within control limit.

W - Post-digest spike recovery furnace analysis was out of 85-115 percent control limit, while sample absorbance was less than 50 percent of spike absorbance.

(1) - 6 NYCRR 703 Groundwater Standards. The standard is only listed if the compound was detected.

NA - Not Applicable

** - 6 NYCRR 703 Guidance Values

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 18

VALIDATED DATA SUMMARY
GROUNDWATER ANALYTICAL RESULTS FOR TOTAL METALS AND CYANIDE

Sample Location:	Groundwater	10S	10I	10D	10D	11S	11I	11D	MW12S		
Sample Designation:	Standard	FRC-10S-01	FRC-10I-01	FRC-10D-01	FRC-10D-01	FRC-11S-01	FRC-11I-01	FRC-11D-01	FRC-MW12S-01	FRC-RB-1	FRC-RB-01
	(1)				DUP						
Sample Date:		12/3/92	12/3/92	12/3/92	12/3/92	12/4/92	12/4/92	12/3/92	12/4/92	12/3/92	12/7/92
Parameter: (Concentrations in ug/l)											
Aluminum	NA	15,791	321	1,093	1,517	13,145	891	429	26,640	13.0U	22.0U
Antimony	3**	21.0U	21.0U	21.0U	21.0U	18.0U	18.0U	18.0U	21.0	18.0U	21.0U
Arsenic	25	8.8B	2.0U	2.0U	2.0U	9.7B	2.0U	2.0U	7.4	2.0U	2.0U
Barium	1000	168B	27.9B	44.4B	50.3B	119.1B	16.1B	27.8B	217	1.0U	6.0U
Beryllium	3**	5.0U	1.0U	1.0U	1.0U	5.0UJ	1.0U	1.0UJ	5.5	1.0UJ	1.0U
Cadmium	10	2.0U	3.3B	2.0U	2.0U	2.0U	2.0U	2.0U	3.9	2.0U	2.0U
Calcium	NA	46,199	19,752	16,145	21,509	23,692	24,924	16,776	58,802	58.7B	104B
Chromium	50	239	9.6B	6.1B	13.1	14.6	3.7B	3.2B	136.8	3.0U	3.0U
Cobalt	NA	16.8B	5.9B	6.0B	3.0U	4.0B	3.0U	3.9B	12.4	3.0U	3.0U
Copper	200	50.8	19.8B	17.1B	19.7B	66.8	15.1B	10.0B	145	4.4B	8.8B
Iron	300	26,602	1,760	2,810	4,136	22,757	1,004	607	39,468	76.0U	82.0U
Lead	25	27.0	3.1J	6.5WJ	11.3J	19.6	7.3	3.4	331	1.0U	2.0U
Magnesium	35000**	8,149	3,626B	2,773B	3,243B	4,917B	3,675B	2,706B	27,600	26.0U	42.0B
Manganese	300	2,203	5,832	49.4	71.3	577	58	372	437	1.1U	1.0U
Mercury	2	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.67	0.20U	0.20U
Nickel	NA	37.0B	21.0U	21.0U	21.0U	14.9B	8.0U	10.0B	21.0	8.0U	21.0U
Potassium	NA	9,392	3,498B	35,603	35,170	3,918B	10,267	8,360	11,474	567U	626U
Selenium	10	2.0UW	2.0U	2.0UW	2.0UW	1.1BW	1.0UW	1.0UW	2.0	1.0U	2.0U
Silver	50	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0	3.0U	3.0U
Sodium	20000	61,096	17,223	32,567	32,230	10,924	21,440	23,426	24,289	131B	111B
Thallium	4**	2.0UW	2.0U	2.0UW	2.0UW	1.0U	1.0U	1.0UW	2.0U	1.0U	2.0U
Vanadium	NA	32.1B	6.0U	6.0U	6.0U	25.7B	4.0U	4.0U	62.2	4.0U	6.0U
Zinc	300	106	44.3	76.4	117.6	145	82.4	43.2	673	7.0U	13.9B
Cyanide	100	10.0U	10.0U	10.0U	10.0U	10.0U	10.0U	10.0U	10.0U	10.0U	10.0U

U - Compound was analyzed for but not detected

B - Analyte results are between IDL and contract required detection limit.

W - Post-digest spike recovery furnace analysis was out of 85-115 percent control limit, while sample absorbance was less than 50 percent of spike absorbance.

(1) - 6 NYCRR 703 Groundwater Standards. The standard is only listed if the compound was detected.

NA - Not Applicable

** - 6 NYCRR 703 Guidance Values

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 18

VALIDATED DATA SUMMARY
GROUNDWATER ANALYTICAL RESULTS FOR TOTAL METALS AND CYANIDE

Sample Location:	Groundwater	1S	1D	2S	2S	2D	2XD	3S	3D	4S	4D
Sample Designation:	Standard	FRC-1S-02	FRC-1D-02	FRC-2S-02	FRC-2S-02	FRC-2D-02	FRC-2XD-02	FRC-3S-02	FRC-3D-02	FRC-4S-02	FRC-4D-02
	(1)				DUP						
Sample Date:		3/1/93	3/1/93	3/1/93	3/1/93	3/1/93	3/1/93	2/25/93	2/26/93	2/26/93	2/26/93
Parameter: (Concentrations in ug/l)											
Aluminum	NA	430	76.9B	140B	218	476	22.0U	1,993	59.6B	298	66.9B
Antimony	3**	21.0U	21.0U	21.0U	21.0U	24.0B	21.0U	21.0U	21.0U	21.0U	21.0U
Arsenic	25	2.1BW	9.5B	11.1	11.4	6.3B	2.6B	4.3B	6.7B	1.0U	3.4U
Barium	1000	52.7B	41.4B	104B	110B	83.2B	49.6B	29.0B	41.4B	27.1B	43.6B
Beryllium	3**	1.0U	5.0U	1.0U	1.0U	1.0U	1.0U	1.0U	4.0U	1.0U	1.0U
Cadmium	10	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U
Calcium	NA	25,814	21,682	76,104	72,180	76,676	66,527	14,811	19,240	12,649	18,241
Chromium	50	3.0U	3.0U	3.0U	3.0U	4.1B	3.0U	4.1B	3.0U	3.0U	3.0U
Cobalt	NA	4.3BN	23.8B	4.7B	3.7B	6.3B	3.0UN	5.3BN	9.1BN	3.0UN	10.7BN
Copper	200	3.0U	17.4B	3.5B	12.6B	8.1B	7.0U	4.0U	4.6U	3.0U	3.0U
Iron	300	2,114	19,104	10,406	13,973	8,898	127	8,761	17,339	491	6,846
Lead	25	2.9B	2.3BWJ	2.6BJ	4.2W	8.3J	1.0UW	6.7	1.0UW	1.9B	1.8B
Magnesium	35000**	4,494B	3,971B	8,428	8,066	8,132	9,880	5,710	3,098B	3,215B	3,150B
Manganese	300	817	859	986	928.6	2,326	3,056	312	1,999	223	1,786
Mercury	2	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U
Nickel	NA	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U
Potassium	NA	2,573B	3,477B	4,757B	4,517B	4,338B	7,151	1,528B	2,709B	1,468B	3,192B
Selenium	10	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0UW	2.0UW
Silver	50	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U
Sodium	20000	51,991	36,266	37,941	37,492	23,692	34,946	4,881B	23,337	7,236	24,949
Thallium	4**	2.0UW	2.0UW	2.0UW	2.0UW	2.0UW	2.0UW	2.0U	2.0UW	2.0UW	2.0UW
Vanadium	NA	9.2B	6.0U	6.0U	6.0U	6.0U	6.0U	15.0B	6.0U	6.0U	6.0U
Zinc	300	8.4B	22.1	5.8B	11.7B	20.3	4.0U	16.9B	13.1B	14.8B	13.9B
Cyanide	100	10.0U	10.0U	10.0U	10.0U	10.0U	10.0U	10.0U	10.0U	10.0U	10.0U

U - Compound was analyzed for but not detected

B - Analyte results are between IDL and contract required detection limit

W - Post-digest spike recovery furnace analysis was out of 85-115 percent control limit, while sample absorbance was less than 50 percent of spike absorbance.

N - The spiked sample recovery is not within control limits.

(1) - 6 NYCRR 703 Groundwater Standards. The standard is only listed if the compound was detected.

NA - Not Applicable

** - 6 NYCRR 703 Guidance Values

eder associates

FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 18

VALIDATED DATA SUMMARY
GROUNDWATER ANALYTICAL RESULTS FOR TOTAL METALS AND CYANIDE

Sample Location:	Groundwater	5S	5D	6S	6D	7S	7D	8S	8I	9S	9I
Sample Designation:	Standards	FRC-5S-02	FRC-5D-02	FRC-6S-02	FRC-6D-02	FRC-7S-02	FRC-7D-02	FRC-8S-02	FRC-8I-02	FRC-9S-02	FRC-9I-02
	(1)										
Sample Date:		3/1/93	3/1/93	3/1/93	3/1/93	3/1/93	3/1/93	2/26/93	2/26/93	2/26/93	2/26/93
Parameter: (Concentrations in ug/l)											
Aluminum	NA	164B	793.7B	2,695	87.2B	1,935	161B	3,466	175B	3,902	243
Antimony	3**	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U
Arsenic	25	3.4B	1.0UW	1.6B	1.0U	1.2B	1.0B	44.7	3.1B	8.1B	1.0U
Barium	1000	42.3B	26.4B	82.8B	21.5B	40.8B	55.4B	192B	26.0B	53.9B	23.4B
Beryllium	3**	1.0B	1.0U	1.0U	1.0U	1.0U	1.0U	11.1U	1.0U	2.0U	1.0U
Cadmium	10	2.0B	2.0U	3.5B	2.0U	6.5	2.0U	2.0U	2.0U	2.0U	2.0U
Calcium	NA	32,019	10,094	12,319	12,445	20,246	18,235	51,062	45,887	11,449	13,626
Chromium	50	3.3B	3.0U	35.9	4.8B	11.9	3.4B	18.0	3.8B	18.8	23.5
Cobalt	NA	9.5B	3.2B	5.3B	3.2B	4.8B	4.0B	3.4BN	8.3BN	4.9BN	3.0UN
Copper	200	6.7B	15.1B	6.8B	3.0U	29.3	3.0U	3.3B	7.2B	9.4B	35.5
Iron	300	6,129	178	4,066	82.0U	3,632	402	61,055	5,169	7,071	1,149
Lead	25	1.3B	2.9B	5.6	1.0U	8.9	2.3B	8.3	4.0	9.8	7.7
Magnesium	35000**	4,554B	2,014B	2,682B	2,688B	3,190B	2,674B	7,844	5,300	3,102B	1,090B
Manganese	300	4,461.9	532.7	206.8	1,025.2	149.6	1,235.2	397	2,292	58.2	106
Mercury	2	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U
Nickel	NA	21.0U	21.0U	21.0U	21.0U	50.7	21.0U	21.0U	21.0U	21.0U	21.0U
Potassium	NA	4,102B	1,755B	2,772B	1,995B	3,284B	2,912B	4,816B	4,360B	1,956B	41,794
Selenium	10	2.0U	2.0UW	2.0UW	2.0UW	2.0UW	2.0UW	2.0U	2.0U	2.0U	2.0UW
Silver	50	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U
Sodium	20000	57,275	10,902	15,940	18,725	10,641	20,675	75,254	26,562	21,553	47,704
Thallium	4**	2.0U	2.0U	2.0UW	2.0UW	2.0U	2.0UW	2.0UW	2.0U	2.0U	2.0UW
Vanadium	NA	6.0U	6.0U	6.3B	6.0U	6.2B	6.0U	13.4B	6.0U	9.6B	14.8B
Zinc	300	13.5B	23.6	27.8	4.0U	121	12.2B	33.0	80.0	112	47.6
Cyanide	100	10.0U	10.0U	10.0U	10.0U	10.0U	10.0U	10.0U	10.0U	10.0U	10.0U

U - Compound was analyzed for but not detected

B - Analyte results are between IDL and contract required detection limit

W - Post-digest spike recovery furnace analysis was out of 85-115 percent control limit, while sample absorbance was less than 50 percent of spike absorbance.

N - The spiked sample recovery is not within control limits.

(1) - 6 NYCRR 703 Groundwater Standards. The standard is only listed if the compound was detected.

NA - Not Applicable

** - 6 NYCRR 703 Guidance Values

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 18

VALIDATED DATA SUMMARY
GROUNDWATER ANALYTICAL RESULTS FOR TOTAL METALS AND CYANIDE

Sample Location:	Groundwater	10S	10I	10D	11S	11I	11I	11D	MW12S
Sample Designation:	Standard	FRC-10S-02	FRC-10I-02	FRC-10D-02	FRC-11S-02	FRC-11I-02	FRC-11I-02 DUP	FRC-11D-02	FRC-MW12S-02
	(1)								
Sample Date:		2/26/93	2/26/93	2/26/93	2/24/93	2/24/93	2/24/93	2/24/93	3/1/93
Parameter: (Concentrations in ug/l)									
Aluminum	NA	10,571	147B	1,273	7,080	469	476	639	27,783
Antimony	3**	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	23.0B
Arsenic	25	5.1B	1.0U	1.0U	4.2B	1.0U	1.0U	1.0U	7.0B
Barium	1000	101B	48.6B	57.7B	61.9B	11.3B	12.2B	51.8B	245
Beryllium	3**	4.5U	1.0U	1.0U	2.0U	1.0U	1.0U	1.0U	9.9B
Cadmium	10	2.0U	2.0U	3.3B	2.0U	2.0U	2.0U	2.0U	2.0U
Calcium	NA	47,603	25,700	41,174	17,584	20,487	21,163	12,715	70,658
Chromium	50	204	8.9B	35.2	17.9	4.5B	5.3B	10.6	132
Cobalt	NA	9.0BN	6.4BN	3.0UN	3.0UN	3.0UN	3.0UN	3.4BN	13.7B
Copper	200	29.8	23.8B	90.1	39.6	3.4B	6.9B	24.8B	158
Iron	300	16,422	3,842	2,809	11,715	598	646	1,730	42,864
Lead	25	20.2	4.9	37.4	17.0	3.8	4.3	13.4	338
Magnesium	35000**	7,211	2,452B	5,430	3,363B	3,896B	3,953B	3,316B	36,139
Manganese	300	1,716	2,633	83	235	43	44.3	436	522.7
Mercury	2	0.20	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.6
Nickel	NA	30.1B	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U
Potassium	NA	7,516	39,502	13,270	4,019B	5,197	5,697	4,128B	11,910
Selenium	10	2.0UW	2.0UW	2.0U	2.0UW	2.0UW	2.0UW	2.0UW	2.0U
Silver	50	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U
Sodium	20000	39,898	86,975	48,611	9,590	17,776	17,980	57,455	25,425
Thallium	4**	2.0UW	2.0UW	2.0UW	2.0UW	2.0UW	2.0UW	2.0UW	2.0UW
Vanadium	NA	20.0B	6.0	7.4B	22.4B	6.0U	6.0U	6.0U	64.3
Zinc	300	65.6	18.2B	150	160	62.3	67.6	798.1	693
Cyanide	100	10.0U	10.0U	10.0U	10.0U	10.0U	10.0U	10.0U	10.0U

U - Compound was analyzed for but not detected

B - Analyte results are between IDL and contract required detection limit.

W - Post-digest spike recovery furnace analysis was out of 85-115 percent control limit, while sample absorbance was less than 50 percent of spike absorbance.

N - The spiked sample recovery is not within control limits.

(1) - 6 NYCRR 703 Groundwater Standards. The standard is only listed if the compound was detected.

NA - Not Applicable

** - 6 NYCRR 703 Guidance Values

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 19

VALIDATED DATA SUMMARY
GROUNDWATER RESULTS FOR DISSOLVED METALS

Sample Location:	Groundwater	1S	1D	2S	2D	2XD	3S	3D	4S	4D	5S
Sample Designation:	Standard	FRC-1S-01	FRC-1D-01	FRC-2S-01	FRC-2D-01	FRC-2XD-01	FRC-3S-01	FRC-3D-01	FRC-4S-01	FRC-4D-01	FRC-5S-01
	(1)										
Sample Date:		12/3/92	12/3/92	12/3/92	12/3/92	12/2/92	12/2/92	12/2/92	12/2/92	12/2/92	12/2/92
Parameter: (Concentrations in ug/l)											
Aluminum	NA	13.0U	19.6B	13.0U	18.3B	204	13.0U	15.7B	36.3B	22.0U	13.0U
Antimony	3**	18.0U	18.0B	26.1B	29.5B	18.0U	18.0U	25.2B	18.0U	21.0U	18.0U
Arsenic	25	2.0U	7.6BW	2.9B	6.0BW	2.0U	2.0U	7.0B	2.0U	2.0U	2.0U
Barium	1000	38.2B	45.5B	133B	82.9B	22.1B	14.2B	43.2B	22.9B	41.0B	28.3B
Beryllium	3**	1.0U	5.0UC	1.0UC	1.0UC	1.0UC	1.0UC	5.0UC	1.0UC	1.0U	1.0UC
Cadmium	10	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U
Calcium	NA	25,457	23,175	88,089	75,922	33,158	13,072	21,149	12,354	25,500	31,784
Chromium	50	3.0U	3.0U	3.0U	3.0U	3.0U	3.3B	3.0U	3.0B	3.0U	3.0U
Cobalt	NA	5.2B	23.0B	3.0U	3.9B	3.0U	3.0U	10.3B	3.0U	3.0U	7.3B
Copper	200	7.8B	3.3B	2.0U	2.0U	9.8B	15.0B	12.0B	16.0B	3.0U	10.9B
Iron	300	630	18,887	5,677	7,910	76.0U	76.0U	17,735	76.0U	165	4,118
Lead	25	1.0U	1.0UW	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	2.0U	1.0U
Magnesium	35000**	3,788B	4,268B	9,405	7,850	3,691BJ	4,298B	3,637B	2,994B	4,410B	4,185B
Manganese	300	1,012	1,014	1,169	2,367	1,123J	27B	2,103	3.8B	358	4,750
Mercury	2	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U
Nickel	NA	8.0U	8.0U	8.0U	8.0U	8.0U	8.0U	8.0U	8.0U	21.0U	8.0U
Potassium	NA	2,689B	4,170B	6,687	4,316B	7,028	1,311B	3,031B	1,657B	4,520B	4,961B
Selenium	10	2.0U	2.0U	2.0U	2.0UW	2.0U	2.0U	2.0UW	2.0U	2.0UN	2.0UW
Silver	50	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U
Sodium	20000	37,496	40,671	70,132	26,262	23,626	5,685	28,044	5,833	13,800	60,943
Thallium	4**	2.0UW	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U
Vanadium	NA	4.0U	4.0U	4.6B	4.0U	4.0U	4.0U	4.0U	4.0U	6.0U	4.0U
Zinc	300	11.6B	15.8B	21.8	21.4	17.4B	24.8	27.3	40.0	26.8	12.0B

U - Compound was analyzed for but not detected.
B - Analyte results are between IDL and contract required detection limit.
W - Post-digest spike recovery furnace analysis was out of 85-115 percent control limit, while sample absorbance was less than 50 percent of spike absorbance.
S - Estimated due to surrogate outliers
C - Laboratory calibration requirements are not met.
(1) - 6 NYCRR 703 Groundwater Standards.
NA - Not Applicable
** - 6 NYCRR 703 Guidance Values

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 19

VALIDATED DATA SUMMARY
GROUNDWATER RESULTS FOR DISSOLVED METALS

Sample Location:	Groundwater	5D	6S	6D	6D	7S	7D	8S	8I	9S	9I
Sample Designation:	Standard	FRC-5D-01	FRC-6S-01	FRC-6D-01	FRC-6D-01	FRC-7S-01	FRC-7D-01	FRC-8S-01	FRC-8I-01	FRC-9S-01	FRC-9I-01
	(1)				DUP						
Sample Date:		12/2/92	12/3/92	12/10/92	12/10/92	12/3/92	12/3/92	12/2/92	12/2/92	12/3/92	12/3/92
Parameter: (Concentrations in ug/l)											
Aluminum	NA	13.0U	147B	88.2B	86.1B	25.2B	13.0U	13.0U	18.1B	72.3B	102B
Antimony	3**	18.0U	21.0U	21.0U	21.0U	18.0U	18.0U	18.0U	20.6B	21.0U	21.0U
Arsenic	25	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U
Barium	1000	22.5B	70.1B	21.2B	21.2B	22.9B	50.1B	44.1B	19.6B	14.1B	20.7B
Beryllium	3**	1.0UC	1.0U	1.0U	1.0U	1.0UC	1.0UC	1.0UC	1.0UC	1.0U	1.0U
Cadmium	10	2.0U	3.2B	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U
Calcium	NA	9,173	14,145	14,127	13,779	18,087	16,505	37,360	25,106	7,550	28,700
Chromium	50	4.8B	10.8	3.4B	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	34.2
Cobalt	NA	3.0U	3.0U	3.2B	3.0U	3.0U	3.0U	3.0U	3.8B	3.0U	3.0U
Copper	200	5.0B	14.9B	3.0U	3.0U	2.0U	2.0U	3.9B	15.3B	9.5B	10.7B
Iron	300	76.0U	82.0U	82.0U	82.0U	76.0U	76.0U	2,398	2,376	82.0U	82.0U
Lead	25	1.0U	2.0U	2.0U	2.0U	1.0U	1.0U	1.0U	1.0U	2.0U	2.0U
Magnesium	35000**	1,717B	3,445B	3,066B	2,992B	2,573B	2,637B	4,505B	2,049BJ	2,129B	1,112B
Manganese	300	527	76.9	1,227	1,200.5	4.0B	1,474	398	1,177J	8.3B	5.4B
Mercury	2	0.20U	0.20U	0.26	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U
Nickel	NA	8.0U	21.0U	21.0U	21.0U	8.0U	8.0U	8.0U	8.0U	21.0U	21.0U
Potassium	NA	1,799B	5,321	1,845B	1,662B	2,647B	2,525B	3,481B	7,052	3,033B	39,308
Selenium	10	2.0U	2.0U	2.0UNW	2.0UNW	2.0U	2.0U	2.0U	2.0UW	2.0UW	2.0UW
Silver	50	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U
Sodium	20000	10,715	15,930	18,439	18,067	10,739	19,031	24,134	22,557	5,163	39,394
Thallium	4**	2.0U	2.0UC	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U
Vanadium	NA	4.0U	6.0U	6.0U	6.0U	4.0U	4.0U	4.0U	4.0U	6.0U	6.0U
Zinc	300	19.3B	21.1	15.0B	22.8	14.7B	14.3B	16.5B	26.6	52.7	25.5

U - Compound was analyzed for but not detected.
B - Analyte results are between IDL and contract required detection limit.
W - Post-digest spike recovery furnace analysis was out of 85-115 percent control limit, while sample absorbance was less than 50 percent of spike absorbance.
* - Duplicate analysis is not within control limits.
C - Laboratory calibration requirements are not met.
(1) - 6 NYCRR 703 Groundwater Standards.
NA - Not Applicable
** - 6 NYCRR 703 Guidance Values

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 19

VALIDATED DATA SUMMARY
GROUNDWATER RESULTS FOR DISSOLVED METALS

Sample Location:	Groundwater	10S	10I	10D	10D	11S	11I	11D	MW12S		
Sample Designation:	Standard	FRC-10S-01	FRC-10I-01	FRC-10D-01	FRC-10D-01 DUP	FRC-11S-01	FRC-11I-01	FRC-11D-01	FRC-MW12S-01	FRC-RB-1	FRC-RB-01
Sample Date:	(1)	12/3/92	12/3/92	12/3/92	12/3/92	12/4/92	12/4/92	12/3/92	12/3/92	12/3/92	12/7/92
Parameter: (Concentrations in ug/l)											
Aluminum	NA	22.0U	22.0U	46.6B	73.3B	532	28B	32.5B	22.8B	17.9B	22.0U
Antimony	3**	21.0U	21.0U	21.0U	23.6B	20.0B	18.0U	18.0U	21.0U	18.4B	21.0U
Arsenic	25	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U
Barium	1000	65.6B	27.4B	26.1B	29.9B	16.9B	9.9B	25.6B	72.6B	1.0U	6.0U
Beryllium	3**	1.0U	1.0U	1.0U	1.0U	1.0UC	1.0UC	1.0UC	1.0U	1.0UC	1.0U
Cadmium	10	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U
Calcium	NA	48,222	21,465	11,672	11,276	23,429	19,876	15,406	32,382	51.2B	101B
Chromium	50	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	4.0B	3.0U	3.0U	3.0U
Cobalt	NA	3.0U	5.5B	3.0U	3.0U	3.0U	3.0U	4.1B	3.0U	3.0U	3.0U
Copper	200	12.8B	10.7B	8.2B	7.0B	4.5B	2.1B	2.0U	3.0U	2.0U	3.8B
Iron	300	82.0U	506	82.0U	82.0U	932	76.0U	76.0U	276	76.0U	82.0U
Lead	25	2.0U	2.0U	2.0U	2.0U	1.2B	1.0U	1.0U	2.0U	1.0U	2.0U
Magnesium	35000**	6,956	4,681B	3,196B	3,223B	3,510B	2,898B	2,489B	14,150	26.0U	29.4B
Manganese	300	671	6,214	6.1B	3.2B	444	31.8	338.3	81.9	3.4B	2.0B
Mercury	2	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.21U	0.20U	0.20U	0.20U
Nickel	NA	21.0U	21.0U	21.0U	21.0U	8.0U	8.0U	8.0U	21.0U	8.0U	21.0U
Potassium	NA	10,647	7,251	31,313	39,554	3,230B	9,330	7,900	13,507	567U	626U
Selenium	10	2.0U	2.0U	2.0U	2.0U	2.1U	2.0U	2.0U	2.0UW	2.0U	2.0UN
Silver	50	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U
Sodium	20000	63,496	18,570	28,508	34,999	11,015	19,104	21,765	25,526	60.7B	240B
Thallium	4**	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U
Vanadium	NA	6.0U	6.0U	6.0U	6.0U	4.0U	4.0U	4.0U	6.0U	4.0U	6.0U
Zinc	300	19.3B	30.5	9.4B	10.8B	52.9	40.2	47.2	9.0B	14.0B	8.4B

U - Compound was analyzed for but not detected.
B - Analyte results are between IDL and contract required detection limit.
W - Post-digest spike recovery furnace analysis was out of 85-115 percent control limit, while sample absorbance was less than 50 percent of spike absorbance.
N - The spiked sample recovery is not within control limits.
(1) - 6 NYCRR 703 Groundwater Standards.
NA - Not Applicable
** - 6 NYCRR 703 Guidance Values

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 19

VALIDATED DATA SUMMARY
GROUNDWATER RESULTS FOR DISSOLVED METALS

Sample Location:	Groundwater	1S	1D	2S	2S	2D	2XD	3S	3D	4S	4D
Sample Designation:	Standard	FRC-1S-02	FRC-1D-02	FRC-2S-02	FRC-2S-02 DUP	FRC-2D-02	FRC-2XD-02	FRC-3S-02	FRC-3D-02	FRC-4S-02	FRC-4D-02
	(1)										
Sample Date		3/1/93	3/1/93	3/1/93	3/1/93	3/1/93	3/1/93	2/25/93	2/26/93	2/26/93	2/26/93
Parameter: (Concentrations in ug/l)											
Aluminum	NA	22.0U	22.0U	22.0U	22.0U	22.0U	22.0U	22.0U	22.0U	22.0U	22.0U
Antimony	3**	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U
Arsenic	25	1.0U	7.9B	2.8B	2.8B	3.0B	1.0B	1.0U	7.7B	1.0U	1.8B
Barium	1000	51.9B	7.8B	81.4B	82.9B	69.1B	47.4B	15.8B	33.8B	22.1B	33.8B
Beryllium	3**	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Cadmium	10	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U
Calcium	NA	27,800	21,323	75,826	74,821	78,472	69,729	14,257	18,672	12,045	16,887
Chromium	50	3.0U	3.0U	3.0U	3.0U	5.0U	3.0U	3.0U	3.0U	4.8B	3.0U
Cobalt	NA	3.7B	19.6B	3.0U	3.0U	3.7B	3.0U	3.0U	10.8B	3.0U	9.0B
Copper	200	3.0U	10.1B	3.0U	6.2B	4.7B	3.0U	3.0U	3.0U	3.0U	3.0U
Iron	300	431	13,713	3,856	4,012	2,627	82.0U	82.0U	16,083	82.0U	2,140
Lead	25	1.2B	1.0U	1.0U	1.0U	1.0U	2.5B	1.0U	1.0U	1.0U	1.0U
Magnesium	35000**	4,762B	3,926B	8,337	8,269	8,295	9,453	5,279	3,023B	3,017B	2,933B
Manganese	300	825	833	967	949	2,335	2,945	1.3B	1,953	1.4B	1,639
Mercury	2	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U
Nickel	NA	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U
Potassium	NA	3,222B	3,693B	4,955B	4,706B	3,780B	6,513	1,453B	2,554B	1,675B	2,192B
Selenium	10	2.0UW	2.0U	2.0UW	2.0U	2.0U	2.0UW	2.0UW	2.0UW	2.0U	2.0UW
Silver	50	3.0U	4.7B	3.0U	3.8B	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U
Sodium	20000	55,944	36,457	37,141	38,231	24,483	33,529	4,722B	22,765	7,106	23,436
Thallium	4**	2.0U	2.0UW	2.0UW	2.0UW	2.0UW	2.0U	2.0U	2.0U	2.0U	2.0UW
Vanadium	NA	6.0U	6.0U	6.0U	6.0U	6.0U	6.0U	6.0U	6.0U	6.0U	6.0U
Zinc	300	8.4B	18.0B	4.0U	15.3B	4.5B	4.0U	11.1B	10.5B	9.0B	10.0B

U - Compound was analyzed for but not detected.
B - Analyte results are between IDL and contract required detection limit.
W - Post-digest spike recovery furnace analysis was out of 85-115 percent control limit, while sample absorbance was less than 50 percent of spike absorbance.
N - The spiked sample recovery is not within control limits.
(1) - 6 NYCRR 703 Groundwater Standards.
NA - Not Applicable
** - 6 NYCRR 703 Guidance Values

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 19

VALIDATED DATA SUMMARY
GROUNDWATER RESULTS FOR DISSOLVED METALS

Sample Location:	Groundwater	5S	5D	6S	6D	7S	7D	8S	8I	9S	9I
Sample Designation:	Standard (1)	FRC-5S-02	FRC-5D-02	FRC-6S-02	FRC-6D-02	FRC-7S-02	FRC-7D-02	FRC-8S-02	FRC-8I-02	FRC-9S-02	FRC-9I-02
Sample Date:		3/1/93	3/1/93	3/1/93	3/1/93	3/1/93	3/1/93	2/26/93	2/26/93	2/26/93	2/26/93
Parameter: (Concentrations in ug/l)											
Aluminum	NA	71.4B	22.0U	124B	117B	22.0U	22.0U	22.0U	22.0U	22.0U	22.0U
Antimony	3**	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U
Arsenic	25	1.4B	1.0UW	1.0U	1.0U	1.0U	1.0U	1.0U	1.0B	1.0U	1.0U
Barium	1000	24.0B	27.7B	66.6B	20.0B	24.6B	51.2B	94.3B	18.0B	32.0B	17.2B
Beryllium	3**	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Cadmium	10	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U
Calcium	NA	29,832	10,628	12,092	12,402	19,609	18,178	49,803	47,793	12,043	8,995
Chromium	50	5.0U	3.0U	5.9B	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	18.7
Cobalt	NA	6.0B	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.9B	3.0U	3.0U
Copper	200	4.4B	19.2B	4.9B	3.0U	3.0U	3.0U	3.0U	3.0U	5.2B	4.2B
Iron	300	2,426	82.0U	82.0U	82.0U	82.0U	82.0U	1,029	689	82.0U	82.0U
Lead	25	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Magnesium	35000**	4,192B	2,074B	2,298B	2,682B	2,714B	2,785B	7,447	5,464	2,665B	621B
Manganese	300	4,062	515	51.8	51.8	4.8B	1,123	322	1,471	6.6B	9B
Mercury	2	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U
Nickel	NA	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U
Potassium	NA	3,144B	2,045B	2,632B	1,835B	2,728B	2,272B	4,707B	4,125B	1,652B	43,994
Selenium	10	2.0U	2.0UW	2.0U	2.0U	2.0U	2.0U	2.0UW	2.0UW	2.0U	19.0U
Silver	50	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U
Sodium	20000	53,191	11,567	15,923	18,609	9,934	20,713	75,708	27,904	23,560	49,953
Thallium	4**	2.0UW	2.0UW	2.0UW	2.0UW	2.0UW	2.0UW	2.0U	2.0UW	2.0U	2.0UW
Vanadium	NA	6.0U	6.0U	7.8B	6.0U	6.0U	6.0U	6.0U	6.0U	6.0U	6.0U
Zinc	300	13.1B	60.1	9.3B	18.2B	11.3B	9.1B	14.8B	39.6	81.7	4.0U

U - Compound was analyzed for but not detected.
B - Analyte results are between IDL and contract required detection limit
W - Post-digest spike recovery furnace analysis was out of 85-115 percent control limit, while sample absorbance was less than 50 percent of spike absorbance.
N - The spiked sample recovery is not within control limits.
(1) - 6 NYCRR 703 Groundwater Standards
NA - Not Applicable
** - 6 NYCRR 703 Guidance Values

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 19

VALIDATED DATA SUMMARY
GROUNDWATER RESULTS FOR DISSOLVED METALS

Sample Location:	Groundwater	10S	10I	10D	11S	11I	11I	11D	MW12S
Sample Designation:	Standard	FRC-10S-02	FRC-10I-02	FRC-10D-02	FRC-11S-02	FRC-11I-02	FRC-11I-02	FRC-11D-02	FRC-MW12S-02
	(1)						DUP		
Sample Date:		2/26/93	2/26/93	2/26/93	2/24/93	2/24/93	2/24/93	2/24/93	3/1/93
Parameter: (Concentrations in ug/l)									
Aluminum	NA	22.0U	22.6B	40.6B	23.2B	22.0U	30.0B	35.8B	57.6B
Antimony	3**	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U
Arsenic	25	1.0U	1.0U	1.0U	1.0UW	1.0U	1.0U	1.0U	1.2B
Barium	1000	37.9B	27.5B	16.3B	6.0U	8.6B	8.6B	43.8B	82.0B
Beryllium	3**	1.0U	1.0U	1.0U	3.3B	1.0U	2.3B	5.2	1.0U
Cadmium	10	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U
Calcium	NA	45,612	15,869	12,453	20,401	21,440	25,987	15,356	37,633
Chromium	50	3.0U	7.0B	5.6B	3.0U	3.0U	4.3B	3.0U	3.0U
Cobalt	NA	3.4B	3.2B	3.0U	3.0U	3.0U	3.0U	5.0B	3.0U
Copper	200	3.4B	13.6B	5.5B	3.0U	3.0U	3.4B	7.6B	3.0U
Iron	300	82.0U	82.0U	82.0U	82.0U	82.0U	82.0U	82.0U	160
Lead	25	1.0U	6.2	1.0B	1.0U	1.0U	1.5B	1.0U	1.2BW
Magnesium	35000**	5,620	1,025B	3,468B	2,684B	3,822B	3,929B	3,328B	18,599
Manganese	300	765	11	14B	184	21.4	20.0	469	130
Mercury	2	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U
Nickel	NA	21.0U	21.0U	21.0U	21.0U	21.0U	21.0U	19.2U	21.0U
Potassium	NA	6,337	40,685	12,924	3,094B	7,151	10,345	5,145	10,607
Selenium	10	2.0U	2.0UW	4.0U+	2.0U	2.0UW	2.0U	2.0U	2.0UW
Silver	50	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U	3.0U
Sodium	20000	38,635	88,255	46,707	9,052	19,108	20,132	51,718	27,019
Thallium	4**	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0UW
Vanadium	NA	6.0U	6.0U	6.0U	6.0U	6.0U	6.0U	6.0U	6.0U
Zinc	300	13.5B	4.0U	5.5B	62.2	32.0	27.7	69.4	5.2B

U - Compound was analyzed for but not detected.
B - Analyte results are between IDL and contract required detection limit.
W - Post-digest spike recovery furnace analysis was out of 85-115 percent control limit, while sample absorbance was less than 50 percent of spike absorbance.
N - The spiked sample recovery is not within control limits.
(1) - 6 NYCRR 703 Groundwater Standards.
NA - Not Applicable
** - 6 NYCRR 703 Guidance Values

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FAIRCHILD INDUSTRIES INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 20

DATA SUMMARY
GROUNDWATER ANALYTICAL RESULTS FOR ALKALINITY, NITRATE, PHOSPHORUS AND SULFATE

Sample Location:	Groundwater	1S	1D	2S	2D	2XD	3S	3D	4S	4D	5S
Sample Designation:	Standard	FRC-1S-01	FRC-1D-01	FRC-2S-01	FRC-2D-01	FRC-2XD-01	FRC-3S-01	FRC-3D-01	FRC-4S-01	FRC-4D-01	FRC-5S-01
	(1)										
Sample Date:		12/3/92	12/3/92	12/3/92	12/3/92	12/2/92	12/2/92	12/2/92	12/2/92	12/2/92	12/2/92
Parameter: (Concentrations in mg/l)											
Alkalinity, as Calcium Carbonate	NA	59.4	77.4	204	155	79.2	31.9	77.2	22	51.7	89.1
Nitrate/Nitrite-Nitrogen	10	0.36	0.10 U	0.11	0.10 U	0.12	1.01	0.10 U	1.72	0.14	0.10 U
Phosphorus	NA	0.10 U	0.10 U	0.2	0.10 U	0.10 U	0.10 U	0.12	0.10 U	0.10 U	0.22
Sulfate	250	13.2	35.4	68.7	94.7	32.1	15.2	19.8	20.6	21.8	24.7

Sample Location:	Groundwater	5D	6S	6D	6D	7S	7D	8S	8I	9S	9I
Sample Designation:	Standard	FRC-5D-01	FRC-6S-01	FRC-6D-01	FRC-6D-01	FRC-7S-01	FRC-7D-01	FRC-8S-01	FRC-8I-01	FRC-9S-01	FRC-9I-01
	(1)				DUP						
Sample Date:		12/2/92	12/3/92	12/10/92	12/10/92	12/3/92	12/3/92	12/2/92	12/2/92	12/3/92	12/3/92
Parameter: (Concentrations in mg/l)											
Alkalinity, as Calcium Carbonate	NA	23.4	11.5	11.9	8.9	39.6	40.4	110	44.6	25.5	117
Nitrate/Nitrite-Nitrogen	10	0.17	2.52	2.8	2.79	1.39	0.64	0.52	0.10 U	0.38	0.10 U
Phosphorus	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.27	0.10 U
Sulfate	250	16.5	27.6	32.5	31.3	27.2	28	13.2	42.4	6.17	62.2

Sample Location:	Groundwater	10S	10I	10D	10D	11S	11I	11D	12S		
Sample Designation:	Standard	FRC-10S-01	FRC-10I-01	FRC-10D-01	FRC-10D-01	FRC-11S-01	FRC-11I-01	FRC-11D-01	FRC-12S-01	FRC-RB-01	FRC-RB-1
	(1)				DUP						
Sample Date:		12/3/92	12/3/92	12/3/92	12/3/92	12/4/92	12/4/92	12/3/92	12/3/92	12/7/92	12/3/92
Parameter: (Concentrations in mg/l)											
Alkalinity, as Calcium Carbonate	NA	107	60.2	84.7	85.5	52.5	59.4	35.6	200	2	<1.00
Nitrate/Nitrite-Nitrogen	10	4.14	0.10 U	0.10 U	0.10 U	1.54	0.49	2.13	0.2	0.10 U	0.10 U
Phosphorus	NA	0.2	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.12	0.10 U	0.10 U	0.83
Sulfate	250	24.7	30.5	30.5	32.1	30.9	33.3	26.4	4.12	<10.0	<10.0

U - The compound was analyzed for but not detected.
(1) - 6 NYCRR 703 Groundwater Standards. The standard is only listed if the compound was detected.
NA - Not Applicable

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FAIRCHILD INDUSTRIES INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 20

DATA SUMMARY
GROUNDWATER ANALYTICAL RESULTS FOR ALKALINITY, NITRATE, PHOSPHORUS AND SULFATE

Sample Location:	Groundwater	1S	1D	2S	2S	2D	2XD	3S	3D
Sample Designation:	Standards	FRC-1S-02	FRC-1D-02	FRC-2S-02	FRC-2S-02	FRC-2D-02	FRC-2XD-02	FRC-3S-02	FRC-3D-02
	(1)			DUP					
Sample Date:		3/1/93	3/1/93	3/1/93	3/1/93	3/1/93	3/1/93	2/25/93	2/26/93
Parameter: (Concentrations in mg/l)									
Alkalinity, as Calcium Carbonate	NA	65.9	52.9	129	173	159	112	35.2	64.7
Nitrate/Nitrite-Nitrogen	10	0.414	0.100U	0.100U	0.100U	0.100U	0.10 U	0.84	0.10 U
Phosphorus	NA	1.13	0.487	0.14	0.665	0.100U	0.10 U	0.33	0.10 U
Sulfate	250	14.8	23	63.8	68.3	88.1	28.8	24.7	18.9

Sample Location:	Groundwater	5S	5D	6S	6D	7S	7D	8S	8I
Sample Designation:	Standards	FRC-5S-02	FRC-5D-02	FRC-6S-02	FRC-6D-02	FRC-7S-02	FRC-7D-02	FRC-8S-02	FRC-8I-02
	(1)								
Sample Date:		3/1/93	3/1/93	3/1/93	3/1/93	3/1/93	3/1/93	2/26/93	2/26/93
Parameter: (Concentrations in mg/l)									
Alkalinity, as Calcium Carbonate	NA	79.6	23.8	11.1	12.77	33.7	40.2	161	108
Nitrate/Nitrite-Nitrogen	10	0.100U	0.17	3.04	2.76	2.15	1.28	1.14	0.10 U
Phosphorus	NA	0.38	0.100U	0.100U	0.100U	0.100U	0.100U	0.10 U	0.10 U
Sulfate	250	26.3	16.1	24.3	26.3	30.9	23.9	26.3	61.7

Sample Location:	Groundwater	10S	10I	10D	11S	11I	11I	11D	MW-12S
Sample Designation:	Standards	FRC-10S-02	FRC-10I-02	FRC-10D-02	FRC-11S-02	FRC-11I-02	FRC-11I-02	FRC-11D-02	FRC-MW12S-0
	(1)						DUP		
Sample Date:		2/26/93	2/26/93	2/26/93	2/24/93	2/24/93	2/24/93	2/24/93	3/1/93
Parameter: (Concentrations in mg/l)									
Alkalinity, as Calcium Carbonate	NA	108	110	70.1	41.6	35.2	43.6	19.8	251
Nitrate/Nitrite-Nitrogen	10	2.32	0.10 U	0.10 U	0.96	0.66	0.65	3.33	0.100U
Phosphorus	NA	0.15	0.10 U	0.10 U	1.2	0.29	0.24	0.10 U	0.100U
Sulfate	250	33.3	28.8	31.7	22.6	43.2	42.4	22.2	10.0U

U - The compound was analyzed for but not detected.
(1) - 6 NYCRR 703 Groundwater Standards. The standard is only listed if the compound was detected.
NA - Not Applicable

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 21

WATER LEVEL DATA SUMMARY

Well I.D./Pond	Measuring Point Elevation, ft AMSL[1]	10-28-92		11-30-92		12-28-92		1-28-93	
		Depth to Water, ft BMP[2]	Water Level Elevation, ft AMSL	Depth to Water, ft BMP	Water Level Elevation, ft AMSL	Depth to Water, ft BMP[2]	Water Level Elevation, ft AMSL	Depth to Water, ft BMP	Water Level Elevation, ft AMSL
1S	77.90	25.98	51.92	25.43	52.47	24.71	53.19	24.69	53.21
1D	77.96	26.00	51.96	25.54	52.42	24.87	53.09	24.82	53.14
2S	76.78	26.09	50.69	25.50	51.28	24.71	52.07	24.69	52.09
2D	76.83	26.13	50.70	25.53	51.30	24.77	52.06	24.74	52.09
2XD	75.99	25.26	50.73	24.72	51.27	23.98	52.01	23.93	52.06
3S	75.82	25.55	50.27	25.01	50.81	24.23	51.59	24.23	51.59
3D	76.09	25.80	50.29	25.31	50.78	24.62	51.47	24.52	51.57
4S	75.58	26.04	49.54	25.54	50.04	24.66	50.92	24.77	50.81
4D	75.52	26.02	49.50	25.53	49.99	24.71	50.81	24.71	50.81
5S	74.03	20.75	53.28	20.25	53.78	19.65	54.38	19.58	54.45
5D	73.75	20.55	53.20	20.13	53.62	19.43	54.32	19.35	54.40
6S	65.60	13.51	52.09	13.06	52.54	12.09	53.51	12.30	53.30
6D	65.28	ND[3]	ND	12.96	52.32	12.31	52.97	12.04	53.24
7S	80.29	28.38	51.91	27.98	52.31	27.21	53.08	27.13	53.16
7D	80.05	28.08	51.97	27.70	52.35	26.96	53.09	26.87	53.18
8S	75.77	25.32	50.45	24.77	51.00	23.96	51.81	23.63	52.14
8I	75.45	25.00	50.45	24.45	51.00	23.65	51.80	23.95	51.50
9S	77.50	26.10	51.40	25.58	51.92	24.83	52.67	24.80	52.70
9I	77.60	26.16	51.44	25.67	51.93	24.92	52.68	24.90	52.70
10S	74.37	25.20	49.17	24.74	49.63	23.94	50.43	23.51	50.86
10I	74.81	ND	ND	24.70	50.11	23.87	50.94	23.96	50.85
10D	74.70	ND	ND	24.29	50.41	23.51	51.19	24.84	49.86
11S	72.53	19.22	53.31	18.74	53.79	18.14	54.39	18.11	54.42
11I	72.31	ND	ND	18.54	53.77	17.91	54.40	17.89	54.42
11D	72.61	ND	ND	18.88	53.73	18.24	54.37	18.20	54.41

NOTES:
(1) AMSL - Above Mean Sea Level
(2) BMP - Below Measuring Point
(3) ND - No Data

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 21

WATER LEVEL DATA SUMMARY

Well I.D./Pond	Measuring Point Elevation, ft AMSL[1]	2-23-93		3-28-93		4-27-93	
		Depth to Water, ft BMP[2]	Water Level Elevation, ft AMSL	Depth to Water, ft BMP	Water Level Elevation, ft AMSL	Depth to Water, ft BMP[2]	Water Level Elevation, ft AMSL
1S	77.90	24.60	53.30	23.32	54.58	22.54	55.36
1D	77.96	24.73	53.23	23.46	54.50	22.68	55.28
2S	76.78	24.57	52.21	23.09	53.69	22.36	54.42
2D	76.83	24.62	52.21	23.14	53.69	22.42	54.41
2XD	75.99	23.81	52.18	22.34	53.65	21.63	54.36
3S	75.82	24.14	51.68	23.64	52.18	21.95	53.87
3D	76.09	24.42	51.67	22.95	53.14	22.24	53.85
4S	75.58	24.60	50.98	23.10	52.48	22.42	53.16
4D	75.52	24.64	50.88	23.14	52.38	22.43	53.09
5S	74.03	19.52	54.51	18.32	55.71	17.54	56.49
5D	73.75	19.32	54.43	18.11	55.64	17.34	56.41
6S	65.60	12.21	53.39	10.96	47.49	10.20	55.40
6D	65.28	11.95	53.52	10.66	54.62	9.93	55.35
7S	80.29	27.10	53.19	25.85	54.44	24.98	55.31
7D	80.05	26.82	53.23	25.58	54.47	24.71	55.34
8S	75.77	23.82	51.95	22.29	53.48	21.60	54.17
8I	75.45	23.51	51.94	22.00	53.45	21.28	54.17
9S	77.50	24.70	52.80	23.34	54.16	22.58	54.92
9I	77.60	24.80	52.80	25.42	52.18	22.66	54.94
10S	74.37	23.80	51.34	22.20	52.17	21.58	52.79
10I	74.81	23.68	50.57	22.11	52.70	21.47	53.34
10D	74.70	23.36	51.13	21.76	52.94	21.13	53.57
11S	72.53	18.05	54.48	16.88	55.65	16.09	56.44
11I	72.31	17.83	54.48	16.64	55.67	15.86	56.45
11D	72.61	18.12	54.49	16.96	55.65	16.16	56.45

NOTES:
(1) AMSL - Above Mean Sea Level
(2) BMP - Below Measuring Point
(3) ND - No Data

LLV4064

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN
EAST FARMINGDALE, NEW YORK

TABLE 22

VALIDATED DATA SUMMARY
SOIL SAMPLE ANALYTICAL RESULTS FOR VOLATILE ORGANIC COMPOUNDS

Sample Designation:	Recommended Soil	ORB-1	ORB-1-D	ORB-2	ORB-3	TB-1*
Sample Date:	Cleanup	10/30/92	10/30/92	10/30/92	10/30/92	---
Parameter: (Concentrations in ug/kg)	Objective (1)					
Chloromethane		12 U	10 U	14 U	11 U	10 UC
Vinyl Chloride		12 U	10 U	14 U	11 U	10 UC
Bromomethane		12 U	10 U	14 U	11 U	10 UC
Chloroethane		12 U	10 U	14 U	11 U	10 UC
Methylene Chloride	100	7JB	4JB	5JB	7JB	10 UC
Acetone	200	9JB	3JB	12JB	6JB	13
Carbon Disulfide	2,700	12 U	10 U	0.7J	11 U	10 UC
1,1-Dichloroethene		12 U	10 U	14 U	11 U	10 UC
trans-1,2-Dichloroethene		12 U	10 U (total)	10 U (total)	11 U	10 UC
1,1-Dichloroethane		12 U	10 U	14 U	11 U	10 UC
cis-1,2-Dichloroethene		12 U	NA	NA	11 U	10 UC
2-Butanone		12 U	10 U	14 U	11 U	10 UC
Chloroform		12 U	10 U	14 U	11 U	10 UC
1,1,1-Trichloroethane		12 U	10 U	14 U	11 U	10 UC
Vinyl Acetate		12 U	10 U	14 U	11 U	10 UC
Carbon Tetrachloride		12 U	10 U	14 U	11 U	10 UC
Benzene		12 U	10 U	14 U	11 U	10 UC
1,2-Dichloroethane		12 U	10 U	14 U	11 U	10 UC
Trichloroethene	700	12 U	10 U	14 U	2J	10 UC
1,2-Dichloropropane		12 U	10 U	14 U	11 U	10 UC
4-Methyl-2-pentanone		12 U	10 U	14 U	11 U	10 UC
Bromodichloromethane		12 U	10 U	14 U	11 U	10 UC
cis-1,3-Dichloropropene		12 U	10 U	14 U	11 U	10 UC
Toluene		12 U	10 U	14 U	11 U	10 UC
trans-1,3-Dichloropropene		12 U	10 U	14 U	11 U	10 UC
1,1,2-Trichloroethane		12 U	10 U	14 U	11 U	10 UC
Tetrachloroethene		12 U	10 U	14 U	11 U	10 UC
2-Hexanone		12 U	10 U	14 U	11 U	10 UC
Dibromochloromethane		12 U	NA	NA	11 U	10 UC
Chlorobenzene		12 U	10 U	14 U	11 U	10 UC
Ethylbenzene		12 U	10 U	14 U	11 U	10 UC
meta and/or para-Xylene		12 U	10 U	14 U	11 U	10 UC
ortho-Xylene		12 U	NA	NA	11 U	10 UC
Styrene		12 U	NA	NA	11 U	10 UC
Bromoform		12 U	10 U	14 U	11 U	10 UC
1,1,2,2-Tetrachloroethane		12 U	10 U	14 U	11 U	10 UC

* - TB-1 Concentrations in ug/l

U - Indicates that the compound was analyzed for but not detected

J - Indicates that the compound was analyzed for and determined to be present in the sample. The mass spectrum of the compound meets the identification criteria of the method. The concentration listed is an estimated value, which is less than the specified minimum detection limit but is greater than zero.

B - This flag is used when the analyte is found in the blanks as well as the sample. It indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte

(1) - Cleanup standards for soil assume Total Organic Carbon=1%. NYSDEC TAGM November, 1992. Determination of soil cleanup objectives and cleanup level Standards given for detected compounds only.

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN
EAST FARMINGDALE, NEW YORK

TABLE 22

VALIDATED DATA SUMMARY
SOIL SAMPLE ANALYTICAL RESULTS FOR VOLATILE ORGANIC COMPOUNDS

Sample Designation:	ORB-1	ORB-1-D	ORB-2	ORB-3	TB-1*
Sample Date:	10/30/92	10/30/92	10/30/92	10/30/92	---
Tentatively Identified Compounds (TICs) (Concentrations in ug/kg)					
Total unknown siloxane	21J	7J	13J	10J	ND
Unknown carboxylic acid	ND	ND	ND	ND	110J
Unknown alkane	ND	ND	8J	ND	ND

* - TB-1 Concentrations in ug/l

J - Indicates that the compound was analyzed for and determined to be present in the sample. The concentration listed is an estimated value.

ND - Not Detected

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 23

VALIDATED DATA SUMMARY
SOIL SAMPLE ANALYTICAL RESULTS FOR SEMIVOLATILE ORGANIC COMPOUNDS

Sample Designation:	Recommended Soil	ORB-1	ORB-1-D	ORB-2	ORB-3
Sample Date:	Cleanup	10/30/92	10/30/92	10/30/92	10/30/92
Parameter: (Concentrations in ug/kg)	Objective (1)				
Phenol		2,000U	680U	460U	890U
bis(2-Chloroethyl)ether		2,000U	680U	460U	890U
2-Chlorophenol		2,000U	680U	460U	890U
1,3-Dichlorobenzene		2,000U	680U	460U	890U
1,4-Dichlorobenzene		2,000U	680U	460U	890U
1,2-Dichlorobenzene		2,000U	680U	460U	890U
2-Methylphenol		2,000U	680U	460U	890U
N-Nitroso-di-n-propylamine		2,000U	680U	460U	890U
Hexachloroethane		2,000U	680U	460U	890U
Nitrobenzene		2,000U	680U	460U	890U
Isophorone		2,000U	680U	460U	890U
2-Nitrophenol		2,000U	680U	460U	890U
2,4-Dimethylphenol	N/A	2,000U	680U	460U	890U
bis(2-Chloroethoxy)methane		2,000U	680U	460U	26J
2,4-Dichlorophenol		2,000U	680U	460U	890U
1,2,4-Trichlorobenzene		2,000U	680U	460U	890U
Naphthalene	13,000	343J	35J	460U	32J
4-Chloroaniline		2,000U	680U	460U	890U
Hexachlorobutadiene		2,000U	680U	460U	890U
4-Chloro-3-methylphenol		2,000U	680U	460U	890U
2-Methylnaphthalene	36,400	121J	26J	460U	42J
Hexachlorocyclopentadiene		2,000U	680U	460U	890U
2,4,6-Trichlorophenol		2,000U	680U	460U	890U
2,4,5-Trichlorophenol		4,800U	1,600U	1,100U	2,200U
2-Chloronaphthalene		2,000U	680U	460U	890U
2-Nitroaniline		4,800U	1600U	1,100U	2,200U
Dimethylphthalate		2,000U	680U	460U	890U
Acenaphthylene	41,000	56J	71J	460U	51J
2,6-Dinitrotoluene		2,000U	680U	460U	890U
3-Nitroaniline		4,800U	1,600U	1,100U	2,200U
Acenaphthene	50,000	502J	200J	460U	144J

U - Indicates that the compound was analyzed for but not detected

J - Indicates that the compound was analyzed for and determined to be present in the sample. The mass spectrum of the compound meets the identification criteria of the method. The concentration listed is an estimated value, which is less than the specified minimum detection limit but is greater than zero.

(1) - Cleanup standards for soil assume Total Organic Carbon=1%. NYSDEC TAGM November, 1992. Determination of soil cleanup objectives and cleanup levels. Standards given for detected compounds only.

N/A - Not Available

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 23

VALIDATED DATA SUMMARY
SOIL SAMPLE ANALYTICAL RESULTS FOR SEMIVOLATILE ORGANIC COMPOUNDS

Sample Designation:	Recommended Soil	ORB-1	ORB-1-D	ORB-2	ORB-3
Sample Date:	Cleanup	10/30/92	10/30/92	10/30/92	10/30/92
Parameter: (Concentrations in ug/kg)	Objective (1)				
2,4-Dinitrophenol		4,800U	1,600U	1,100U	2,200U
4-Nitrophenol		4,800U	1,600U	1,100U	2,200U
Dibenzofuran	6,200	352J	82J	460U	97J
2,4-Dinitrotoluene		2,000U	680U	460U	890U
Diethylphthalate	7,100	2,000U	9J	460U	17J
4-Chlorophenyl-phenylether		2,000U	680U	460U	890U
Fluorene	50,000	593J	207J	460U	205J
4-Nitroaniline		4,800U	1,600U	1,100U	2,200U
4,6-Dinitro-2-methylphenol		4,800U	1,600U	1,100U	2,200U
N-Nitrosodiphenylamine(1)		2,000U	680U	460U	890U
4-Bromophenyl-phenylether		2,000U	680U	460U	890U
Hexachlorobenzene		2,000U	680U	460U	890U
Pentachlorophenol		4,800U	1,600U	1,100U	2,200U
Phenanthrene	50,000	5,675	2,651	10J	2,696
Anthracene	50,000	1,148J	535J	460U	435J
Carbazole	N/A	1,656J	725	460U	735J
Di-n-butylphthalate	8,100	129JB	65JB	38JB	102JB
Fluoranthene	50,000	9,532	5,036	12J	5,242
Pyrene	50,000	8,201	3,725	19J	2,831
Butylbenzylphthalate	50,000	34JB	28JB	7JB	139JB
3,3'-Dichlorobenzidine		2,000U	680U	460U	890U
Benzo(a)anthracene	220	4,666	2,775	460U	1,840
Chrysene	400	4,579	2,597	10J	1,873
bis(2-Ethylhexyl)phthalate	50,000	265JB	145JB	98JB	464JB
Di-n-octylphthalate	50,000	2,000U	680U	8J	890U
Benzo(b)fluoranthene	1,100	3,507U	1,616	460U	2,298
Benzo(k)fluoranthene	1,100	653U	1,946	460U	1,230
Benzo(a)pyrene	61	3,579U	2,315	460U	1,545
Indeno(1,2,3-cd)pyrene	3,200	3,133U	1,073	460U	668J
Dibenzo(a,h)anthracene		2,000U	680U	460U	890U
Benzo(g,h,i)perylene	50,000	2,191U	298J	460U	549J

U - Indicates that the compound was analyzed for but not detected

J - Indicates that the compound was analyzed for and determined to be present in the sample. The mass spectrum of the compound meets the identification criteria of the method. The concentration listed is an estimated value, which is less than the specified minimum detection limit but is greater than zero.

B - This flag is used when the analyte is found in the blanks as well as the sample.

(1) - Cleanup standards for soil assume Total Organic Carbon ~1%. NYSDEC TAGM November, 1992. Determination of soil cleanup objectives and cleanup levels. Standards given for detected compounds only.

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FAIRCHILD INDUSTRIES INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 24

VALIDATED DATA SUMMARY
SOIL SAMPLE ANALYTICAL RESULTS FOR PCBs

Sample Designation:	Recommended Soil	ORB-1	ORB-1-D	ORB-1-D	ORB-2	ORB-3	ORB-3
Sample Date:	Cleanup	10/30/92	10/30/92	10/30/92	10/30/92	10/30/92	10/30/92
Parameter: (Concentrations in ug/kg)	Objective (1)		Diluted 10x	Diluted 100x		Diluted 10x	Diluted 100
Aroclor-1016		40 UC	340 UC	3,400 UC	46 UC	440 UC	4,400 UC
Aroclor-1221		81 UC	690 UC	6,900 UC	93 UC	900 UC	9,000 UC
Aroclor-1232		40 UC	340 UC	3,400 UC	46 UC	440 UC	4,400 UC
Aroclor-1242		40 UC	340 UC	3,400 UC	46 UC	440 UC	4,400 UC
Aroclor-1248		40 UC	340 UC	3,400 UC	46 UC	440 UC	4,400 UC
Aroclor-1254	1,000	130.0 P	4,000P	7,900 DPC	40.0 JPC	620 P	4,400 UC
Aroclor-1260		40 UC	340 UC	3,400 UC	46 UC	440 UC	4,400 UC

U - Indicates that the compound was analyzed for but not detected.

D - This flag identifies all compounds identified in an analysis at a secondary dilution factor.

P - Indicates that there is a greater than 25 percent difference for detected concentrations between the two GC columns.

J - Indicates that the compound was analyzed for and determined to be present in the sample. The concentration listed is an estimated value, which is less than the specified minimum detection limit but is greater than zero.

C - Laboratory calibration requirements are not met.

(1) - Cleanup standards for soil assume Total Organic Carbon=5%. NYSDEC TAGM November, 1992 Determination of soil cleanup objectives and cleanup levels. Standards given for detected compounds only.

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 25

VALIDATED DATA SUMMARY
SOIL SAMPLE ANALYTICAL RESULTS FOR METALS

Sample Designation:	Recommended Soil	Eastern USA	ORB-1	ORB-1-D	ORB-2	ORB-3
Sample Date:	Cleanup	Background	10/30/92	10/30/92	10/30/92	10/30/92
Parameter: (Concentrations in mg/kg)	Objective (1)	Levels				
Aluminum	SB	33,000	1,488	1,686	36,502	4,184
Antimony	SB	2-10	4.0U	3.3U	4.3U	3.9U
Arsenic	7.5	3-12	1.1B	0.80B	9.0S	6.8S
Barium	300	15-600	13.1B	11.6B	108	20.5B
Beryllium	1.0	0.0-1.75	0.22U	0.18U	9.4	0.46B
Cadmium	1.0	0.1-1	0.65B	0.77B	0.48U	7.3
Calcium	SB	130-35,000	635B	322B	1,585	2,305
Chromium	10	1.5-40	126.1	108	35.5	907
Cobalt	30	2.5-60	0.66U	0.97B	14.8	2.6B
Copper	25	1-50	9.3 J	8.8 J	29.5	121
Iron	2,000	2,000-550,000	2,446*	3,166*	34,850*	6,811*
Lead	30	4-61	32.8*	59.0*	28.80*	289
Magnesium	SB	100-5,000	311B	439B	4,813	1,074
Manganese	SB	50-5,000	32.24	39.0	346	190
Mercury	0.1	0.001-0.2	0.11U	0.10U	0.13U	0.28
Nickel	13	0.5-25	3.3B	3.3B	24.7	17.9
Potassium	SB	8,500-43,000	125U	133B	1,926	157B
Selenium	2.0	0.1-3.9	0.22U	0.20B	0.61B	0.20U
Silver	SB	.01-5	0.86B	0.79B	0.72U	9.7
Sodium	SB	6,000-8,000	21.6B	16.9B	120B	34.2B
Thallium	SB	N/A	0.22U	0.20B	0.26B	0.20U
Vanadium	150	1-300	6.4B	4.9B	49.8	24.2
Zinc	20	9-50	49.9	35.2	134	341

U - Indicates analyte results less than instrument detection limit (IDL).
B - Indicates analyte results between IDL and contract required detection limit.
S - The reported value was determined by the method of standard additions.
* - Duplicate analysis not within control limits.
(1) - NYSDEC TAGM November, 1992. Determination of soil cleanup objectives and cleanup levels.
SB - Site Background levels.
N/A - Not Available

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN
SOIL ANALYTICAL RESULTS FOR PESTICIDES AND PCBs
SEPTEMBER 1993

TABLE 26

COMPOUND (All concentrations in ug/kg)	NYSDEC DRAFT CLEANUP LEVEL	ORB-4	ORB-5	ORB-6	ORB-7	ORB-8
alpha-BHC		38 U	1100 U	910 U	850 U	840 U
beta-BHC		38 U	1100 U	910 U	850 U	840 U
delta-BHC		38 U	1100 U	910 U	850 U	840 U
gamma-BHC (Lindane)	N/A	1.5 JP	1100 U	910 U	60 JP	840 U
Heptachlor		38 U	1100 U	910 U	850 U	840 U
Aldrin	41	38 U	1100 U	910 U	97 JP	840 U
Heptachlor epoxide		38 U	1100 U	910 U	850 U	840 U
Endosulfan I		38 U	1100 U	910 U	850 U	840 U
Dieldrin		76 U	2100 U	1800 U	1700 U	1700 U
4,4'-DDE	2,100	76 U	510 JP	1100 JP	720 JP	650 JP
Endrin		76 U	2100 U	1800 U	1700 U	1700 U
Endosulfan II		76 U	2100 U	1800 U	1700 U	1700 U
4,4'-DDD	2,900	76 U	210 J	1800 U	1700 U	1700 U
Endosulfan Sulfate	N/A	17 JP	2100 U	1800 U	1700 U	1700 U
4,4'-DDT	2,100	76 U	2100 U	300 JP	240 JP	270 JP
Methoxychlor		380 U	11000 U	9100 U	8500 U	8400 U
Endrin ketone	N/A	76 U	2100 U	1800 U	1700 U	420 JP
Endrin aldehyde		76 U	2100 U	1800 U	1700 U	1700 U
alpha-Chlordane		38 U	1100 U	910 U	850 U	840U
gamma-Chlordane		38 U	1100 U	910 U	850 U	840 U
Toxaphene		3800 U	110000 U	91000 U	85000 U	84000 U
Aroclor-1016		760 U	21000 U	18000 U	17000 U	17000 U
Aroclor-1221		1500 U	42000 U	36000 U	34000 U	34000 U
Aroclor-1232		760 U	21000 U	18000 U	17000 U	17000 U
Aroclor-1242		760 U	21000 U	18000 U	17000 U	17000 U
Aroclor-1248		760 U	21000 U	18000 U	17000 U	17000 U
Aroclor-1254	1,000	160 JP	21000 U	18000 U	17000 U	17000 U
Aroclor-1260		760 U	21000 U	18000 U	17000 U	17000 U

NOTES :

J = Estimated concentrations
P = Percent Difference outside control limits
U = Indicates that the compound was analyzed for but not detected.

table5.wk1/6-16-94

FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 27

"MAJOR" RAIN EVENT HYDROLOGIC DATA
APRIL 26, 1993 TO APRIL 29, 1993

Date Time	4/26/93 12 Noon	4/27/93 2 P.M.	4/28/93 11 A.M.	4/29/93 8 A.M.	Remarks
Measurement Location	Water Level Elevation, ft AMSL[1]				
North Pond Pier	55.38	55.41	55.40	55.38	.03' rise in WL[3]
1S	55.35	55.36	55.35	55.34	.01' rise in WL
2S	54.37	54.41	55.38	54.36	.04' rise in WL
6S	55.37	55.40	54.39	55.37	.03' rise in WL
9S	54.91	54.92	NM[2]	NM	Airport Property Little Response Discontinued Measurements
11S	56.42	56.44	56.43	56.41	.02' rise in WL
MW12S	55.13	55.08	55.08	55.12	.05' Decrease in WL[7]

NOTES:

(1) AMSL - Above Mean Sea Level
(2) NM - Not Measured
(3) WL - Water Level

Rain fell from approximately 1:30 p.m. April 26 until 5:00 p.m. April 27, and a total of 0.53 inches of rain accumulated in the recharge basin rain gauge during this period. No rain accumulated in the gauge during the 72-hour period before or after the rain event.

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FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 28

"MINOR" RAIN EVENT HYDROLOGIC DATA
MAY 5, 1993 TO MAY 6, 1993

Date Time	5/5/93 8 A.M.	5/5/93 4:30 P.M.	5/6/93 8 P.M.	5/6/93 4:30 P.M.	Remarks
Measurement Location	Water Level Elevation, ft AMSL[1]				
North Pond Pier	55.23	55.24	55.22	55.21	.01' rise in WL[2]
1S	55.17	55.17	55.16	55.16	
2S	54.19	54.19	54.18	54.18	
6S	55.20	55.21	55.21	55.20	.01' rise in WL
11S	56.24	56.25	56.25	56.24	.01' rise in WL
MW12S	54.98	54.99	54.98	54.99	.01' rise in WL

NOTES:

(1) AMSL - Above Mean Sea Level
(2) WL - Water Level

Rain fell from approximately 8:00 A.M. to 7:00 P.M. on May 5, and a total of 0.09 inches of rain accumulated in the recharge basin rain gauge during this period. No rain accumulated in the gauge during the 72-hour period before or after the rain event.

LC3749

FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN
GROUNDWATER ANALYTICAL RESULTS FOR VOLATILE ORGANIC COMPOUNDS
EAST FARMINGDALE FIRE DEPARTMENT WELLS
SEPTEMBER 1993

TABLE 29

COMPOUND (All concentrations in ug/l)	NYSDEC-6NYCRR703 GW STANDARDS	FRCW2101	FRCW1901	TRIP BLANK
Chloromethane	5	2 BJ	1 BJ	1 BJ
Bromomethane	5	7 BJ	6 BJ	6 BJ
Vinyl Chloride		10U	10U	10U
Chloroethane		10U	10U	10U
Methylene Chloride	5	10U	10U	4 J
Acetone	50	3 BJ	10U	4 BJ
Carbon Disulfide		10U	10U	10U
1,1-Dichloroethene		10U	10U	10U
1,1-Dichloroethane		10U	10U	10U
1,2-Dichloroethene (total)		10U	10U	10U
Chloroform		10U	10U	10U
1,2-Dichloroethane		10U	10U	10U
2-Butanone (MEK)		10U	10U	10U
1,1,1-Trichloroethane	5	5 J	10U	10U
Carbon Tetrachloride		10U	10U	10U
Bromodichloromethane		10U	10U	10U
1,2-Dichloropropane		10U	10U	10U
cis-1,3-Dichloropropene		10U	10U	10U
Trichloroethene		10U	10U	10U
Dibromochloromethane		10U	10U	10U
1,1,2-Trichloroethane		10U	10U	10U
Benzene		10U	10U	10U
trans-1,3-Dichloropropene		10U	10U	10U
Bromoform		10U	10U	10U
4-Methyl-2-Pentanone (MIBK)		10U	10U	10U
2-Hexanone		10U	10U	10U
Tetrachloroethene		10U	10U	10U
1,1,2,2,-Tetrachloroethane		10U	10U	10U
Toluene		10U	10U	10U
Chlorobenzene		10U	10U	10U
Ethylbenzene		10U	10U	10U
Styrene		10U	10U	10U
Xylenes (total)		10U	10U	10U

NOTES:

J = Estimated concentration

B = Detected in Method Blank

U = Indicates that the compound was analyzed for but not detected.

table1.wk1/6-16-94

FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN
GROUNDWATER ANALYTICAL RESULTS FOR VOLATILE ORGANIC COMPOUNDS
TENTATIVELY IDENTIFIED COMPOUNDS
EAST FARMINGDALE FIRE DEPARTMENT WELLS
SEPTEMBER 1993

TABLE 29

SAMPLE NUMBER:	FRCW2101	FRCW1901		TRIP BLANK	
NUMBER OF TICs FOUND:	NONE	24		1	
TICs:	N/A	Pentane, 2-methyl	100 JN	Hexane	6 JN
		Pentane, 3-methyl	50 JN		
		Hexane	20 JN		
		Pentane, 2,4-dimethyl	30 JN		
		Hexane, 2-methyl-	30 JN		
		Pentane, 2,3-dimethyl-	40 JN		
		Pentane, 3-ethyl-	20 JN		
		Hexane, 2,2-dimethyl-	90 JN		
		Hexane, 2,4-dimethyl-	30 JN		
		Pentane, 2,3,4-trimethyl-	50 JN		
		Pentane, 2,3,3-trimethyl-	60 JN		
		Heptane, 3-methyl	9 JN		
		Hexane, 2,2,5-trimethyl-	7 JN		
		Cyclohexane, 1,3-dimethyl-,	7 JN		
		UNKNOWN HYDROCARBON	6 J		
		UNKNOWN HYDROCARBON	20 J		
		UNKNOWN HYDROCARBON	6 J		
		Benzene, 1,2,3-trimethyl-	20 JN		
		Benzene, 1-methyl-3-prpyl-	10 JN		
		UNKNOWN HYDROCARBON	10 J		
		Benzene, 1-methyl-4-(1-methy	8 JN		
		1H-Indene, 2,3-dihydro-1-met	5 JN		
		UNKNOWN HYDROCARBON	6 J		
		UNKNOWN OF 1-H-INDENE	5 J		

NOTES:
J = Estimated concentration
N = Compound analyzed for but not requested as an analyte
N/A = Not Applicable

table1b.wk1/6-16-94

FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN
GROUNDWATER ANALYTICAL RESULTS FOR SEMIVOLATILE ORGANIC COMPOUND
EAST FARMINGDALE FIRE DEPARTMENT WELLS
SEPTEMBER 1993

TABLE 30

COMPOUND (All concentrations in ug/l)	FRCW2101	FRCW1901
Phenol	10 U	ND
bis(2-Chloroethyl)ether	10 U	10 U
2-Chlorophenol	10 U	10 U
1,3-Dichlorobenzene	10 U	10 U
1,4-Dichlorobenzene	10 U	10 U
1,2-Dichlorobenzene	10 U	10 U
2-Methylphenol	10 U	10 U
2,2'-oxybis(1-Chloropropane)	10 U	10 U
N-Nitroso-di-n-propylamine	10 U	10 U
4-Methylphenol	10 U	10 U
Hexachloroethane	10 U	10 U
Nitrobenzene	10 U	10 U
Isophorone	10 U	10 U
2-Nitrophenol	10 U	10 U
2,4-Dimethylphenol	10 U	10 U
bis(2-Chloroethoxy)methane	10 U	10 U
2,4-Dichloropnenol	10 U	10 U
1,2,4-Trichlorobenzene	10 U	10 U
Naphthalene	10 U	10 U
4-Chloroaniline	10 U	10 U
Hexachlorobutadiene	10 U	10 U
4-Chloro-3-methylphenol	10 U	10 U
2-Methylnaphthalene	10 U	10 U
Hexachlorocyclopentadiene	10 U	10 U
2,4,6-Trichlorophenol	10 U	10 U
2,4,5-Trichlorophenol	25 U	25 U
2-Chloronaphthalene	10 U	10 U
2-Nitroaniline	25 U	25 U
Dimethylphthalate	10 U	10 U
2,6-Dinitrotoluene	10 U	10 U
Acenaphthylene	10 U	10 U
3-Nitroaniline	25 U	25 U
Acenaphthene	10 U	10 U
2,4-Dinitrophenol	25 U	25 U
4-Nitrophenol	25 U	25 U
2,4-Dinitrotoluene	10 U	10 U
Dibenzofuran	10 U	10 U
Diethylphthalate	10 U	10 U
4-Chlorophenyl-phenylether	10 U	10 U
Fluorene	10 U	10 U
4-Nitroaniline	25 U	25 U
4,6-Dinitro-2-methylphenol	25 U	25 U
N-Nitrosodiphenylamine	10 U	10 U

NOTE :
U = Indicates that the compound was analyzed for but not detected.

table2b.wk1/6-16-94

FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN
GROUNDWATER ANALYTICAL RESULTS FOR SEMIVOLATILE ORGANIC COMPOUNDS
EAST FARMINGDALE FIRE DEPARTMENT WELLS
SEPTEMBER 1993

TABLE 30

COMPOUND (All concentrations in ug/l)	NYSDEC-6NYCRR703 GW STANDARDS	FRCW2101	FRCW1901
4-Bromophenyl-phenylether		10 U	10 U
Hexachlorobenzene		10 U	10 U
Pentachlorophenol		25 U	25 U
Phenanthrene		10 U	10 U
Anthracene		10 U	10 U
Carbazole		10 U	10 U
Di-n-butylphthalate		10 U	10 U
Fluoranthene		10 U	10 U
Pyrene		10 U	10 U
Butylbenzylphthalate		10 U	10 U
3,3'-Dichlorobenzidine		10 U	10 U
Bis(2-Ethylhexyl)phthalate	50	3 J	3.1 J
Benzo(a)anthracene		10 U	10 U
Chrysene		10 U	10 U
Di-n-octylphthalate		10 U	10 U
Benzo(b)fluoranthene		10 U	10 U
Benzo(k)fluoranthene		10 U	10 U
Benzo(a)pyrene		10 U	10 U
Indeno(1,2,3-cd)pyrene		10 U	10 U
Dibenz(a,h)anthracene		10 U	10 U
Benzo(g,h,i)perylene		10 U	10 U

NOTES:
J = Estimated concentrations
U = Indicates that the compound was analyzed for but not detected.

table2.wk1/6-16-94

FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN
GROUNDWATER ANALYTICAL RESULTS FOR PESTICIDES AND PCBs
EAST FARMINGDALE FIRE DEPARTMENT WELLS
SEPTEMBER 1993

TABLE 31

COMPOUND (All concentrations in ug/l)	NYSDEC-6NYCRR703 GW STANDARDS	FRCW2101	FRCW1901
alpha-BHC		0.050 U	0.050 U
beta-BHC		0.050 U	0.050 U
delta-BHC		0.050 U	0.050 U
gamma-BHC		0.050 U	0.050 U
Heptachlor		0.050 U	0.050 U
Aldrin		0.050 U	0.050 U
Heptachlor epoxide		0.050 U	0.050 U
Endosulfan I	N/A	0.0018 J	0.050 U
Dieldrin	ND	0.10 U	0.0035 JP
4,4'-DDE		0.10 U	0.10 U
Endrin		0.10 U	0.10 U
Endosulfan II		0.10 U	0.10 U
4,4'-DDD		0.10 U	0.10 U
Endosulfan Sulfate		0.10 U	0.10 U
4,4'-DDT		0.10 U	0.10 U
Methoxychlor		0.50 U	0.50 U
Endrin ketone		0.10 U	0.10 U
Endrin aldehyde		0.10 U	0.10 U
alpha-Chlordane	0.01	0.00081 JP	0.0022 J
gamma-Chlordane	0.01	0.050 U	0.0026 JP
Toxaphene		5.0 U	5.0 U
Aroclor 1016		1.0 U	1.0 U
Aroclor-1221		2.0 U	2.0 U
Aroclor-1232		1.0 U	1.0 U
Aroclor-1242		1.0 U	1.0 U
Aroclor-1248		1.0 U	1.0 U
Aroclor-1254		1.0 U	1.0 U
Aroclor-1260		1.0 U	1.0 U

NOTES:
J = Estimated concentration
P = Percent Difference outside control limits
ND = Nondetectable
U = Indicates that the compound was analyzed for but not detected.

table3.wk1/6-16-94

FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN
GROUNDWATER ANALYTICAL RESULTS FOR INORGANICS
EAST FARMINGDALE FIRE DEPARTMENT WELLS
SEPTEMBER 1993

TABLE 32

ELEMENT (All concentrations in ug/l)	NYSDEC-6NYCRR703 GW STANDARDS	FRCW2101	FRCW1901	FRCW2101F	FRCW1901F
Aluminum	N/A	2630 N	6830 N	43.1 BN	34.6 U
Antimony		42.0 U	42.0 U	42.0 U	42.0 U
Arsenic		1.6 U	1.6 U	1.6 U	1.6 U
Barium	1,000	43.6 B	59.2 B	24.5 B	24.6 B
Beryllium		3.5 U	3.5 U	3.5 U	3.5 U
Cadmium		3.3 U	3.3 U	3.3 U	3.3 U
Calcium	N/A	14400	18500	13500	18200
Chromium	50	22.6	34.8	4.0 U	4.0 U
Cobalt		19.2 U	19.2 U	19.2 U	19.2 U
Copper	200	26.6	36.2	9.1 B	7.9 B
Iron	300	5290	10500	ND	87.2 B
Lead	25	9.5	4.8	2.5 B	2.6 B
Magnesium	N/A	3810 B	4100 B	3200 B	3080 B
Manganese	300	63.8	556	7.2 B	243
Mercury		0.08 U	0.08 U	0.08 U	0.08 U
Nickel	N/A	11.8 U	18.6 B	11.8 U	11.8 U
Potassium	N/A	2190 B	3360 B	2020 B	2890 B
Selenium		1.2 U	1.2 U	1.2 U	1.2 U
Silver		2.5 U	2.5 U	2.5 U	2.5 U
Sodium	20,000	19200 B	23800 B	18500 B	24100 B
Thallium		1.9 U	1.9 U	1.9 U	1.9 U
Vanadium	N/A	19.0 U	23.1 B	ND	ND
Zinc	300	56.0	78.2	77.6	14.8 B
Cyanide	100	10.5	10.9	-	-

NOTES:

N = Spiked sample recovery not within control limits
B = Analyte result between IDL and CRDL
N/A = Not Applicable
U = Indicates that the compound was analyzed for but not detected.

table4.wk1/6-16-94

Environmental Fate Parameters
for Organic Contaminants

Table 33

Compound	Water Solubility	Carbon/Water Partition Coefficient	Henry Law Constant
	mg/l	ml/g	atm x m3/mol
Acetone	infinite	2.2E+00	2.06E-05
1,1-Dichloroethane	5.50E+03	3.00E+01	4.31E-03
1,1-Dichloroethene	2.25E+03	6.50E+01	3.40E-02
1,2-Dichloroethene	3.50E+03	4.90E+01	7.58E-03
1,2-Dichloroethene	6.30E+03	5.90E+01	6.56E-03
1,1,1-Trichloroethane	1.50E+03	1.52E+02	1.44E-02
Trichloroethene	1.10E+03	1.26E+02	9.10E-03
Tetrachloroethene	1.50E+02	3.64E+02	2.59E-02
Chloromethane	6.50E+03	3.50E+01	4.40E-02
Dibromochloromethan	4.00E+03	8.40E+01	9.90E-04
Pentachlorophenol	1.40E+01	5.30E+04	2.75E-06
Benzo(a)pyrene	1.20E-03	5.50E+06	1.55E-06
Beta-BHC	N/A	N/A	N/A
Dieldrin	1.95E-01	1.70E+03	4.58E-07
4,4-DDE	4.00E-02	4.40E+06	6.80E-05
Chlordane	5.60E-01	1.40E+05	9.63E-06

N/A - Not Available

Source: U.S. Environmental Protection Agency (USEPA). March 1990. Basics of Pump-and-Treat Ground-Water Remediation Technology.

FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE 34

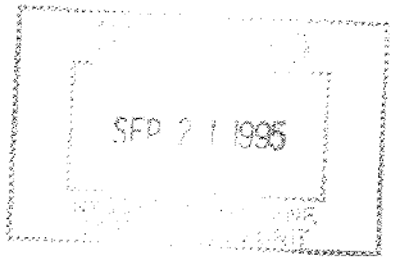
PCB CONCENTRATIONS IN THE TRANSFORMER OIL AT THE MAIN PLANT SITE

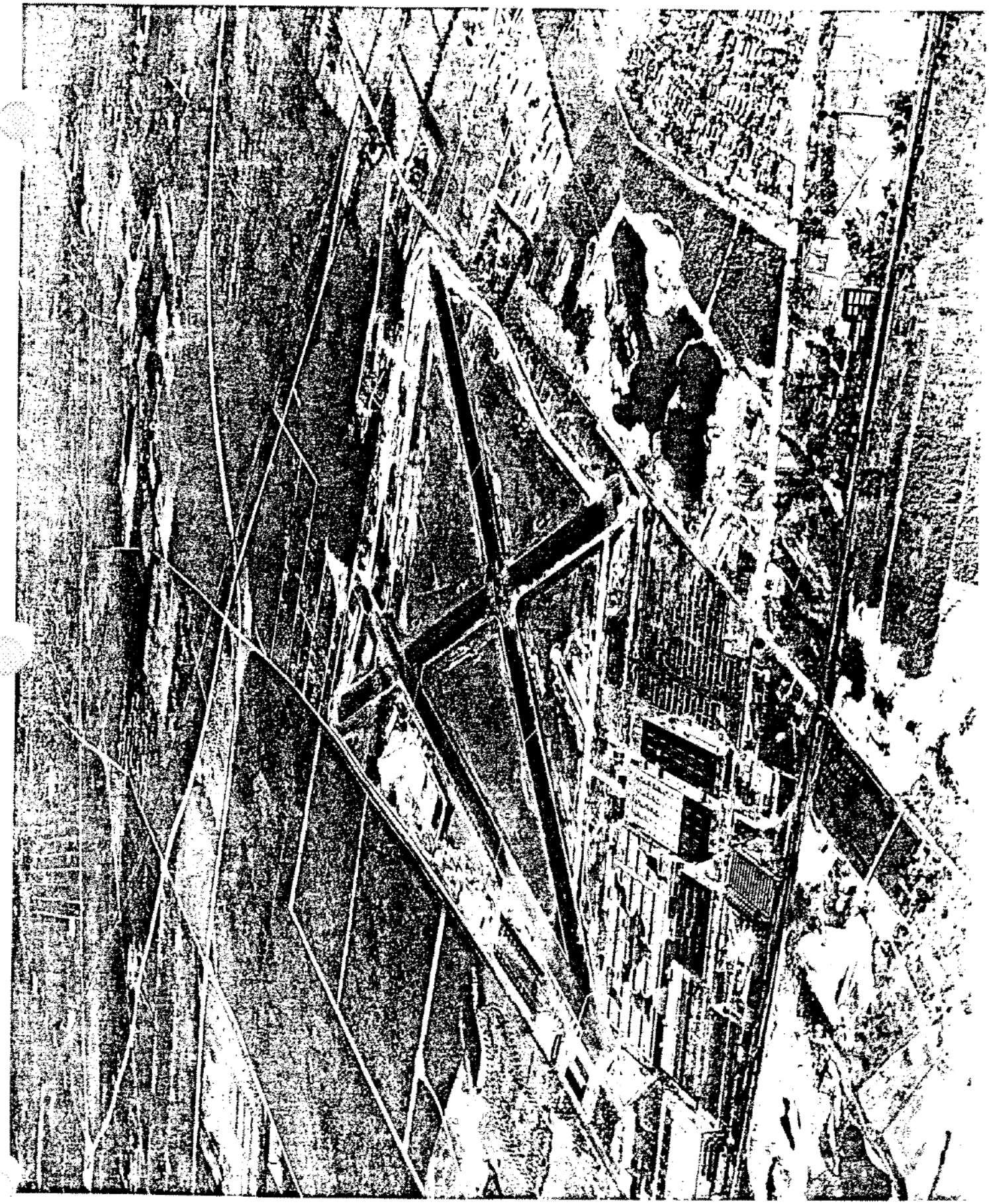
Sample Location	Date	Arochlor (mg/l)						
		1016	1221	1232	1242	1248	1254	1260
Building 19 TB#3	07/02/92	<5	<5	<5	<5	<5	<5	9
Building 54 # 21572	03/18/85	ND	ND	ND	ND	ND	ND	42
Building 54 # 21573	03/18/85	ND	ND	ND	ND	ND	ND	12
Building 54 # 21574	03/18/85	ND	ND	ND	ND	ND	ND	28
Building 55 # 6580595	02/06/87	ND	ND	ND	ND	ND	ND	41 (1)
Building 55 # 6580590	02/06/87	ND	ND	ND	ND	ND	ND	191 (1)
Building 55 # 6580597	02/11/87	ND	ND	ND	ND	ND	ND	18 (1)
Building 55 # 3161360	10/29/86	ND	ND	ND	ND	ND	ND	21
Building 55 # 3161361	10/29/86	ND	ND	ND	ND	ND	ND	16
Building 55 # 3161362	10/29/86	ND	ND	ND	ND	ND	ND	12
Building 55 # 3161360	02/12/87	ND	ND	ND	ND	ND	ND	25
Building 55 # 3161361	02/12/87	ND	ND	ND	ND	ND	ND	10
Building 55 # 3161362	02/12/87	ND	ND	ND	ND	ND	ND	11
Building 20 #1813227	NA	ND	ND	ND	ND	ND	ND	32
Building 20 #1813231	NA	ND	ND	ND	ND	ND	ND	10
Building 20 #1813236	NA	ND	ND	ND	ND	ND	ND	16
Building 2 Main Transformer	07/12/94	ND	ND	ND	ND	ND	ND	110

(1) Total of Arochlor 1242 &1260
ND - Not Detected
NA - Not Available

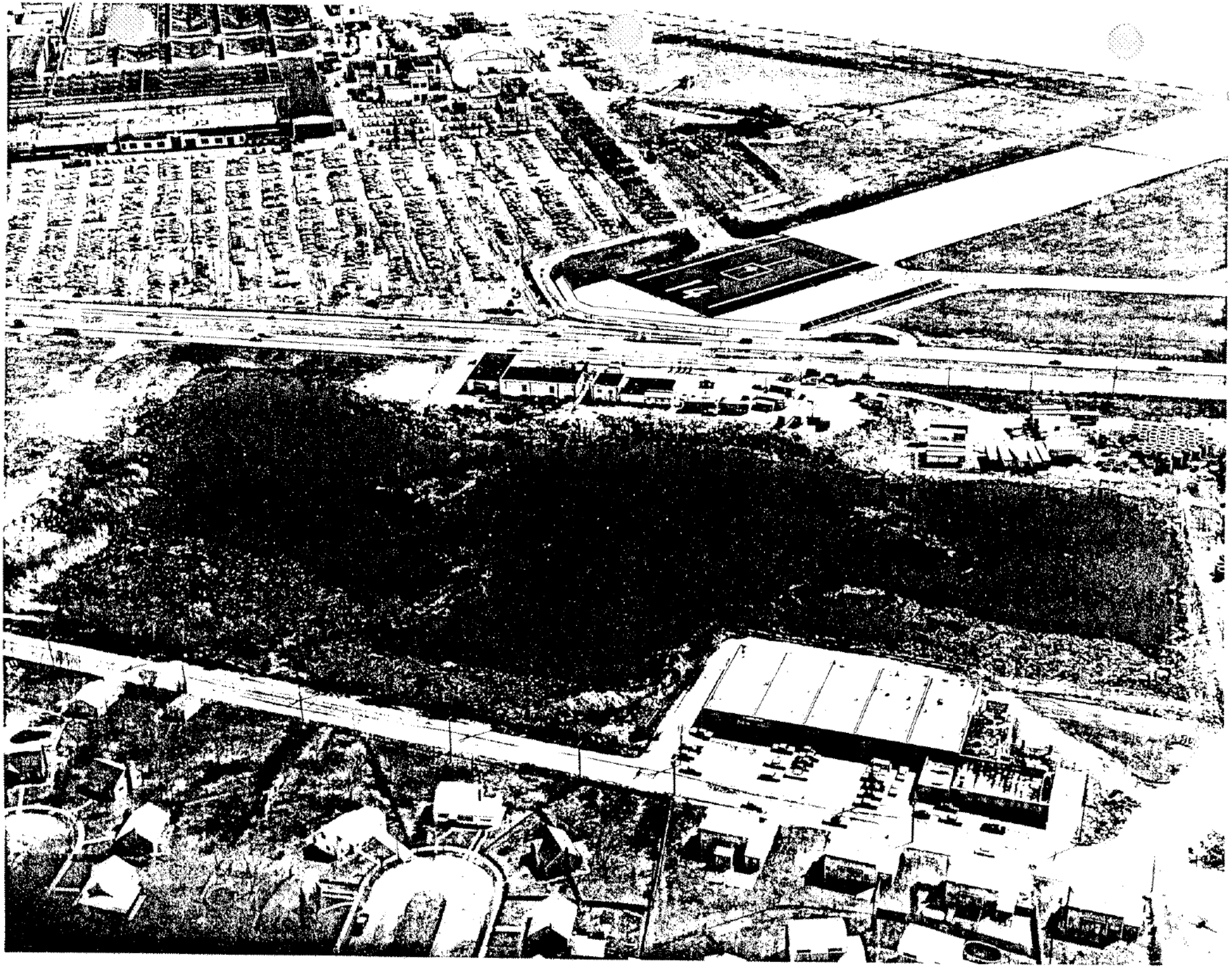
APPENDIX A

AERIAL PHOTOGRAPHS

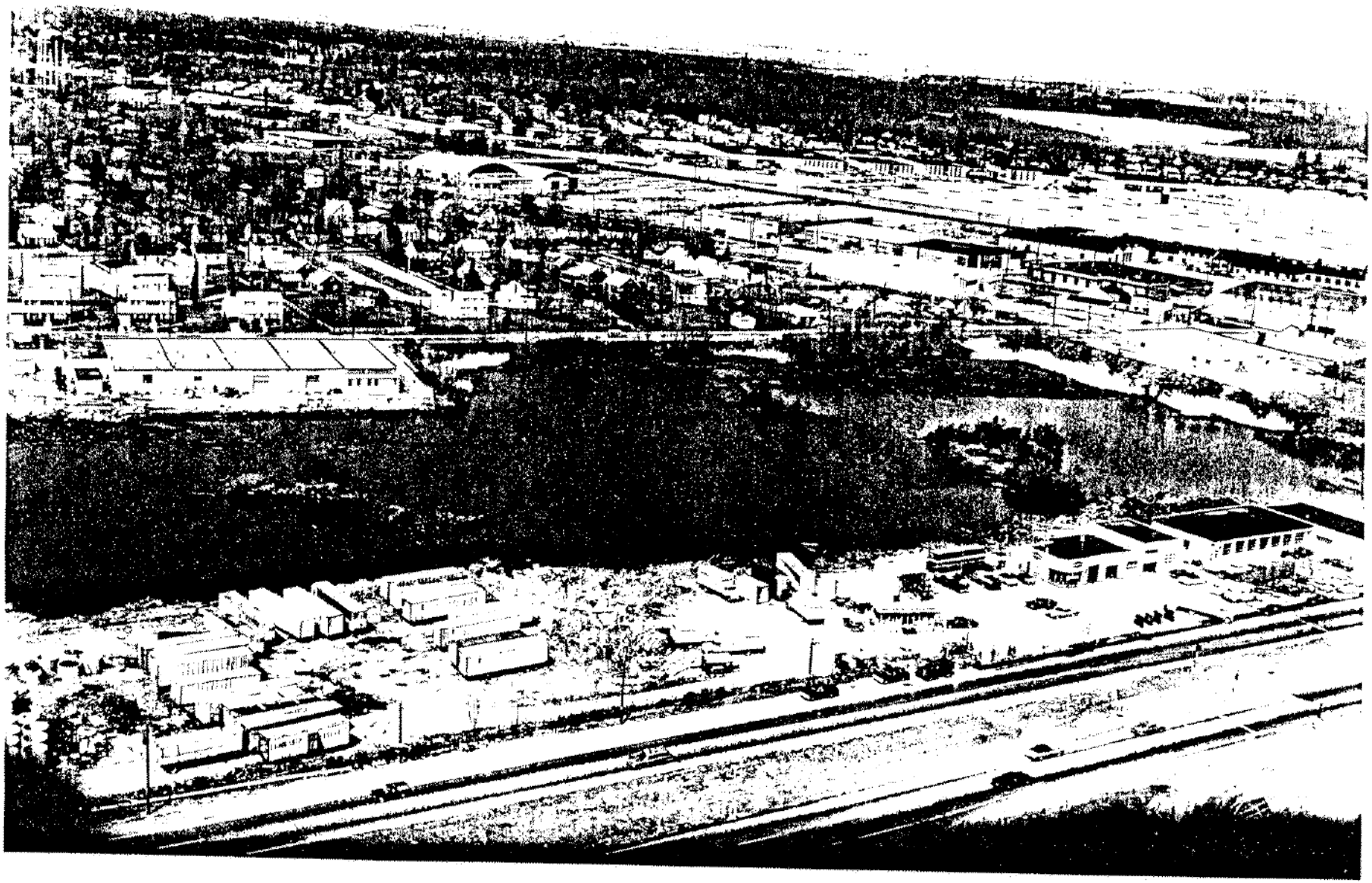


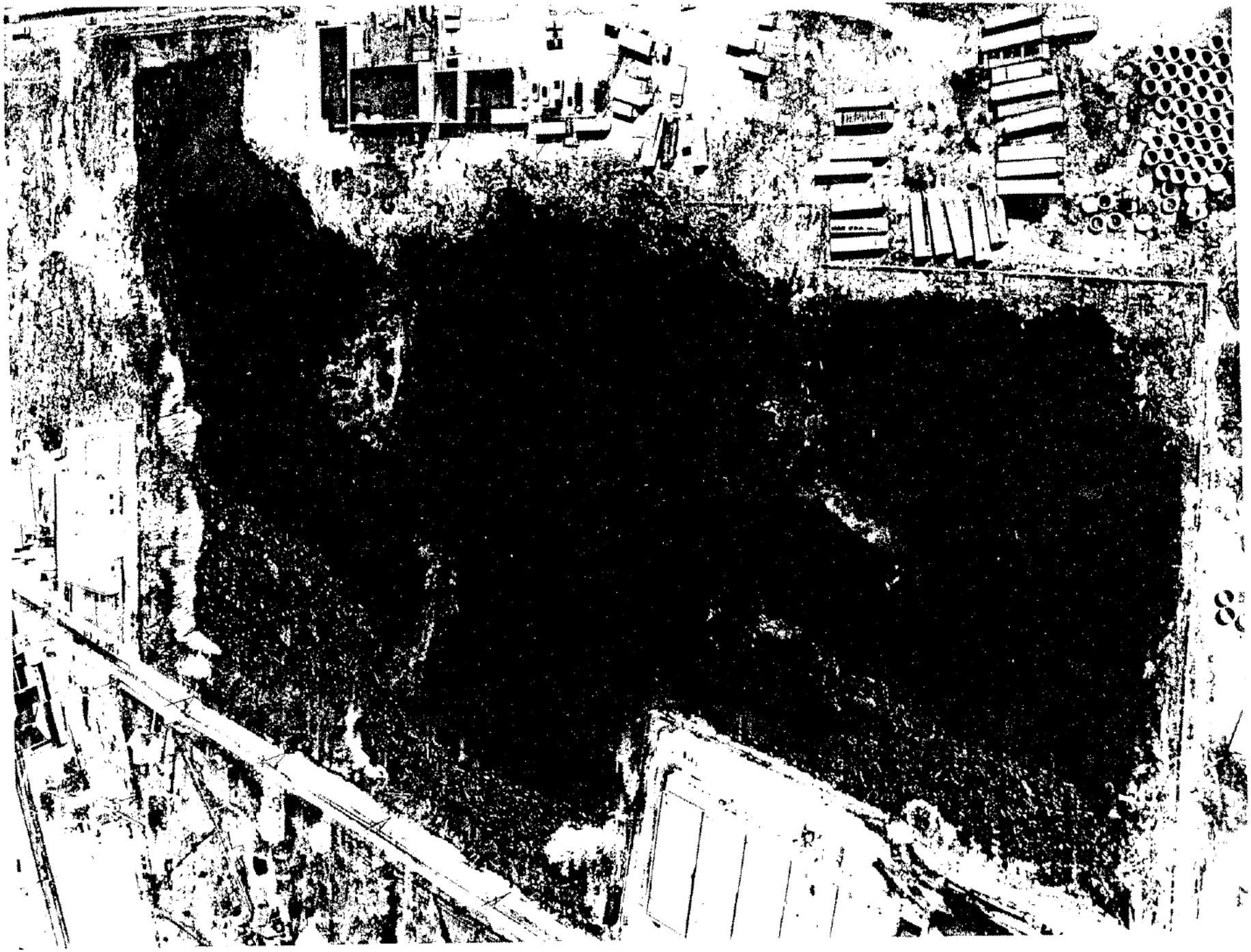


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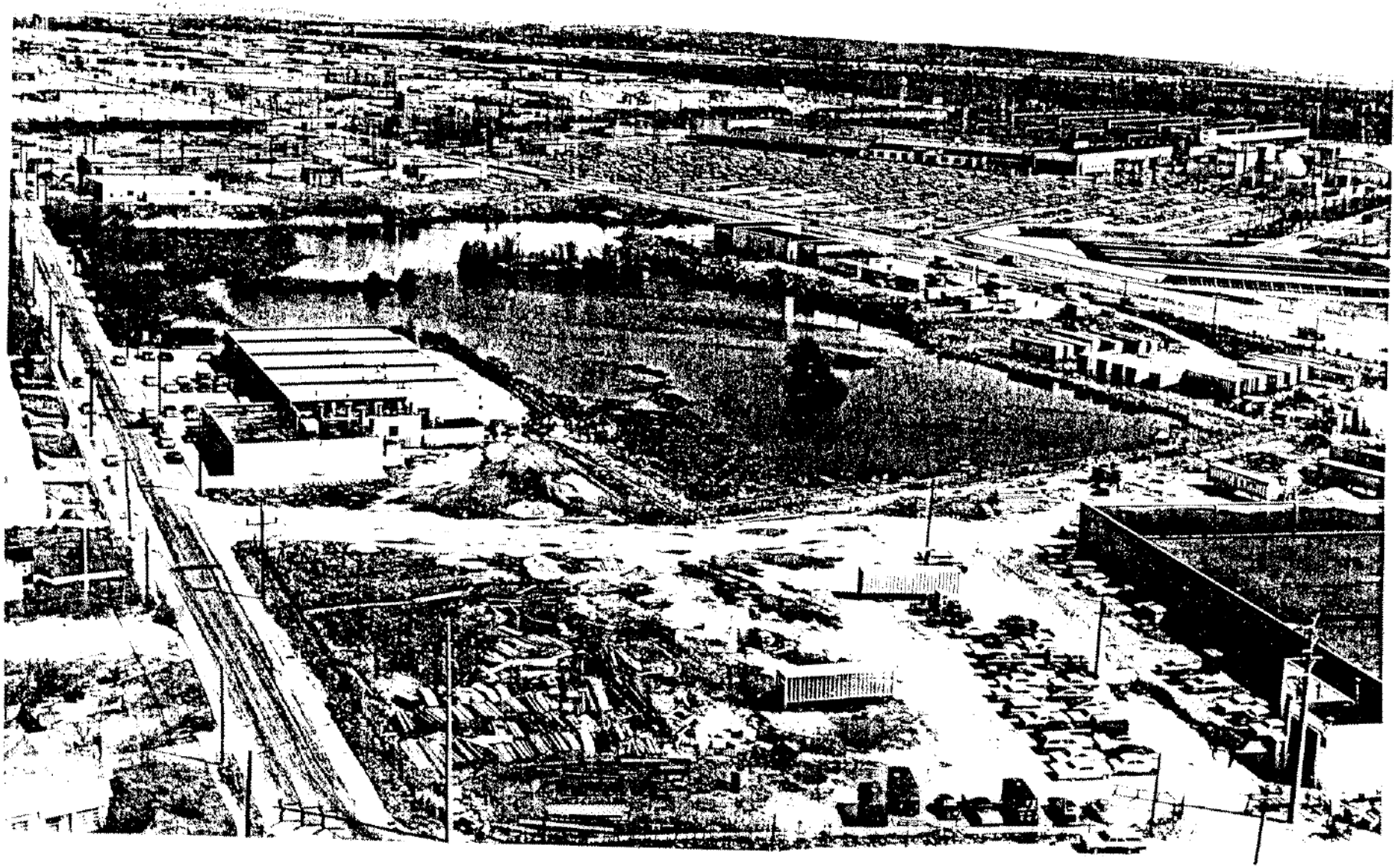


APR 6 1960

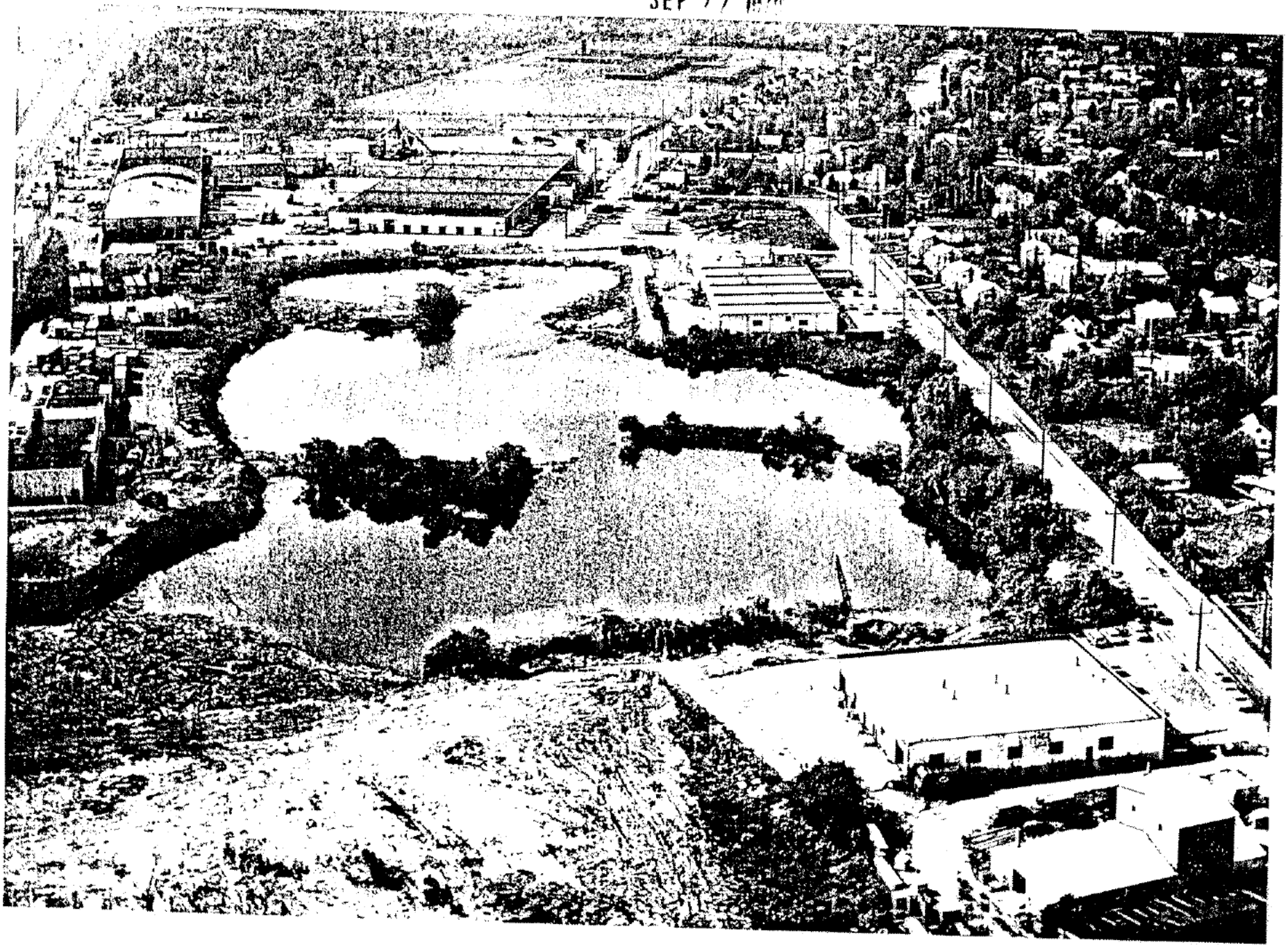




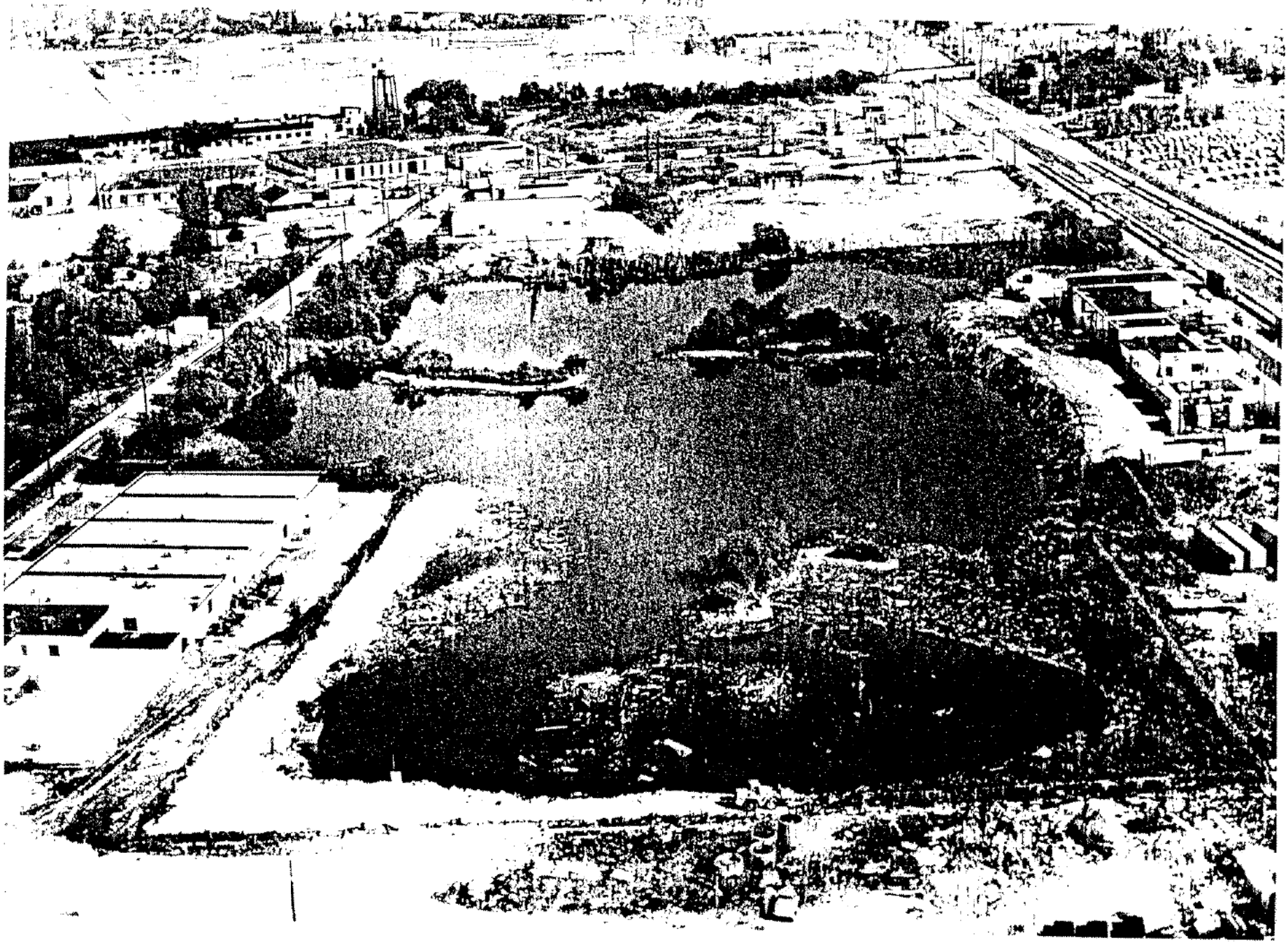
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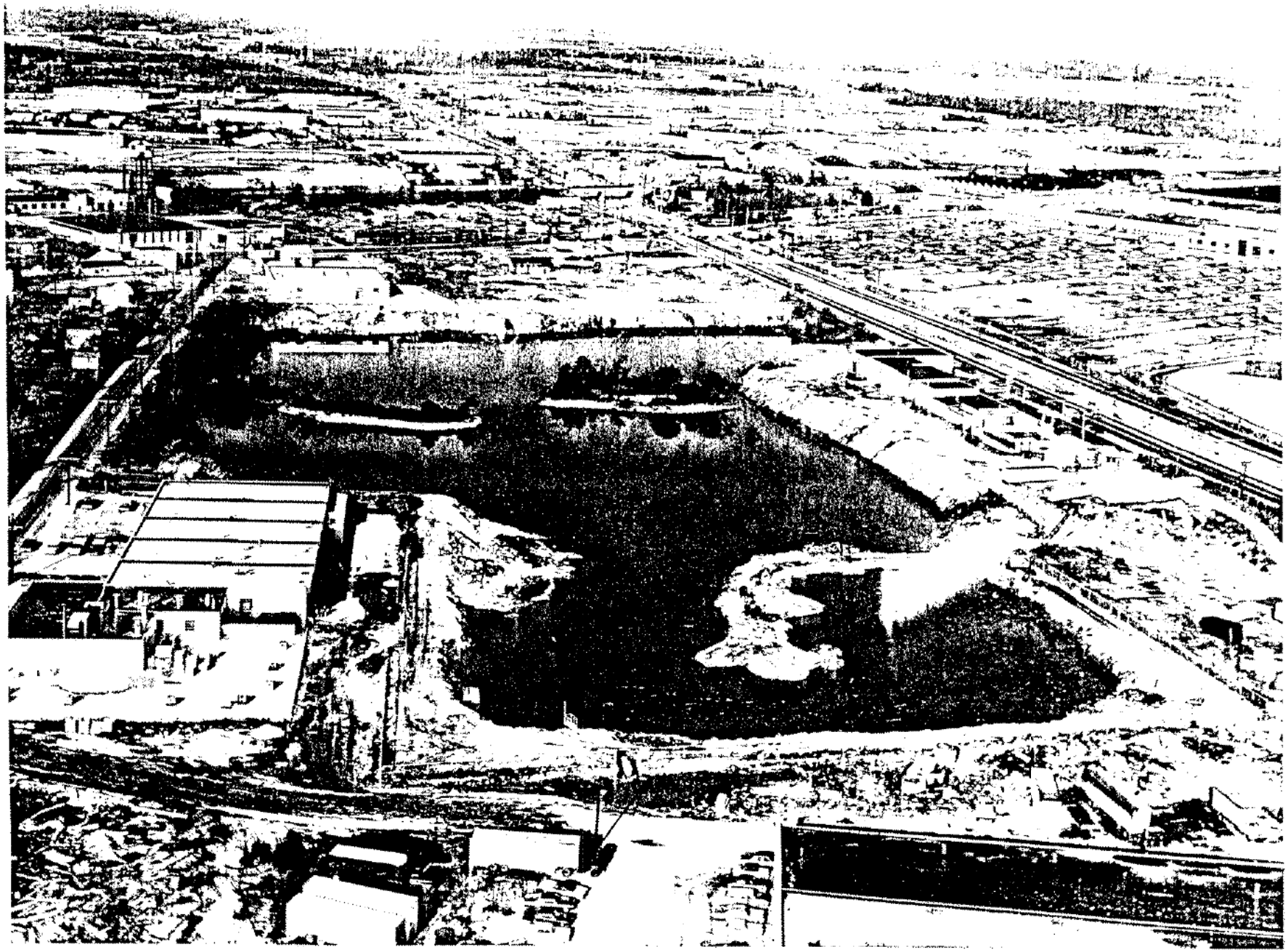
SEP 77 1977

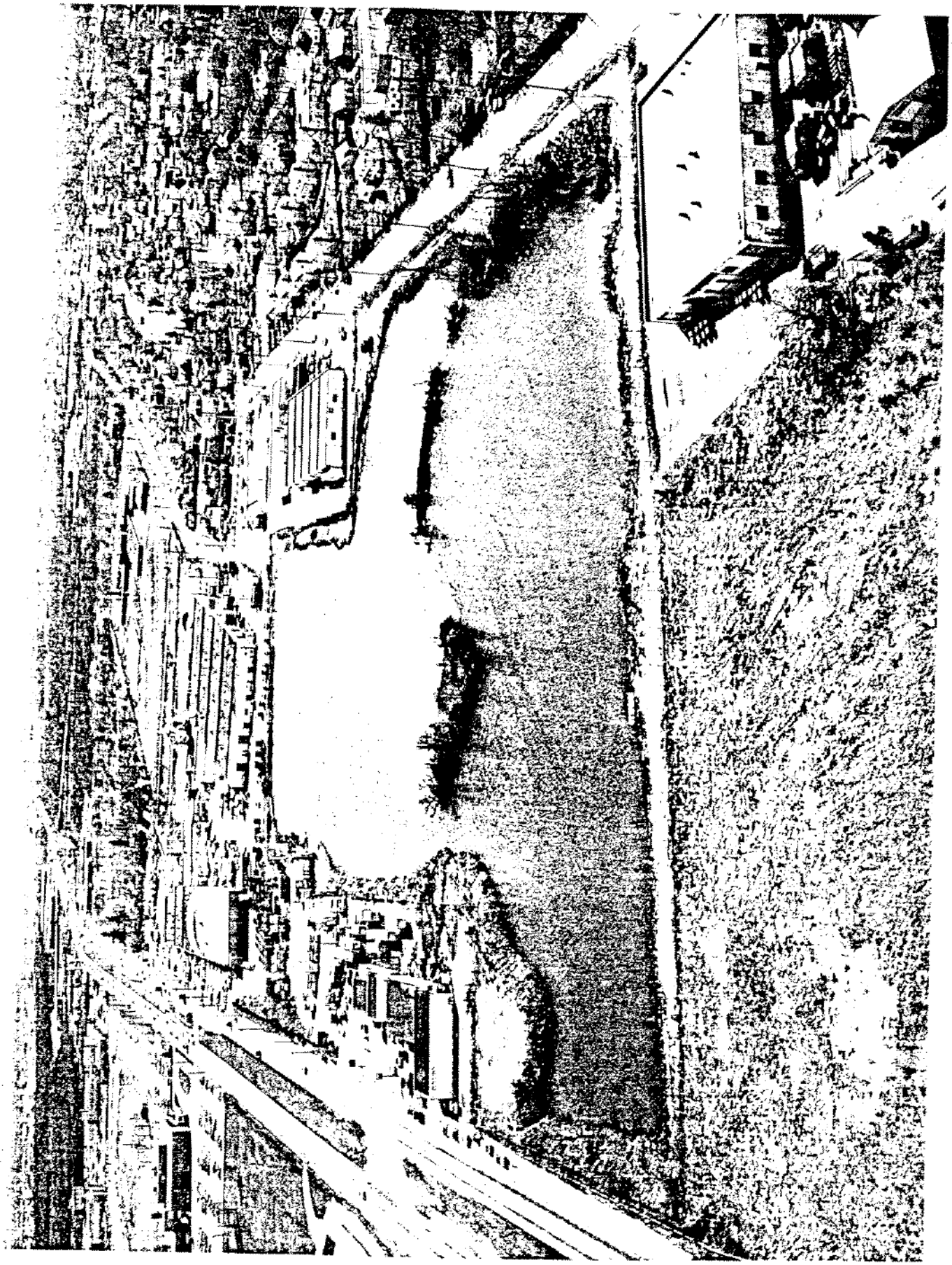


SEP 27 1979



MAY 17 1976







APPENDIX B

SPDES PERMITS AND VIOLATIONS

FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE A-1

VOC ANALYTICAL RESULTS FOR FAIRCHILD DISCHARGES

Sample Location	Date	Parameters	Concentration (mg/l)	Required Detection Limit (mg/l)
Wastewater Treatment Plant	10/20/82	TCE	54	0.05
		PCE	14	0.05
	7/30/84	Toluene	0.003	0.05
		TCE	0.020	0.01
		Methylene Chloride	<0.002	0.05
		PCE	<0.002	0.002
		1,1,1-TCA	<0.001	0.05
		m-Xylene	<0.002	0.05
		o & p Xylene	<0.004	0.05
	7/31/84	Methylene Chloride	<0.002	0.05
		Toluene	0.002	0.05
		PCE	<0.002	0.002
		TCE	0.005	0.01
		1,1,1-TCA	<0.001	0.05
		m-Xylene	<0.002	0.05
		o & p Xylene	<0.004	0.05
	8/1/84	Methylene Chloride	<0.002	0.05
		Toluene	0.002	0.05
		PCE	<0.002	0.002
		TCE	0.008	0.01
		1,1,1-TCA	<0.001	0.05
		m- Xylene	<0.002	0.05
		o & p Xylene	<0.004	0.05
	7/23/86	1,1,1-TCA	0.084	NA

Sample Location	Date	Parameters	Concentration (mg/l)	Required Detection Limit (mg/l)
New Recharge Basin	7/30/84	PCE	<0.002	0.002
		m-Xylene	<0.002	0.05
		o-Xylene	<0.004	0.05
		Benzene	<0.001	0.001
	7/31/84	PCE	<0.002	0.002
		m-Xylene	<0.002	0.05
		o & p-Xylene	<0.004	0.05
		Benzene	<0.001	0.001
	8/1/84	PCE	<0.002	0.002
		m-Xylene	<0.002	0.05
		o & p-Xylene	<0.004	0.05
		Benzene	<0.001	0.001
Sewage Treatment Plant	3/9/83	PCE	0.11	0.05
		2-Butanone	0.11	0.05
Old Recharge Basin	6/15/81	Methylene Chloride	0.910	0.05
		TCE	0.072	0.05
Underpass Near Route 110	4/22/81	Methylene Chloride	1.9	0.05
Sump off Light Tower	7/22/81	Methylene Chloride	0.36	0.05
SD Middle of Route 110	7/22/81	Methylene Chloride	0.15	0.05
SP Southwest Building 29S	7/22/81	Methylene Chloride	0.13	0.05
SD Southeast Building 29S	7/22/81	TCE	0.09	0.05
SD. South Middle Building 29S	7/22/81	TCE	0.053	0.05
		Methylene Chloride	0.06	0.05
SD South Building 42	7/22/81	TCE	ND	0.05
		Methylene Chloride	ND	0.05

FAIRCHILD INDUSTRIES, INC.
OLD RECHARGE BASIN RI
EAST FARMINGDALE, NEW YORK

TABLE A-2

INDUSTRIAL WASTEWATER TREATMENT PLANT
SPDES AND OTHER EFFLUENT VIOLATIONS (NY0074276)

Date	Parameter	Concentration (mg/l)*	Permit Limit (mg/l)*
11/13/72	pH	2.6	6.5-8.5
9/10/74	pH Total Chromium	10.2 2.3	6.5-8.5 1.0
1/31/77	pH Total Chromium Fluoride	12.4 4.1 16	6.5-8.5 2.0 3.0
8/6/79	Nitrogen Fluoride Aluminum Total Chromium Iron	77 8.8 16 33 1.9	10 3 2 2 0.6
8/7/79	pH	5.2	6.5-8.5
6/17/81	pH	4	6.5-8.5
11/30/81	pH Nitrogen Fluoride Total Chromium Iron	5.6 91.35 89 264.77 6.73	6.5-8.5 10 3 1.0 0.6
1/20/82	TCE PCE Total Chromium Hexavalent Chromium Lead pH	54 14 200 78 0.2 4	ND ND 2 0.1 0.05 6.5-8.5

Table A-2 Continued . . .

Date	Parameter	Concentration (mg/l)*	Permit Limit (mg/l)*
2/28/82	pH	5.8	6.5-8.5
	Nitrogen	33.35	10
	Aluminum	16.2	2
	Total Chromium	9.76	2
	Iron	2.4	0.6
5/31/82	pH	3.6-11.2	6.5-8.5
	Fluoride	4.39	3
	Aluminum	70.55	2
	Total Chromium	31.7	2
	Iron	0.96	0.6
8/31/82	pH	2.2-11.2	6.5-8.5
	Fluoride	3.05	3
	Aluminum	31.74	2
	Total Chromium	8.11	2
	Iron	1.64	0.6
11/30/82	pH	2.8-11.6	6.5-8.5
	Nitrogen	10.81	10
	Aluminum	1833	2
	Total Chromium	2775	2
	Iron	168.25	0.6
8/31/83	pH	1.3-12.47	6.5-8.5
	Nitrogen	13.46	10
	Aluminum	21.74	2
	Zinc	1.67	5
	Total Chromium	7.45	2
	Iron	5.06	0.6
12/13/82	Suspended Solids	34	45
	pH	2.7	6.5-8.5
11/30/83	pH	1.8-11.89	6.5-8.5
	Nitrogen	22.8	10
	Aluminum	15.45	2
	Zinc	0.708	0.6
	Total Chromium	16.63	2
	Iron	4.26	0.6
	Hexavalent Chromium	0.289	0.1

Table A-2 Continued . . .

Date	Parameter	Concentration (mg/l)*	Permit Limit (mg/l)*
7/30/84	TCE	0.02	ND
7/31/84	TCE	0.005	ND
8/1/94	TCE	0.008	ND
11/29/84	Total Chromium	1.7	2.0
11/29/84[1]	Iron Lead Cadmium	12.0 0.4 0.06	0.6 0.05 0.02
2/28/85	pH Aluminum Sulfides	4.6 70 35	6.5-8.5 2.0 1.0
7/23/86	Silver 1,1,1 trichloroethane	0.14 0.084	0.1 ND
Sewage Treatment Plant SPDES Violations (NY 0074276)			
9/6/77	Suspended solids Fecal coliform % removal TOC	88 460 0	45 400 85
2/21/78	Suspended solids Fecal coliform % removal TOC	112 2400 26	45 400 85
4/18/78	Suspended solids % removal TOC	60 82	45 85
3/17/80	Suspended solids Fecal Coliform	208 >2400	45 400
4/14/80	Suspended solids Fecal Coliform % removal TOC	64 >2400 73	45 400 85
7/14/80	Suspended solids % removal TOC	76 65	45 85

Table A-2 Continued . . .

Date	Parameter	Concentration (mg/l)*	Permit Limit (mg/l)*
11/20/80	Suspended solids Fecal coliform	72 >2400	45 400
12/26/80	Suspended solids % removal TOC	105 80	45 85
5/18/81	% removal TOC	69	85
9/21/81	Suspended solids % removal TOC	50 52	45 85
12/13/82	pH % removal TOC	2.7 51	6.5-8.5 85
3/9/83	Tetrachloroethene 2-butanone (MEK)	0.110 0.110	
3/28/83	Fecal coliform Cadmium	>2400 0.04	400 0.02
10/17/83	Cadmium	0.06	0.02

NOTES:

ND = Not Detected

1. Sample from steam cleaning pit

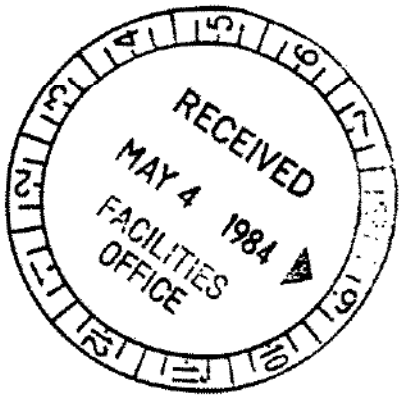
* - All units mg/l except for pH.

SPDES PERMITS

ew York State Department of Environmental Conservation
egulatory Affairs Unit
Bldg. 40, SUNY--Room 219
Stony Brook, NY 11794

(516) 751-7900

Henry G. Williams
Commissioner



May 1, 1984

Fairchild Republic Company
Conklin Street
Farmingdale, NY 11735

Attention: R. S. Miller, Sr. Vice President

RE: Deletion of State Pollutant Discharge
Elimination System (SPDES) Permit
No. NY-0074276, UPA File No. 10-83-1454
Babylon (T)

Dear Mr. Miller:

This Department has made a determination to delete your referenced SPDES permit because the subject discharge has been incorporated into SPDES Permit No. NY-0089621.

Please direct any inquiries you may have to this office or call (516) 751-7900.

Very truly yours,

Daniel J. Larkin
Regional Permit Administrator

cc: A. Yerman
S. Costa
R. Hannaford

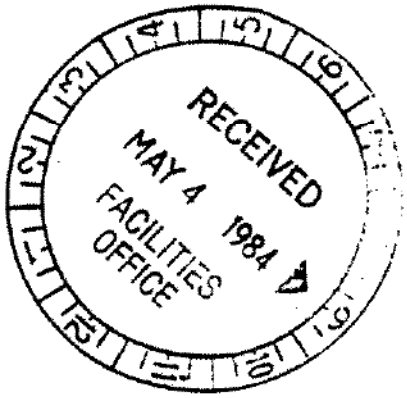
DJL:co's

ew York State Department of Environmental Conservation
Regulatory Affairs Unit
Bldg. 40, SUNY--Room 219
Stony Brook, NY 11794

(516) 751-7900

Henry G. Williams
Commissioner

May 1, 1984



Fairchild Republic Company
Conklin Street
Farmingdale, NY 11735

Attention: Tom Webb, Chief Environmental Engineer

RE: UPA File Number 10-83-1454
SPDES Facility I.D. Number NY-0089621

Dear Mr. Webb:

In conformance with the requirements of the State Uniform Prodecures Act (Article 70, ECL) and its implementing Regulations (6NYCRR, Part 621) we are enclosing your SPDES Permit identified above. Please carefully read all general and other conditions and the schedule contained in the permit to insure compliance during the term of the permit.

This permit should be kept available on the premises of the discharging facility at all times.

Very truly yours,

Daniel J. Larkin
Regional Permit Administrator

cc: R. Hannaford
A. Yerman
S. Costa, P.E., SCHDS
DJL:DD:co's

Attachment: General Conditions, Part II
Copies: A. Yerman
R. Hannaford
S. Costa

Facility ID No. : NY-008 9621

Effective Date (EDP) : May 1, 1984

Expiration Date (ExDP) : May 1, 1989

RECEIVED
MAY 4 1984
FACILITIES
OFFICE

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM (SPDES)
DISCHARGE PERMIT

Special Conditions
(Part I)

This SPDES permit is issued in compliance with Title 8 of Article 17 of the Environmental Conservation Law of New York State and in compliance with the Clean Water Act, as amended, (33 U.S.C. §1251 et. seq.) (hereinafter referred to as "the Act").

Permittee Name: Fairchild Republic Co Attn: Tom Webb, Chief Environmental Engineer

Permittee Street: Conklin Street

Permittee City: Farmingdale State: NY Zip Code: 11735

is authorized to discharge from the facility described below:

Facility Name: Fairchild Republic Co.

Facility Location (C,T,V): Babylon (T) County: Suffolk County

Facility Mailing Address (Street): Conklin Street

Facility Mailing Address (City): Farmingdale State: NY Zip Code: 11735

into receiving waters known as: Groundwater (Class GA)

in accordance with the effluent limitations, monitoring requirements and other conditions set forth in this permit.

This permit and the authorization to discharge shall expire on midnight of the expiration date shown above and the permittee shall not discharge after the expiration date unless this permit has been renewed, or extended pursuant to law. To be authorized to discharge beyond the expiration date, the permittee shall apply for permit renewal as prescribed by Sections 17-0803 and 17-0804 of the Environmental Conservation Law and Parts 621, 752, and 755 of the Departments' rules and regulations.

By Authority of Daniel J. Larkin, P.E., Regional Permit Administrator
Designated Representative of Commissioner of the
Department of Environmental Conservation

5/3/84
Date

Signature

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning May 1, 1984
and lasting until May 1, 1989
the discharges from the permitted facility shall be limited and monitored by the permittee as specified below:

Outfall Number & Effluent Parameter	Discharge Limitations Daily Avg.	Daily Max.	Units	Measurement Frequency	Sample Type
001 Flow (treated process water to 002)[1]		NA		Continuous	Recorded
Aluminum-Total		2	mg/l	Weekly	Composite
Copper-Total		1	mg/l	Weekly	Composite
Chromium-Total		1	mg/l	Weekly	Composite
Chromium-Hexavalent		.1	mg/l	Weekly	Composite
Fluoride		3	mg/l	Weekly	Composite
Iron-Total		.6	mg/l	Weekly	Composite
Lead-Total		.05	mg/l	Weekly	Composite
Silver-Total		.1	mg/l	Weekly	Composite
Sulfide		1	mg/l	Weekly	Composite
Phenol		.002	mg/l	Weekly	Composite
Total Nitrogen		10	mg/l	Weekly	Composite
Oil & Grease		15	mg/l	Weekly	Composite
pH (Range)	6.5 - 8.5		SU	Weekly	Grab
002 No monitoring required, sanitary and treated 001 waste to S.T.P.[2]					Grab
003 Non-contact Cooling and Storm water Oil & Grease		15	mg/l	When discharging	Grab
004 Storm water - Aircraft Parking Oil & Grease		15	mg/l	Monthly	Grab

The permit application must list all the corrosion/scale inhibitors or biocidal-type compounds used by the permittee. If use of new boiler/cooling water additives is intended, application must be made prior to use.

Notes

[1] Outfall 001 treated process water discharge to 002 (One of five influent lines)

[2] Outfall 002 discharge to Company operated STP NY#0024276 - To be discontinued 1/30/85 The STP presently receives Sanitary Waste from 5 separate Sanitary lines covering the entire site. Four (4) of these will be disconnected by 6/30/84 when connection is made separately for each to the SW Sewer District line. After pretreatment upgrading is completed for Outfall 001, by 1/30/85, the last (1) sanitary waste line will be connected to the SWSD line and the STP line will be shut down.

all 003 and 004 No treated or untreated industrial wastes or sanitary wastes shall be allowed. Discharge shall be to new storm water recharge basins only.

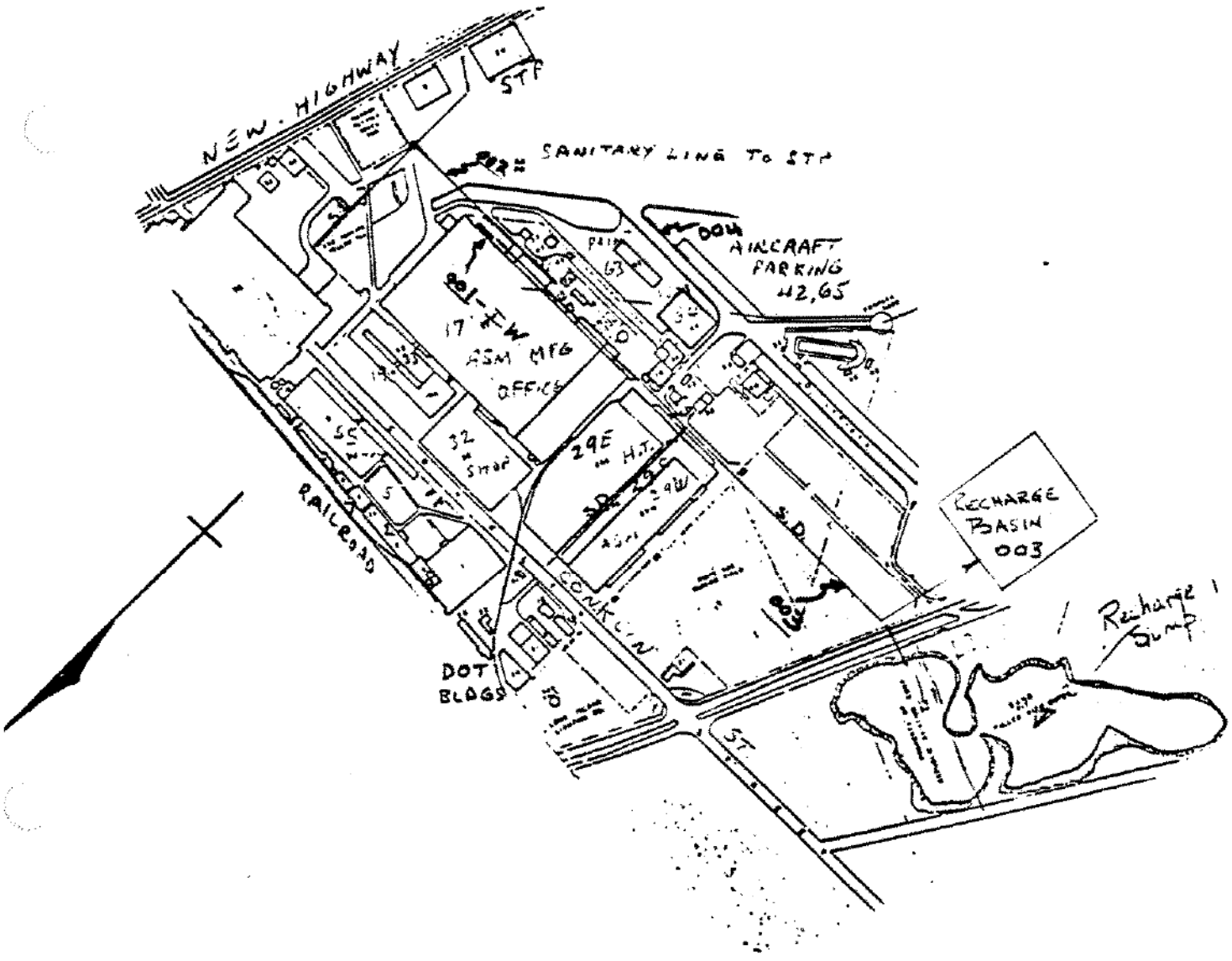
Definition of Daily Average and Daily Maximum

The daily average discharge is the total discharge by weight or in other appropriate units as specified herein, during a calendar month divided by the number of days in the month that the production or commercial facility was operating. Where less than daily sampling is required by this permit, the daily average discharge shall be determined by the summation of all the measured daily discharges in appropriate units as specified herein divided by the number of days during the calendar month when the measurements were made.

The daily maximum discharge means the total discharge by weight or in other appropriate units as specified herein, during any calendar day.

Monitoring Locations

Permittee shall take samples and measurements to meet the monitoring requirements at the location(s) indicated below: (Show locations of outfalls with sketch or flow diagram as appropriate).



SCHEDULE OF COMPLIANCE FOR EFFLUENT LIMITATIONS

(a) Permittee shall achieve compliance with the effluent limitations specified in this permit for the permitted discharge(s) in accordance with the following schedule:

Action Code	Outfall Number(s)	Compliance Action	Due Date
19	001	A short-term, high-intensity sampling program shall be implemented for the parameters listed below. This shall consist of grab samples taken for three consecutive days. Analysis shall be by gas chromatography with a limit of detectability as indciated. Results of sampling shall be expressed in mg/l and lbs/day and shall be submitted to the Bureau of Wastewater Facilities Design.	31 July 1984
		PARAMETER — DETECTION LIMIT (mg/l): methylene chloride .05; tetrachloroethylene .002; toluene .05; trichloroethylene .01; 1,1,1-trichloroethane .05; xylene .05	
	003	Discharge from water quench tank in foundry and Lindberg heat treat quench in Bldg. 17 shall be disconnected from outfall 003.	31 July 1984
28	001 & 002	Connect to Suffolk County South West Sewer District	Jan. 30, 1985

(b) The permittee shall submit to the Department of Environmental Conservation the required document(s) where a specific action is required in (a) above to be taken by a certain date, and a written notice of compliance or noncompliance with each of the above schedule dates, postmarked no later than 14 days following each elapsed date. Each notice of noncompliance shall include the following information:

1. A short description of the noncompliance;

2. A description of any actions taken or proposed by the permittee to comply with the elapsed schedule requirement without further delay;

3. A description of any factors which tend to explain or mitigate the noncompliance; and

4. An estimate of the date permittee will comply with the elapsed schedule requirement and an assessment of the probability that permittee will meet the next scheduled requirement on time.

SCHEDULE OF COMPLIANCE FOR EFFLUENT LIMITATIONS (continued)

(a) Permittee shall achieve compliance with the effluent limitations specified in this permit for the permitted discharge(s) in accordance with the following schedule:

Action Code	Outfall Number(s)	Compliance Action	Due Date
19	004	A short-term, high-intensity sampling program for benzene, toluene and xylene shall be implemented. This shall include grab samples taken for three consecutive days. Analysis shall be by gas chromatgraphy with a limit of detectability of .05 for toluene and xylene and .001 mg/l for benzene. Results of sampling shall be expressed in mg/l and lbs/day and shall be submitted to the Bureau of Wastewater Facilities Design.	31 July 1985

(b) The permittee shall submit to the Department of Environmental Conservation the required document(s) where a specific action is required in (a) above to be taken by a certain date, and a written notice of compliance or noncompliance with each of the above schedule dates, postmarked no later than 14 days following each elapsed date. Each notice of noncompliance shall include the following information:

1. A short description of the noncompliance;

2. A description of any actions taken or proposed by the permittee to comply with the elapsed schedule requirement without further delay;

3. A description of any factors which tend to explain or mitigate the noncompliance; and

4. An estimate of the date permittee will comply with the elapsed schedule requirement and an assessment of the probability that permittee will meet the next scheduled requirement on time.

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233-0001
PDES Permit Section, Room 315
(518) 457-8185

Robert F. Flacke
Commissioner

March 17, 1982

2b.	[X]	Publ. (NW-P)
1c. 2c.	[ ]	CO/ECSL
2d.	[ ]	Fee

R. S. Miller, Sr. Vice President
Fairchild Republic Company
Conklin Street
Farmingdale, New York 11735

Re: Application for Permit to Discharge Under New York State Pollutant Discharge Elimination System (SPDES)
Application No. NY-0089621
Suffolk Co.

Dear Mr. Miller

1. Enclosed are the following:

[X] a. The "Notice of Complete Application" (Notice) (one page), a public notice to other potentially interested parties describing your discharge and this Department's intention to issue a permit. The Notice will be published in the Department's weekly Environmental Notice Bulletin, and, if item 2b. is checked below, you must also have the Notice published in a local newspaper.

[X] b. A copy of the draft SPDES discharge permit which contains the effluent limitations and monitoring requirements and other specific conditions that you will be required to comply with.

[ ] c. A [ ] Consent Order or [ ] Enforcement Compliance Schedule Letter (ECSL) with Schedule A, which contains an abatement schedule and interim effluent limitations and monitoring requirements that you will be required to follow to bring your discharge(s) into compliance with applicable Federal and State water pollution control laws. Also see item 2c. below.

[ ] d. Other: _____

2. You are hereby requested to do the following:

[X] a. Read over the enclosed documents carefully and notify this office immediately if there are any errors. If there are no errors, but you want to submit written comments, the comments should be sent to this office prior to the cut-off date underlined in the body of the Notice.

[X] b. The Notice of Complete Application should be published unedited in its entirety (except for bracketed portions) one time only on any day during the week of March 29 - April 2, 1982, in the POST, 51 Heisser Lane, Farmingdale, NY 11735.
(name and location of newspaper)

The Notice should not be revised or edited unless you have been authorized to do so by this office. Minor revisions will be authorized by phone if necessary.

Request the newspaper publisher to provide you with an affidavit of publication and promptly forward a copy of it to this office for filing with your application. You are responsible for the cost of publication.

You are advised that any delay or failure to comply with requirements for publication may necessitate appropriate legal action if there are existing discharges from your facility; or cancellation of your application if this is a proposed project.

☐ c. The Consent Order or ECSL must be signed by a chief executive officer (e.g. city or village mayor, town supervisor, corporate president or vice president, owner or partner) and must be returned to this office before the cut-off date underlined in the body of the Notice. A signed copy of the Consent Order or ECSL will be attached to each copy of the issued permit. If you do not agree to sign the Consent Order or ECSL, this Department will have no other recourse but to initiate enforcement proceedings to secure your compliance with applicable effluent limitations and water quality standards mandated by the Federal Clean Water Act and State Environmental Control Law.

☐ d. You failed to include with your application the full amount of the required fee which is $_____. Please submit a check or money order for the balance due in the amount of $_____, payable to the Department of Environmental Conservation. A copy of the application fee schedule is enclosed. Please indicate the SPDES Application Number on your check or money order. Legally, your application is incomplete until the fee is paid. However, in order to expedite processing of this application, we have enclosed the Notice of Complete Application and draft SPDES permit. The amount of the fee should be sent to this office on or before the "cut-off date" underlined in the body of the Notice.

☐ e. Other: _____

If you call our office, please ask for Mr. Dan Meszler

Very truly yours,

William L. Garvey, P.E.
Chief, Permit Administration Section
Division of Water

Enclosures:
cc: SPDES File
Tickler File
ENB (Notice Only)
Region # 1
[X] EPA
Suffolk Co. DHS

14-12-4 (5/80)

NOTE TO NEWSPAPER:
DO NOT PUBLISH MATERIAL IN BRACKETS.

New York State Department of Environmental Conservation

NOTICE OF COMPLETE APPLICATION

THIS IS NOT A PERMIT

TO: Applicant R. S. Miller, Sr. Vice President

Address Fairchild Republic Company
Conklin Street, Farmingdale, New York 11735

Date 3/17/82

App. Nos. NY-0089621

Permit(s) applied for: State Pollutant Discharge Elimination System (SPDES)

Project Description and Site Location: Town Babylon County Suffolk

FAIRCHILD REPUBLIC COMPANY

The Department has made a tentative determination to approve this application for renewal of a permit for an existing discharge of an average of: (A) 288,000 gallons per day of treated (reduction, flocculation, sedimentation and neutralization) process wastewater, and (2) 165,000 gallons per day of treated (chemical and biological) sanitary and compatable process wastewater into groundwaters from wastewater treatment plants as well as intermittent discharges of (1) stormwater runoff and (2) treated (oil/water seperator) contaminated stormwater runoff into groundwaters from subsurface disposal facilities at the applicant's facility located on Conklin Street, Farmingdale, Babylon (T), Suffolk Co., New York, where the applicant manufactures and assembles aircraft as well as aircraft and space vehicle parts. A compliance schedule will require additional treatment to meet current state and/or federal standards.

PUBLIC COMMENT: Applications may be reviewed at the address listed below and specific comments on the project, or a request to become a party-in-interest if a public hearing is held, must be submitted in writing to the contact person named

below no later than May 3, 1982. {Cut-off date}
(By law, this date must be at least 14 days (30 days for a SPDES Permit) from the date the notice will appear in the Environmental Notice Bulletin.)

LEAD AGENCY: N.Y.S. Department of Environmental Conservation

SEQR DETERMINATION:

SEQR-1 Project is not subject to SEQR because it is exempt, excluded, or a Type II action.

CONTACT: (name, agency, address, telephone number)
William L. Garvey, P.E.
Chief, Permit Administration Section
50 Wolf Road, Room 315
Albany, New York 12233-0001
Phone Inquiries: Call (518) 457-8185 and ask for Mr. Dan Meszler

TO THE APPLICANT: This is to advise that your application is complete and a review has commenced. Additional information may be requested from you at a future date, if deemed necessary in order to process the application.
The project has been classified non-minor. Accordingly, a decision will be made within 90 days of the date of this notice. If a public hearing is necessary, you will be notified within 60 days, and the hearing will commence with 90 days of the date of this notice. If a hearing is held, the final decision will be made within 60 days after the hearing is completed.

cc: Chief Executive Officer
Environmental Notice Bulletin, Room 509, 50 Wolf Road, Albany, N. Y. 12233
File

DEC Region # 1
Tickler
Suffolk Co. DHS

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233 (Room 201)

February 28, 1979

Fairchild Republic Company
Conklin Street
Farmingdale, NY 11735

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Robert F. Flacke
Commissioner

Attn: Mr. Russell Gray,
Supervisor/Plant Engineering

Re: MODIFICATION OF POLLUTANT
DISCHARGE ELIMINATION SYSTEM
PERMIT NO. NY-0089621 (GWI)
Babylon (T), Suffolk Co.
Fairchild Republic Co.

Dear Mr. Gray:

This is to inform you that pursuant to Environmental Conservation Law ("ECL"), Article 17, Title 8 (McKinney's) and 6 NYCRR, Part 757, the New York State Department of Environmental Conservation has made a determination to modify your referenced Pollutant Discharge Elimination System Permit as indicated in the complete enclosed revised Permit which supercedes the previous Permit.

A separate Compliance Schedule has been developed for outfall 003. Also Discharge Monitoring Report submittal has been changed from monthly to quarterly.

Unless otherwise specified, this modification will become effective immediately unless you petition, pursuant to ECL Section 17-0907, that you be given an opportunity to be heard in connection with this determination and where applicable, if no written objection is received by this office within 30 days after receipt of this modification by the Regional Administrator of EPA. Any such petition for a hearing shall contain specific evidence to support your contention that a hearing is necessary and thay you were not previously given an opportunity to be heard.

Enclosure
cc: Region # 1
Mr. Crandall - BMS
Mr. Pagano - BIP
Suffolk Co. DHS-H
Mr. Cronin
File

Very truly yours,

George K. Hansen

George K. Hansen, P.E.
Chief, P.D.E.S. Permit Section
Division of Pure Waters

Copies: SPDES File
Reg. 1-Ref.#47-0775
Suffolk Co. DHS
Mr. Crandall - BMS
Mr. Pagano - BIP

Facility ID No. : NY-0089621

Effective Date : July 1, 1976

Expiration Date : July 1, 1981

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM (SPDES)
DISCHARGE PERMIT

Attch: Part II-Gen'l Cond
Schedules "A" & "B"

MODIFIED: 2/28/79

Special Conditions
(Part I)

This SPDES permit is issued in compliance with Title 8 of Article 17 of the Environmental Conservation Law of New York State and in compliance with the provisions of the Federal Water Pollution Control Act, as amended by the Federal Water Pollution Control Act Amendments of 1972, P.L. 92-500, October 18, 1972, (33 U.S.C. §1251 et. seq.) (hereinafter referred to as "the Act").

Fairchild Republic Company
Conklin Street
Farmingdale, NY 11735

Attn: Mr. Russell Gracy

is authorized to discharge from the facility described below:

Fairchild Republic Company
Conklin Street

Babylon (T), Suffolk Co.

into receiving waters known as:

Groundwater - Class GA

in accordance with the effluent limitations, monitoring requirements and other conditions set forth in this permit.

This permit and the authorization to discharge shall expire on midnight of the expiration date shown above and the permittee shall not discharge after the expiration date unless this permit has been renewed, or written authorization is given by the Department. In order to receive authorization to discharge beyond the expiration date, the permittee shall submit such information, forms, and fees as are required by the Department of Environmental Conservation no later than 180 days prior to the expiration date.

By Authority of George K. Hansen, P.E., Chief, PDES Permit Section
Designated Representative of Commissioner of the
Department of Environmental Conservation

Date

Signature

INITIAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning July 1, 1976 and lasting until April 1, 1978, the discharges from the permitted facility shall be limited and monitored by the permittee as specified below:

Outfall Number	Effluent Parameter	Discharge Limitations (kg/day (lbs/day) Daily Avg.	Discharge Limitations (kg/day (lbs/day) Daily Max.	Discharge Limitations Other Units (Specify) Daily Avg.	Discharge Limitations Other Units (Specify) Daily Max.	Monitoring Reqmt Measurement Frequency	Monitoring Reqmt Samp Typ
001	Flow-Industrial Wastes*				288,000 gpd	Daily	Conti
	Cr^{+6}				0.1 mg/l	weekly	gra
	Cr-Total				2.0 mg/l	weekly	gra
	Fluoride				3.0 mg/l	weekly	gra
	Zn				0.6 mg/l	weekly	gra
002	Sanitary Waste - To Fairchild Republic Sewage Treatment Plant. SPDES Permit No. NY-0074276.						

NOTE: *Industrial waste treatment plant effluent and miscellaneous untreated industrial discharge. Presently all discharge from 001 is going into 003.

Permittee also subject to attached Schedule "A"

**The pH shall not be less than 6.5 standard units nor greater than 8.5 standard units ar shall be monitored as follows: 2/daily using a properly calibrated pH meter.

Samples taken in compliance with the monitoring requirements specified above shall be tak at the following location(s):

The daily average discharge is the total discharge by weight or in other appropriate unit as specified herein, during a calendar month divided by the number of days in the month that the production or commercial facility was operating. Where less than daily sampling is required by this permit, the daily average discharge shall be determined by the summat of all the measured daily discharges in appropriate units as specified herein divided by number of days during the calendar month when the measurements were made.

The daily maximum discharge means the total discharge by weight or in other appropriate u as specified herein, during any calendar day. **When natural groundwaters have a pH outside of range indicated above, that natural pH may be one extreme of the allowable range.

INITIAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (Continued)

During the period beginning effective date of modification and lasting until November 1, 1980, the discharges from the permitted facility shall be limited and monitored by the permittee as specified below:

Outfall Number	Effluent Parameter	Discharge Limitations kg/day (lbs/day) Daily Avg.	Discharge Limitations kg/day (lbs/day) Daily Max.	Discharge Limitations Other Units (Specify) Daily Avg.	Discharge Limitations Other Units (Specify) Daily Max.	Monitoring Reqmts Measurement Frequency	Monitoring Reqmts Sampl Type
003	Storm Drainage System - Discharge to recharge sump on west side of Route 110. Present capacity is being exceeded partly due to the continuous discharge from 001.						

Permittee also subject to attached Schedule A

*When natural groundwaters have a pH outside of range indicated above, that natural pH may be one extreme of the allowable range.

* The pH shall not be less than 6.5 standard units nor greater than 8.5 standard units and shall be monitored as follows: 1/day by using properly calibrated pH meter.

Samples taken in compliance with the monitoring requirements specified above shall be take at the following location(s):

The daily average discharge is the total discharge by weight or in other appropriate units as specified herein, during a calendar month divided by the number of days in the month that the production or commercial facility was operating. Where less than daily sampling is required by this permit, the daily average discharge shall be determined by the summati of all the measured daily discharges in appropriate units as specified herein divided by t number of days during the calendar month when the measurements were made.

The daily maximum discharge means the total discharge by weight or in other appropriate un as specified herein, during any calendar day.

FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning April 1, 1978 and lasting until July 1, 1981, the discharges from the permitted facility shall be limited and monitored by the permittee as specified below:

Outfall Number	Effluent Parameter	Discharge Limitations kg/day (lbs/day) Daily Avg.	Discharge Limitations kg/day (lbs/day) Daily Max.	Discharge Limitations Other Units (Specify) Daily Avg.	Discharge Limitations Other Units (Specify) Daily Max.	Monitoring Reqmts. Measurement Frequency	Monitoring Reqmts. Sample Type
002	Sanitary Wastes for sanitary and compatible industrial wastes as outlined in engineering report (Including the treated effelent from industrial wastes 001).						

Permittee also subject to attached Schedule A.

*When natural groundwaters have a pH outside of range indicated, that natural pH may be one extreme of the allowable range.

*The pH shall not be less than 6.5 standard units nor greater than 8.5 standard units and shall be monitored as follows: 2/daily for outlet 002 using properly calibrated pH meter.
Samples taken in compliance with the monitoring requirements specified above shall be taker at the following location(s):

The daily average discharge is the total discharge by weight or in other appropriate units as specified herein, during a calendar month divided by the number of days in the month that the production or commercial facility was operating. Where less than daily sampling is required by this permit, the daily average discharge shall be determined by the summatic of all the measured daily discharges in appropriate units as specified herein divided by th number of days during the calendar month when the measurements were made.

The daily maximum discharge means the total discharge by weight or in other appropriate uni as specified herein, during any calendar day.

SPECIAL NOTES

1 - Since the Fairchild Republic Sewage Treatment Plant has adequate reserve disposal facilities presently idle, the engineering consultant recommends that the pre-treated industrial wastewater be tied into the sanitary sewage collection system, until the facilities of the Suffolk County South West District are available this will eliminate the overloading of the storm water recharge sump 003.

2 - Any waste not compatible with the sewage treatment plant or industrial waste treatement plant that is discharged to either above ground or in-ground holding tanks or containers such as waste conc. acids, waste oil, waste conc. caustic, waste fuel, waste solvents and industrial waste treatment plant sludge, but not limited specifically to these, must be removed from site by an approved industrial waste scavenger to a site outside Suffolk Co. No discharge of these wastes will be allowed onto surface or ground waters. Overflow or spillage into the surface of the ground will not be allowed. Waste removal records must be maintained for review by appropriate personnel.

3 - The discharge of Polychlorinated Biphenyls (PCBs) shall be prohibited.

SCHEDULE OF COMPLIANCE FOR EFFLUENT LIMITATIONS

(a) Permittee shall achieve compliance with the effluent limitations specified in this permit for the permitted discharge(s) in accordance with the following schedule:

Action Code	Outfall Number(s)	Compliance Action	Due Date
1	001, 002,	Submit Approvable Engineering Report by:	September 1, 1976
2	"	Submit Approvable Final Plans by:	March 1, 1977
4	"	Commencement of Construction by:	July 1, 1977
8	"	Completion of Construction by:	January 1, 1978
9	"	Attainment of Operational Level by:	April 1, 1978

(b) The permittee shall submit to the Department of Environmental Conservation the required document(s) where a specific action is required in (a) above to be taken by a certain date, and a written notice of compliance or non-compliance with each of the above schedule dates, postmarked no later than 14 days following each elapsed date. Each notice of noncompliance shall include the following information:

1. A short description of the noncompliance;

2. A description of any actions taken or proposed by the permittee to comply with the elapsed schedule requirement without further delay;

3. A description of any factors which tend to explain or mitigate the noncompliance; and

4. An estimate of the date permittee will comply with the elapsed schedule requirement and an assessment of the probability that permittee will meet the next scheduled requirement on time.

SCHEDULE OF COMPLIANCE FOR EFFLUENT LIMITATIONS

(a) Permittee shall achieve compliance with the effluent limitations specified in this permit for the permitted discharge(s) in accordance with the following schedule:

Action Code	Outfall Number(s)	Compliance Action	Due Date
01	003	Submit Approvable Engineering Report by:	May 1, 1979
02	" "	Submit Approvable Final Plans by:	November 1, 1979
04	" "	Commencement of Construction by:	June 1, 1980
09	" "	Attainment of Operational Level by:	November 1, 1980

(b) The permittee shall submit to the Department of Environmental Conservation the required document(s) where a specific action is required in (a) above to be taken by a certain date, and a written notice of compliance or noncompliance with each of the above schedule dates, postmarked no later than 14 days following each elapsed date. Each notice of noncompliance shall include the following information:

1. A short description of the noncompliance;

2. A description of any actions taken or proposed by the permittee to comply with the elapsed schedule requirement without further delay;

3. A description of any factors which tend to explain or mitigate the noncompliance; and

4. An estimate of the date permittee will comply with the elapsed schedule requirement and an assessment of the probability that permittee will meet the next scheduled requirement on time.

SCHEDULE OF COMPLIANCE FOR EFFLUENT LIMITATIONS
(Continued)

c) The permittee shall submit copies of the written notice of compliance or noncompliance required in section (b) to the following offices:

Chief, Compliance Section
New York State Department of Environmental Conservation
50 Wolf Road
Albany, New York 12233

Regional Engineer - Region #1
New York State Department of Environmental Conservation
Building 40 - SUNY
Stoney Brook, New York 11794

and

Suffolk Co. Dept. of Health Services
65 Jetson Lane
Hauppauge, New York 11787

d) The permittee shall submit copies of any engineering reports, plans of study, final plans, as-built plans, infiltration-inflow studies, etc. required by this permit to the following offices, unless otherwise specified in this permit or in writing by the Department or its designated field office:

Regional Office #1 - 3 Copies

Suffolk County Dept. of Environmental Control - 1 copy

MONITORING, RECORDING AND REPORTING

a) The permittee shall also refer to the General Conditions (Part II) of this permit for additional information concerning monitoring and reporting requirements and conditions.

b) The monitoring information required by this permit shall be summarized and reported by submitting a completed and signed Discharge Monitoring Report form once every 3 months to the Department of Environmental Conservation and other appropriate regulatory agencies at the offices specified below. The first report will be due no later than March 28, 1979. Thereafter, reports shall be submitted no later than the 28th of the following month(s): June, Sept., Dec., March

Chief, Waste Source Monitoring Section
New York State Department of Environmental Conservation
Room 300 - 50 Wolf Road - Albany, New York 12233

Regional Engineer - Region #1
New York State Department of Environmental Conservation
Building 40 - SUNY
Stoney Brook, New York 11794
and
Suffolk Co. Dept. of Health Services
65 Jetson Lane
Hauppauge, New York 11787

c) If so directed by this permit or by previous request, Monthly Wastewater Treatment Plant Operator's Reports shall be submitted to the DEC Regional Office and county health department or county environmental control agency specified above.

d) Each submitted Discharge Monitoring Report shall be signed as follows:

1. If submitted by a corporation, by a principal executive officer of at least the level of vice president, or his duly authorized representative, if such representative is responsible for the overall operation of the facility from which the discharge described in the Discharge Monitoring Report originates;

2. If submitted by a partnership, by a general partner;

3. If submitted by a sole proprietor, by the proprietor;

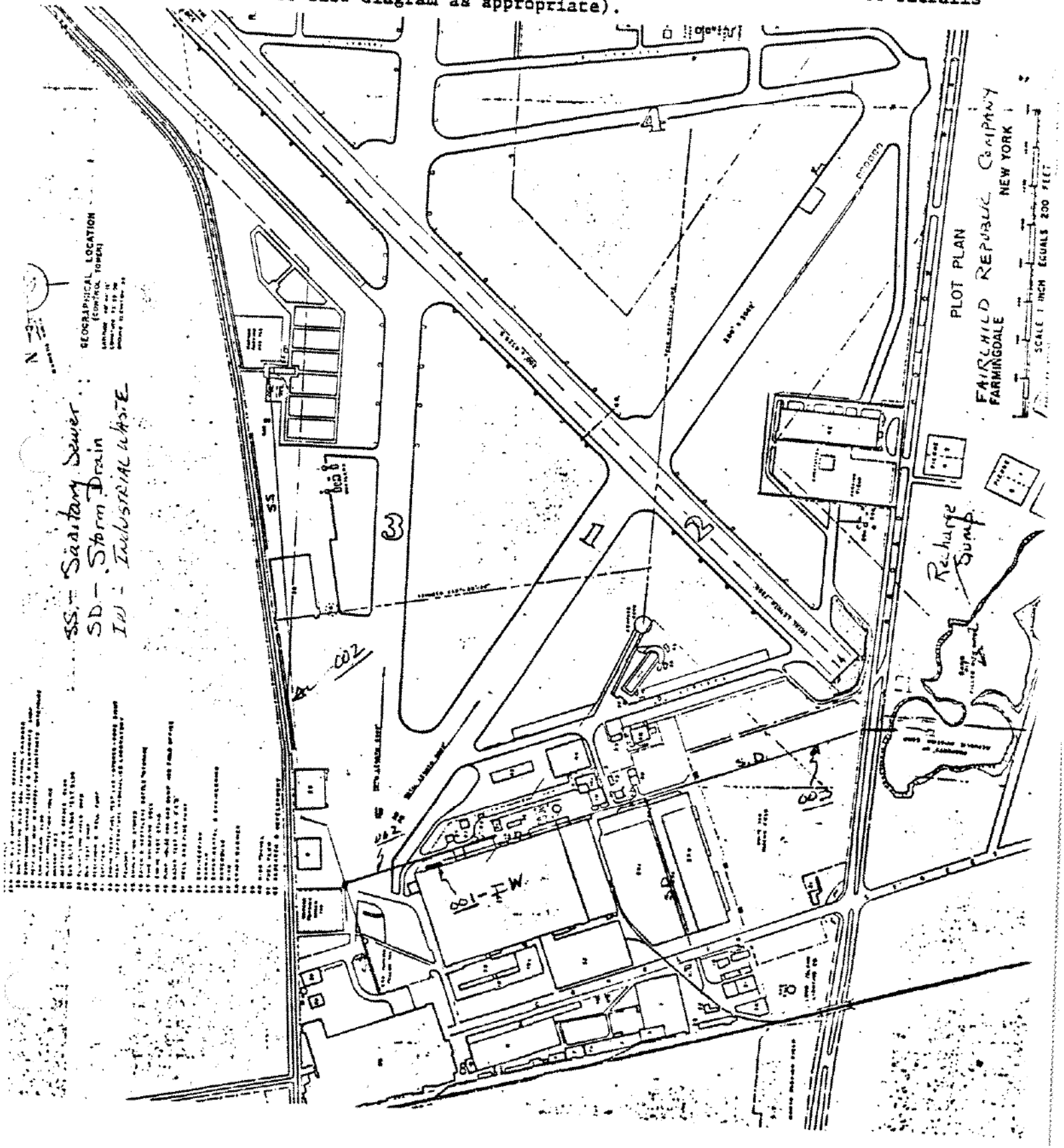
4. If submitted by a municipality, State or Federal agency, or other public entity; by a principal executive officer, ranking elected official, commanding officer, or other duly authorized employee.

e) Unless otherwise specified, all information submitted on the Discharge Monitoring Form shall be based upon measurements and sampling carried out during the most recently completed reporting period.

f) Blank Discharge Monitoring Report Forms are available at the above addresses.

Monitoring Locations

Permittee shall take samples and measurements to meet the monitoring requirements at the location(s) indicated below: (Show locations of outfalls with sketch or flow diagram as appropriate).



NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM (SPDES)
DISCHARGE PERMIT

GENERAL CONDITIONS
(PART II)

SECTION

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PART II - GENERAL CONDITIONS

1. GENERAL PROVISIONS

a. A determination has been made on the basis of a submitted application, plans, or other available information, that compliance with the specified permit provisions will reasonably assure compliance with applicable water quality standards. Satisfaction of permit provisions notwithstanding, if operation pursuant to the permit causes or contributes to a condition in contravention of State water quality standards, or if the Department determines, on the basis of notice provided by the permittee and any related investigation, inspection or sampling, that a modification of the permit is necessary to assure maintenance of water quality standards or compliance with other provisions of ECL Article 17, or the Act, the Department may require such a modification and may require abatement action to be taken by the permittee and may also prohibit the noticed act until the permit has been modified.

b. All discharges authorized by this permit shall be consistent with the terms and conditions of this permit; facility expansions, production increases, or process modifications which result in new or increased discharges of pollutants must be reported by submission of a new SPDES application or, if such new or increased discharge does not violate the effluent limitations specified in this permit, by submission to the permit issuing authority of notice of such new or increased discharges of pollutants (in which case the permit may be modified to specify effluent limitations for any pollutants not identified and limited herein); the discharge of any pollutant not identified and authorized or the discharge of any pollutant more frequently than or at a level in excess of that identified and authorized by this permit shall constitute a violation of the terms and conditions of this permit.

c. The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

d. If the discharge(s) permitted herein originate within the jurisdiction of an interstate water pollution control agency, then the permitted discharge(s) must also comply with any applicable effluent standards or water quality standards promulgated by that interstate agency.

2. PROHIBITIONS

a. The following discharges into the waters of the State are hereby prohibited:

(1) The discharge of any radiological, chemical or biological warfare agent or high-level radioactive waste, such as terms are defined by the Act or pursuant thereto;

(2) Any discharge which the Secretary of the Army acting through the Chief of Engineers finds would substantially impair anchorage and navigation;

(3) Any discharge to which the Regional Administrator has objected in writing pursuant to any right to object provided the Administrator in Section 402(d) of the Act; and

(4) Any discharge from a point source which is in conflict with a plan or amendment thereto approved pursuant to section 208(b) of the Act, or any other discharge not permitted by this article, article 17 of the ECL, other rules and regulations adopted or applicable pursuant thereto, the Act, or the provisions of a SPDES permit.

3. EXCLUSIONS

a. The issuance of this permit by the Department and the receipt thereof by the Applicant does not supersede, revoke or rescind an order or modification thereof on consent or determination by the Commissioner issued heretofore by the Department or any of the terms, conditions or requirements contained in such order or modification thereof.

b. The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations; nor does it obviate the necessity of obtaining other assent required by law for the discharge authorized.

c. This permit does not authorize or approve the construction of any onshore or offshore physical structures or facilities or the undertaking of any work in any navigable waters.

d. Nothing in this permit shall be deemed to preclude the institution of any legal action nor relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Clean Water Act, as amended.

4. MODIFICATION, SUSPENSION, REVOCATION

a. If the permittee fails or refuses to comply with an interim or final requirement in a SPDES permit, such noncompliance shall constitute a violation of the permit for which the Commissioner may modify, suspend, or revoke the permit or take direct enforcement action pursuant to law. When, at any time during or prior to a period for compliance, the permittee announces or otherwise lets it be known, or the Commissioner on reasonable cause determines, that the permittee

will not make the requisite efforts to achieve compliance with an interim or final requirement, the Commissioner may modify, suspend or revoke the permit and take direct enforcement action pursuant to law, without waiting for expiration of the period for compliance with such requirements.

b. After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:

1. Violation of any terms or conditions of this permit; or;

2. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts, or false or inaccurate statements or information in the application; or;

3. A change in any physical circumstances, requirements or criteria applicable to discharges that requires either a temporary or permanent reduction or elimination of the authorized discharges, such as:

(i) standards for construction or operation of the discharging facility,

(ii) the characteristics of the waters into which such discharge is made,

(iii) the water quality criteria applicable to such waters,

(iv) the classification of such waters, or

(v) effluent limitations or other requirements applicable pursuant to the Act or State Law.

c. Notwithstanding (b) above, if a toxic effluent standard or prohibition (including any schedule of compliance specified in Section 17-0813 of the Environmental Conservation Law or Section 307(a) of the Act) is established for a toxic pollutant which is present in the discharge authorized herein and such standard or prohibition is more stringent than any limitation upon such pollutant in this permit, or if this permit contains no limitations on such pollutants, this permit shall be revised or modified in accordance with the toxic effluent standards or prohibition and the permittee shall be so notified.

d. This permit shall be modified, or alternatively, revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under sections 301(b)(2) (C) and (D), 304(b)(2) and 307(a)(2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:

(1) Contains different conditions or is otherwise more stringent than any effluent limitations in the permit; or
(2) Controls any pollutant not limited in the permit.

The permit as modified or reissued under this paragraph shall also contain any other requirements of the Act then applicable.

5. REPORTING NONCOMPLIANCE

a. If for any reason the permittee does not comply with or will be unable to comply with any daily maximum effluent limitation specified in this permit or should any unusual or extraordinary discharge of wastes occur for the permitted facilities, the permittee shall immediately notify the Department of Environmental Conservation Regional Office by telephon and provide the following information in writing within five days of such notification:

(1) Cause of noncompliance;

(2) A description of the noncomplying discharge including its impact upon the receiving waters;

(3) Anticipated time the condition of noncompliance is expected to continue, or if such condition has been corrected, the duration of the period of noncompliance

(4) Steps taken by the permittee to reduce and eliminate the noncomplying discharge; and

(5) Steps to be taken by the permittee to prevent recurrence of the condition of noncompliance.

b. Permittee shall take all reasonable steps to minimize any adverse impact to navigable waters resulting from noncompliance with any effluent limitation specified in this permit, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the non-complying discharge.

c. Except as provided herein under Prohibition of Bypass of Treatment Works, nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

d. It is recognized that equipment malfunction, acts of God or other circumstances beyond the control of the Permittee may sometimes result in effluent concentrations exceeding the permit limitations despite the exercise of appropriate care and maintenance measures and corrective measures by the Permittee. The Permittee may come forward to demonstrate to the Department that such circumstances exist in any case where effluent concentrations exceed those set forth in this permit. The Department, however, is not bound to wait for or solicit such demonstrations prior to the initiation of any enforcement proceeding; nor must it accept as valid on its face the statements made in any such demonstration. Nevertheless, if the Department seeks to enforce in an administrative or judicial proceeding any provision of any permit issued to the Permittee by any permitting agency, the Permittee may raise at that time the issue of whether under the Constitution, statute, or decisional law it is entitled to a defense that its conduct was caused by circumstances beyond its control.

6. INSPECTIONS

a. The permittee shall allow the Commissioner of the Department of Environmental Conservation, the Regional Administrator, and/or their authorized representative, upon the presentation of credentials:

1. To enter upon the permittee's premises where an effluent source is located or in which any records are required to be kept under the terms and conditions of this permit;

2. To have access to and copy, at reasonable times, any records required to be kept under the terms and conditions of this permit;

3. To inspect any monitoring equipment or practices being maintained pursuant to this permit; or

4. To have access to and sample any discharge of pollutants to waters or to publicly owned treatment works resulting directly or indirectly from activities or operations of the owner or operator of the premises in which the effluent source or outlet is located.

7. TRANSFER OF OWNERSHIP

a. Any permittee who intends to transfer a SPDES permit is required to notify the Department in advance of the transfer. In the case of a change of ownership only, notice to the Department is required prior to change; in the case of an ownership change accompanied by a change or proposed change in wastewater characteristics, a minimum of 180 days prior notice to the Department is required.

b. The terms and conditions of this permit are binding on the successors or assigns in interest of the original permittee.

8. PERMIT RENEWAL

a. Any permittee who wishes to continue to discharge after the expiration date of a permit shall apply for renewal of its permit no later than 180 days prior to the permit's expiration date (unless permission for a later date has been granted by the Department) by submitting any forms, fees, or supplemental information which may be required by the Department. Upon request, the Department shall provide the permittee with specific information concerning the forms, fees, and supplemental information required.

b. If this permit expires before a new permit is issued, the permittee shall continue to comply with all the terms and conditions of this permit until a new permit is issued.

9. SPECIAL PROVISIONS - NEW OR MODIFIED DISPOSAL SYSTEMS

a. Prior to construction of any new waste disposal system or modification which would materially alter the volume of, or the method or effect of treating or disposing of the sewage, industrial waste or other wastes, from an existing waste disposal system, the Permittee shall submit to the Department or its designated field office for review, an approvable engineering report, plans, and specifications which have been prepared by a person or firm licensed to practice Professional Engineering in the State of New York.

b. The construction of the above new or modified disposal system shall not start until the Permittee receives written approval from the Department or its designated field office.

c. The construction of the above new or modified disposal system shall be under the general supervision of a person or firm licensed to practice Professional Engineering in New York State, and upon completion of construction that person or firm shall certify to the Department or its designated field office that the system has been fully completed in accordance with the approved engineering report, plans and specifications, permit and letter of approval.

d. The Department and its designated field offices review wastewater disposal system reports, plans, and specifications for treatment process capability only, and approval by either office does not constitute approval of the system's structural integrity.

10. MONITORING RECORDING AND REPORTING

10.1 General

a. The permittee shall comply with all recording, reporting, monitoring and sampling requirements herein and such other additional terms, provisions, requirements or conditions that the Department may deem to be reasonably necessary to achieve the purposes of the Environmental Conservation Law, Article 17, the Act, or rules and regulations adopted pursuant thereto.

b. Samples and measurements taken to meet the monitoring requirements specified herein shall be representative of the volume and nature of the monitored discharge. Composite samples should be "flow-proportioned" if necessary to obtain a representative sample.

c. The permittee shall periodically calibrate and perform maintenance procedures on all monitoring and analytical instrumentation to insure accuracy of measurements.

10.2 Monitoring Locations

a. Permittee shall take samples and measurements to meet the monitoring requirements at the locations specified.

b. Unless specified otherwise, samples of the effluent shall be taken at the point of combined flow into the outfall sewer.

c. Unless specified otherwise, samples of the influent wastewater shall be taken at the point of plant inflow.

10.3 Recording of Monitoring Activities and Results

a. The permittee shall make and maintain records of all information resulting from the monitoring activities required by this permit.

b. The permittee shall record for each measurement or sample taken pursuant to the requirements of this permit the following information: (1) The date, exact place, and time of sampling; (2) The dates analyses were performed; (3) Who performed the analyses; (4) The analytical techniques or methods used; and, (5) The results of all required analyses.

c. If the permittee monitors any pollutant more frequently than is required by this permit, he shall include the results of such monitoring in the calculation and reporting of the values required in the Discharge Monitoring Report form. Such increased frequency shall be indicated on the Discharge Monitoring Report form.

d. The permittee shall retain for a minimum of three (3) years all records of monitoring activities and results including all records of calibration and maintenance of instrumentation and original strip chart recordings from continuous monitoring instrumentation. This period of retention shall be extended during the course of any unresolved litigation or other proceedings regarding the discharge of pollutants by the permittee or when requested by the Commissioner of the Department of Environmental Conservation or the EPA Regional Administrator.

10.4 Analytical Methods

Following promulgation of guidelines establishing test procedures for the analysis of pollutants, published pursuant to Section 304(g) of the Federal Water Pollution Control Act, as amended, all sampling and analytical methods used to meet the monitoring requirements specified above shall conform to such guidelines. If the Section 304(g) guidelines do not specify test procedures for any pollutants required to be monitored by this permit and until such guidelines are promulgated, sampling and analytical methods used to meet the monitoring requirements specified in this permit shall, unless otherwise specified by the Commissioner, conform to the latest edition of the following references:

1. Standard Methods for the Examination of Water and Waste-Waters, 14th Edition, 1976, American Public Health Association, New York, New York 10019.

2. A. S. T. M. Standards, Part 31, Water; Atmospheric Analysis, 1975, American Society for Testing and Materials, Philadelphia, Pennsylvania 19103.

3. Methods for Chemical Analysis of Water and Wastes, 1974, Environmental Protection Agency Water Quality Office, Analytical Quality Control Laboratory, NECR, Cincinnati, Ohio 45268.

10.5 Application for Alternate Test Procedures

a. The applicant shall submit his application to the Director of the Bureau of Monitoring and Surveillance, Division of Pure Waters, N.Y.D.E.C., 50 Wolf Road, Albany, New York 12233.

b. Unless and until printed application forms are made available, an application for an alternate test procedure may be made by letter in triplicate. Any application for an alternate test procedure shall:

(1) Provide the name and address of the responsible person or firm making the discharge (if not the applicant) and the applicable ID number of the existing or pending permit, issuing agency, and type of permit for which the alternate test procedure is requested, and the discharge serial number.

(2) Identify the pollutant or parameter for which approval of an alternate testing procedure is being requested.

(3) Provide justification for using testing procedures other than those specified in Table I, FEDERAL REGISTER, 28759, Vol. 38. No. 199, Tues. Oct. 16, 1973, or as amended.

(4) Provide a detailed description of the proposed alternate test procedure, together with references to published studies of the applicability of the alternate test procedure to the effluents in question.

10.6 Confidential Information

a. Except for data determined to be confidential under Section 17-0805 of the Environmental Conservation Law or Section 308 of the Act, all such reports shall be available for public inspection at the offices of the Department of Environmental Conservation and the Regional Administrator of EPA Region II. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in Section 71-1933 of the Environmental Conservation Law or Section 309 of the Act.

11. DISPOSAL SYSTEM OPERATION AND QUALITY CONTROL

11.1 General

a. The disposal system shall not receive or be committed to receive wastes beyond its design capacity as to volume and character of wastes treated, nor shall the system be materially altered as to: type, degree, or capacity of treatment provided; disposal of treated effluent; or treatment and disposal of separated scum, liquids, solids or combinations thereof resulting from the treatment process without prior written approval of the Department of Environmental Conservation or its designated field office.

b. The permittee shall at all times maintain in good working order and operate as efficiently as reasonably possible any disposal system or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit.

c. Any maintenance of the disposal system that may cause a degradation of effluent quality shall be scheduled during non-critical water quality periods and shall be carried out in a manner approved by the New York State Department of Environmental Conservation.

d. When required under Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6NYCRR650), sufficient personnel meeting qualifications for operators of sewage treatment works as required therein shall be employed to satisfactorily operate and maintain the treatment works.

e. The permittee shall not discharge floating solids or visible foam, unless specifically authorized by this permit.

11.2 Prohibition of Bypass of Treatment Works

a. Bypass or diversion of wastes from any portion of the treatment facilities is prohibited except:

(1) Where unavoidable to prevent loss of life, serious injury or severe property damage. Severe property damage includes substantial physical damage to property; damage to the treatment facilities which would cause them to become inoperable; or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. It does not include economic loss caused by delays in production; and

(2) Where there are no feasible alternatives to bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime; and

(3) Where the permittee promptly but in no event later than 24 hours after the permittee learns of the bypass, submits notice of the bypass or an anticipated need for bypass to the Department containing the information required by Section 5 of this Part.

Where the permittee knows in advance of the need for the bypass, this notification shall be submitted for approval to the Department before the date of bypass. Bypass shall be either:

(i) Prohibited by the Department in consideration of the adverse effects of the bypass and the factors set out above, or

(ii) Allowed under conditions determined to be necessary by the Department to minimize any adverse effects.

11.3 Special Condition - Disposal Systems with Septic Tanks

If a septic tank is installed as part of the disposal system, it shall be inspected by the permittee or his agent for scum and sludge accumulation at intervals not to exceed one year's duration, and such accumulation will be removed before the depth of either exceeds one-fourth (¼) of the liquid depth so that no settleable solids or scum will leave in the septic tank effluent. Such accumulation shall be disposed of in an approved manner.

11.4 Sludge Disposal

a. The storage or disposal of collected screenings, sludges, other solids, or precipitates separated from the permitted discharges and/or intake or supply water by the permittee shall be done in such a manner as to prevent creation of nuisance conditions or entry of such materials into classified waters or their tributaries, and in a manner approved by the Department. Any live fish, shellfish, or other animals collected or trapped as a result of intake water screening or treatment may be returned to their water body habitat. The permittee shall maintain records of disposal on all effluent screenings, sludges and other solids associated with the discharge(s) herein described. The following data shall be compiled and reported to the Department or its designated field office upon request:

1. The sources of the materials to be disposed of;

2. The approximate volumes and weights;

3. The method by which they were removed and transported;

4. Their final disposal locations.

12. CONDITIONS APPLICABLE TO A PUBLICLY OWNED TREATMENT WORKS (POTW) AND USERS OF A POTW

12.1 GENERAL

a. Notice shall be given the Department of Environmental Conservation of any new introduction of pollutants into the POTW from a source which would be a new source as defined in Section 306 of the Act if such source was discharging pollutants; and, except as to such categories and classes of sources specified by the Commissioner, any new introduction of pollutants which exceed 10,000 gallons on any one day into the POTW from a source which would be subject to Section 301 of the Act if such source was discharging pollutants; and any substantial change in volume or character of pollutants being introduced into the POTW at the time of issuance of the permit. Such notice shall include information on the quality and quantity of effluent to be introduced into the POTW; and an anticipated impact of such change in the quantity or quality of effluent to be discharged from the POTW.

b. The permittee shall require any industrial user of the POTW to comply with the requirements of Section 204(b), 307, and 308 of the Act. Any industrial user subject to the requirements of Section 307 of the Act shall be required by the permittee to prepare and transmit to the New York State Department of Environmental Conservation periodic notice (over intervals not to exceed 9 months) of progress toward full compliance with Section 307 requirements. The permittee, upon receipt of such reports shall transmit a copy promptly to the Department.

c. The permittee shall require any industrial user of storm sewers to comply with the requirement of Section 308 of the Act.

d. For discharges from publicly owned treatment works, appropriate measures will be established by the permittee to insure compliance by industrial users with any system of user charges and recovery of construction costs required under the provisions of the Act.

e. Persons discharging industrial waste to a publicly owned treatment works shall comply with toxic effluent standards and pretreatment standards and with monitoring, reporting, recording, sampling and entry requirements provided by the Act or the Environmental Conservation Law, Article 17 or adopted pursuant to the Act or the Environmental Conservation Law, Article 17.

12.2 NATIONAL PRETREATMENT STANDARDS: PROHIBITED DISCHARGES

(Note: The following Section was published in the Federal Register, Vol. 43, No. 123 - Monday June 26, 1978. The effective date of the regulation (Part 403) was August 25, 1978)

§403.5 National Pretreatment Standards: Prohibited Discharges.

(a) Pollutants introduced into POTW's by any source of a nondomestic discharge shall not inhibit or interfere with the operation or performance of the works. These general prohibitions apply to all such users of a POTW whether or not the user is subject to other National Pretreatment Standards or any National, State, or local Pretreatment Requirements.

(b) The following pollutants may not be introduced into a POTW:

(1) Pollutants which create a fire or explosion hazard in the POTW;

(2) Pollutants which will cause corrosive structural damage to the POTW, but in no case discharges with pH lower than 5.0 unless the works is specifically designed to accommodate such discharges;

(3) Solid or viscous pollutants in amounts which will cause obstruction to the flow in sewers, or other Interference with the operation of the POTW;

(4) Any pollutant, including oxygen demanding pollutants (BOD, etc.) released in a discharge of such volume or strength as to cause Interference in the POTW.

(5) Heat in amounts which will inhibit biological activity in the POTW resulting in Interference but in no case heat in such quantities that the temperature at the treatment works influent exceeds 40°C(104°F) unless the works is designed to accommodate such heat.

(c) POTW's developing POTW Pretreatment Programs pursuant to §403.8 shall be required to develop and enforce specific limits for discharges of the pollutants listed in §403.5(b)(1)-(5). In addition, any POTW in violation of an NPDES Permit requirement as a result of Interference by a pollutant listed in §403.5(b)(1)-(5) shall be required by the EPA or NPDES state to develop and enforce such specific limits.

(d) Where specific prohibitions or limits on the pollutants or pollutant parameters listed in §403.5(b)(1)-(5) are developed by a POTW, either as a requirement of an Approved POTW Pretreatment Program pursuant to §403.8 or an NPDES Permit, such limits shall be incorporated in the NPDES Permit issued to the POTW and shall replace and be enforceable in lieu of the general prohibitions set forth in this section.

(e) Compliance with the provisions of this section is required beginning on the effective date of this regulation, except for paragraph (b)(5) of this section which must be complied with within 3 years of the effective date of this regulation.

BUREAU OF EASTERN

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Appendix B	Chemtech Electronic Data
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1.0 INTRODUCTION

MAC CONSULTANTS, INC. (MAC) conducted a subsurface investigation on behalf of Mairoll Inc. to delineate the Old Recharge Basin (ORB) bottom sediment confined and re-buried during closure. An area of buried chromium soil was delineated and a soil gas survey was also performed as part of the investigation. The field work was conducted from June 17 to June 20, 2002. The work was performed in accordance with the New York State Department of Environmental Conservation (NYSDEC) approved "Old Recharge Basin Bottom Sediment Investigation Work Plan, May 2002"(Work Plan).

This delineation was discussed as one of two items the NYSDEC and the New York State Department of Health (NYSDOH) are seeking to support the institutional controls requirement of the closure. The other item is the deed notice NYSDEC has been working on internally with Department legal staff. The purpose of this investigation was to provide NYSDEC with the information that the Department has specifically requested and it is not intended as a pre-construction document. In the event that construction activities are undertaken by any party, it may be necessary for those parties to conduct an independent investigation where construction is to occur, in order to insure compliance with site-specific and general environmental regulations by Federal, State or local agencies.

In summary, the bottom sediment rose to the surface as the higher density sand and gravel fill was placed in the area shown on Figure 1, prepared by Savik & Murray. The sediment was confined by surrounding it with an earthen berm to prevent spreading the sediment over a wider area. The sediment was placed in trenches shown on Figure 1 and were allowed to dry as much as possible before being buried beneath clean sand and gravel fill. The limits of the buried sediment, including the trenches, were staked and surveyed by Savik & Murray, as shown on Figure 1.

When the sediment first rose to the surface of the ORB, **MAC** collected two soil samples and one

water sample on August 25, 1997. The analytical results indicated elevated concentrations of metals, PCBs and semi-volatile organic compounds (SVOCs). NYSDEC reviewed these results and concurred with the decision to bury the sediments onsite. Since the site may be developed in the future, it was recommended that the area and depth of these sediments below grade be delineated so that if these soils are encountered, they can be properly managed.

2.0 BOTTOM SEDIMENT INVESTIGATION

2.1 Soil Sampling Procedures

A Geoprobe direct-push device was used to bore through the soil and buried bottom sediment and collect discrete soil samples for inspection and laboratory analyses. No composite samples were collected. A four foot long by 2-inch outside diameter soil sampler ("macro core") was driven from grade to the 12 feet below grade. Soil samples were collected continuously at the 0 to 4 foot, 4 to 8 foot, and 8 to 12 foot intervals at each of the designated locations. Soil descriptions from the macro cores were noted on geologic logs by a **MAC** hydrogeologist. The geologic logs are provided in Appendix A. The boring locations are shown on Figure 1 and described in detail below.

2.1.1 Buried Chromium Soil

Soils containing elevated levels of chromium are buried beneath a berm along the western boundary of the site. Twenty-eight borings were drilled in the vicinity of the buried chromium soil to delineate the presence and depth of total chromium in the soil. The number and spacing of the borings were based upon proposed utilities in the vicinity of the buried chromium soil. The buried chromium soil and soil boring locations are shown on Figure 1. Three soil samples per boring were collected for laboratory analysis at the 0 to 4 foot, 4 to 8 foot, and 8 to 12 foot intervals. Two soil samples were collected from buried chromium borings BC-14 and BC-21 due to Geoprobe refusal at 8.5 feet and 6.5 feet, respectively.

2.1.2 Buried Bottom Sediment

The Work Plan included seventeen borings that would be drilled to delineate the presence and depth of buried bottom sediment. An additional three borings (BS-25, BS-26, BS-27) were drilled to provide further delineation of the buried bottom sediment based on discussions with NYSDEC. The

location of the buried bottom sediment and bottom sediment boring locations are shown on Figure 1. These boring locations were based on 1997 surveyed boundaries of bottom sediment at grade. Soil samples were collected from the macro core which contained obvious bottom sediment material that is easily identified by its dark gray to black color and silty characteristics. If bottom sediment was readily identified, a boring was stopped at the depth the bottom sediment is found, and a sample was collected for laboratory analysis. If no clearly identifiable bottom sediment was found, soil samples were collected from each cored interval to confirm absence of bottom sediment.

Soil samples were not collected from borings BS-1, BS-17, or BS-26 because soil samples collected from these borings did not contain obvious bottom sediment material and these locations are assumed to be within the boundary of the buried bottom sediment. Soil samples were collected from borings BS-25 and BS-27 in substitute for the proposed samples from borings BS-1 and BS-17. Boring BS-25 was drilled an additional four feet and a soil sample was collected at 12 to 16 feet below grade. A soil sample was collected from BS-27 at 8 to 12 feet below grade.

2.1.3 Additional Soil Sampling

The ORB has been sectioned into 13 grids. NYSDEC required one boring to be drilled in each grid (with the exception of grids 1, 4, 5, 6, 7, and 8 that were sampled for buried chromium soil and buried bottom sediment) to determine if the bottom sediment material is present. An additional two borings (BS-28 and BS-29) were drilled in grid 7 to further delineate possible bottom sediment material identified in buried chromium boring BC-5 and buried bottom sediment boring BS-13. The grid locations and additional soil sampling borings are shown on Figure 1. If bottom sediment was readily identified, a boring was stopped at the depth the bottom sediment is found, and a sample was collected for laboratory analysis. If no clearly identifiable bottom sediment was found, soil samples were collected from each cored interval to confirm absence of bottom sediment.

2.1.4 Soil Disposal

Unused soil sample from the cores were placed back in the boring from which it was recovered.

2.1.5 Decontamination

The Geoprobe drill rods and other equipment which came in contact with the soil were cleaned with Alconox and double rinsed between each use.

2.2 Soil Gas Survey

A soil gas survey was performed to address the potential presence of volatile organic compounds (VOCs) in the soil gas. One soil gas sample was collected from each grid as shown on Figure 1. A vehicle-mounted Geoprobe unit was used to perform the soil gas survey at the respective locations.

The probe rods and an expendable drive point were driven to 6 feet below grade. Once the drive point is set at the 6 foot depth, the probe rods were retracted approximately 3 to 4 inches to create a void which will allow the migration of the soil vapor sample into the bottom of the borehole. A clean, ¼" Teflon tubing was then attached to the bottom of the lead probe rod. The line was purged by drawing soil gas / vapor through the tubing using a vacuum pump.

The tubing was then disconnected from the vacuum pump and attached to a Photoionization Detector (PID) to detect the presence of VOC vapors. The PID readings were recorded on geologic logs provided in Appendix A. The Teflon tubing was then fitted to a Summa canister which collected a soil gas sample using negative pressure the canister was placed under by the laboratory.

The probe rods and sample equipment were cleaned with Alconox and double rinsed between each use.

2.3 Laboratory Analysis

Chemtech Laboratories of Mountainside, New Jersey analyzed the samples collected from the Geoprobe borings and soil gas survey locations. A Data Usability Summary Report (DUSR) was prepared under the requirement for the NYSDEC ASP Catagory B deliverables. Chemtech is a ELAP and CLP New York State certified laboratory. The Chemtech Electronic Data is included in Appendix B and the DUSR report is included in Appendix C.

2.3.1 Buried Chromium Soil

Soil samples collected as part of the buried chromium soil investigation were analyzed for total chromium. Additional sample was collected and the ten highest total chromium samples were analyzed for TCLP chromium. Total chromium results are presented in Table 1 and the TCLP chromium results are presented in Table 2.

2.3.2 Buried Bottom Sediment

Soil samples collected as part of the buried bottom sediment investigation were analyzed for VOCs using USEPA Method 8260, SVOCs using USEPA Method 8270, PCBs using Method 8082, and Target Analyte List metals using Method 6010. The soil VOC results are shown in Table 3, SVOCs in Table 4, PCBs in Table 5, and Target Analyte List metals results are shown in Table 6.

2.3.3 Additional Soil Sampling

Soil samples collected as part of the additional soil sampling investigation were analyzed for PCBs using Method 8082. PCB results are shown in Table 5.

2.3.4 Soil Gas

Air samples collected during the soil gas survey were analyzed for VOCs using Method TO + 14. The air analytical results are shown in Table 7.

2.4 Quality Assurance Project Plan

The quality assurance (QA) objective was to develop and implement procedures for sampling, laboratory analyses, field measurements, and reporting that will provide quality data consistent with it's intended use. This section defines the goals for levels of quality control (QC) effort.

2.4.1 Quality Control

Duplicate samples, rinse blanks, and trip blanks were collected and submitted to the analytical laboratory to provide a means to assess the quality of the data resulting from the field sampling program. A field duplicate sample was analyzed for sampling and analytical reproducibility. Trip blank samples were analyzed to assess cross-contamination caused by VOC migration during shipment and storage. QC effort consisted of one duplicate sample for every 20 samples and a trip blank with each shipment of soil samples to the laboratory. Deionized water used for trip blanks was demonstrated analyte-free for parameters of interest by laboratory analysis.

2.4.2 Quality Control Requirements

Field quality control was maintained during all field activities. All field quality control procedures were carried out according to this Quality Assurance Project Plan and were documented in bound ledgers.

2.4.2.1 Field Duplicates

A duplicate sample, Matrix Spike (MS) sample, and a Matrix Spike Duplicate (MSD) sample were collected for every 20 samples collected, a field rinse blank analysis of the decontaminated Geoprobe tools was collected once a day.

2.4.2.2 Trip Blanks

Each sample shipment containing aqueous samples for VOC analysis contained one trip blank for VOC analysis. The trip blank consisted of two 40 ml VOA vials with laboratory grade distilled water, prepared by the laboratory, transported to the field, and shipped with the other samples to the laboratory without being opened.

3.0 LABORATORY RESULTS

3.1 Soil Analytical Results

3.1.1 Chromium

Total chromium results are presented in Table 1 and TCLP chromium results are presented in Table 2. Eighty three samples were collected from the buried chromium borings and analyzed for total chromium. Twenty one samples exceeded eastern U.S.A. background levels. Samples which exceeded eastern U.S.A. background levels were collected from cores retrieved at 4 to 8 feet and 8 to 12 feet below grade. No samples collected from 0 to 4 feet below grade exceeded eastern U.S.A. background levels.

Samples collected from buried chromium borings BC-1, BC-6, and BC-14 exceeded eastern U.S.A. background levels and were beyond the limit of the buried chromium soil as shown on Figure 1.

The ten highest total chromium samples were analyzed for TCLP chromium. Table 2 presents the TCLP chromium results. The ten samples were within United States Environmental Protection Agency (USEPA) leachability standards.

3.1.2 Volatile Organic Compounds

VOC results are shown in Table 3. Forty five soil samples were collected from the bottom sediment borings and analyzed for VOCs. No VOCs were detected except for acetone in samples from BS-4 at 8 to 12 feet below grade, and BS-13 at 4 to 8 and 8 to 12 feet below grade. Acetone is known to be a common laboratory contaminant and the above results were below NYSDEC soil cleanup guidelines.

3.1.3 Semi-Volatile Organic Compounds

SVOC results are shown in Table 4. Forty five soil samples were collected from the bottom sediment borings and analyzed for SVOCs. Thirty eight samples exceeded NYSDEC soil cleanup guidelines for one or more SVOC. Compounds which exceeded NYSDEC soil cleanup guidelines were mainly benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, and benzo(a)pyrene. These compounds are petroleum hydrocarbons that are commonly found in asphalt material, which was encountered in a majority of the borings. The presence and concentration of these compounds in also consistent with soil samples collected by **MAC** in August 1997 and soil samples collected by Eder Associates in October 1992 as part of the Remedial Investigation (RI).

3.1.4 PCBs

PCBs results are shown in Table 5. Sixty seven soil samples were collected from the bottom sediment and additional soil sample borings and analyzed for PCBs. Two samples exceeded NYSDEC soil cleanup guidelines of 10,000 ug/kg for one or more PCB. The presence of PCBs in these soil samples can be associated with the buried bottom sediment material that was encountered in the area where bottom sediment had been buried. None of the surface soil samples (0 to 4 feet below grade) contained PCBs above the 1,000 ug/kg NYSDEC cleanup guidance value for surface soils.

3.1.5 Target Analyte List Metals

Target Analyte List metals results are shown in Table 6. Forty five soil samples were collected from the bottom sediment borings and analyzed for Target Analyte List metals. Ten samples exceeded eastern U.S.A. background levels.

The samples collected from bottom sediment borings BS-25 at 12 to 16 feet below grade and BS-27 at 8 to 12 feet below grade detected elevated concentrations of cadmium, chromium, copper, nickel,

and zinc which exceeded eastern U.S.A. background levels. The 8 to 12 foot sample from BS-4 detected elevated concentrations of cadmium, chromium, and copper above eastern U.S.A. background levels. No samples collected from 0 to 4 feet below grade exceeded U.S.A. background and other samples which exceeded background levels were close to eastern U.S.A. background levels.

3.2 Air Analytical Results

The air analytical results are shown in Table 7. Thirteen air samples were collected from the soil gas survey locations (one in each grid). Tetrachloroethene was detected at over 16 mg/m^3 in the soil gas sample collected at SG-1. This sample location is adjacent to the East Farmingdale Fire District where a groundwater monitoring well is located which in known to contain high concentrations of tetrachloroethene. Other soil gas survey samples detected trace amounts of trichloroethene, tetrachloroethene, and 1,2,4-trimethylbenzene.

4.0 CONCLUSIONS

The conclusions of the Bottom Sediment Investigation are summarized below:

1. Samples collected from the buried chromium borings did not detect total chromium levels over eastern U.S.A. background levels from samples collected at 0 to 4 feet below grade. Samples collected at 4 to 8 and 8 to 12 feet below grade that exceeded eastern U.S.A. background levels were within the limit of the surveyed buried chromium soil are except for samples collected from buried chromium borings BC-1, BC-6, and BC-14. The ten highest total chromium samples were analyzed for TCLP chromium and results were below USEPA standards for leachable chromium.

2. No VOCs were detected in soil samples except for acetone, a common laboratory contaminant, in samples from BS-4 at 8 to 12 feet below grade, and BS-13 at 4 to 8 feet and 8 to 12 feet below grade. Acetone concentrations were below NYSDEC soil cleanup guidelines.

3. SVOCs detected in soil samples included benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, and benzo(a)pyrene. These compounds are commonly found in asphalt material, which was encountered in a majority of the borings. The presence and concentration of these compounds in also consistent with soil samples collected in August 1997 and soil samples collected in October 1992 as part of the RI.

4. The presence of PCBs detected in soil samples is most likely associated with the buried bottom sediment material. The only two samples containing PCBs above NYSDEC soil cleanup guidelines were at depths of 8 to 12 and 12 to 16 feet below grade respectively within the area where bottom sediments rose to the surface.

5. Samples collected from bottom sediment borings BS-25 at 12 to 16 feet below grade and BS-27 at 8 to 12 feet below grade detected elevated concentrations of cadmium, chromium, copper, nickel, and zinc which exceeded eastern U.S.A. background levels. The 8 to 12 foot sample from BS-4 detected elevated concentrations of cadmium, chromium, and copper above eastern U.S.A. background levels. None of the shallow (0 to 4 feet below grade) soil samples exceeded Eastern U.S.A. background levels.

6. Tetrachloroethene was detected at over 16 mg/m^3 in the soil gas sample collected at SG-1. This sample location is adjacent to the East Farmingdale Fire District where a groundwater monitoring well is located which in known to contain high concentrations of tetrachloroethene.

7. The purpose of this investigation was to provide NYSDEC with the information that the Department has specifically requested and it is not intended as a pre-construction document. In the event that construction activities are undertaken by any party, it may be necessary for those parties to conduct an independent investigation where construction is to occur, in order to insure compliance with site-specific and general environmental regulations by Federal, State or local agencies.

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Old Recharge Basin
East Farmingdale, New York
Bottom Sediment Investigation

Table 1
Soil Analytical Results (mg/kg): Total Chromium

Sample ID	BC-1	BC-1	BC-1	BC-2	BC-2	BC-2	BC-3	BC-3	BC-3	Eastern USA
Sample Depth	0-4 ft	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	Background
Sample Date	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	(mg/kg)
PARAMETER - mg/kg										
Chromium as Cr	3.7	80.3	115	6.1	5.4	6.6	4.2	3.3	4.5	1.5 - 40

Sample ID	BC-4	BC-4	BC-4	BC-5	BC-5	BC-5	BC-6	BC-6	BC-6	Eastern USA
Sample Depth	0-4 ft	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	Background
Sample Date	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	(mg/kg)
PARAMETER - mg/kg										
Chromium as Cr	4.8	4	13.4	9.5	25.2	5.8	5.7	1180	108	1.5 - 40

Sample ID	BC-7	BC-7	BC-7	BC-8	BC-8	BC-8	BC-9	BC-9	BC-9	Eastern USA
Sample Depth	0-4 ft	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	Background
Sample Date	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	(mg/kg)
PARAMETER - mg/kg										
Chromium as Cr	3.2	5.8	4.9	2.6	8	16.4	8.3	6	4.6	1.5 - 40

Sample ID	BC-10	BC-10	BC-10	BC-11	BC-11	BC-11	BC-12	BC-12	BC-12	Eastern USA
Sample Depth	0-4 ft	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	Background
Sample Date	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	(mg/kg)
PARAMETER - mg/kg										
Chromium as Cr	8.2	6.6	6.7	14.9	8.2	2	3.7	4.6	4.4	1.5 - 40

Old Recharge Basin
East Farmingdale, New York
Bottom Sediment Investigation

Table 1 (Cont'd)
Soil Analytical Results (mg/kg): Total Chromium

Sample ID	BC-13	BC-13	BC-13	BC-14	BC-14	BC-15	BC-15	BC-15	BC-16	Eastern USA
Sample Depth	0-4 ft	4-8 ft	8-12 ft	0-4 ft	4-8 ft	0-4 ft	4-8 ft	8-12 ft	0-4 ft	Background
Sample Date	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	(mg/kg)
PARAMETER - mg/kg										
Chromium as Cr	14.5	13.6	6.2	13.5	46.3	8.2	38.2	13	12.7	1.5 - 40

Sample ID	BC-16	BC-16	BC-17	BC-17	BC-17	BC-18	BC-18	BC-18	BC-19	Eastern USA
Sample Depth	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	0-4 ft	Background
Sample Date	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	(mg/kg)
PARAMETER - mg/kg										
Chromium as Cr	209	101	9.7	61	55.7	6.6	5.3	78.8	5.8	1.5 - 40

Sample ID	BC-19	BC-19	BC-20	BC-20	BC-20	BC-21	BC-21	BC-22	BC-22	Eastern USA
Sample Depth	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	0-4 ft	4-8 ft	0-4 ft	4-8 ft	Background
Sample Date	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	(mg/kg)
PARAMETER - mg/kg										
Chromium as Cr	32.9	87.9	5.8	47.4	72.2	4	16.9	37.8	3.3	1.5 - 40

Sample ID	BC-22	BC-23	BC-23	BC-23	BC-24	BC-24	BC-24	BC-25	BC-25	Eastern USA
Sample Depth	8-12 ft	0-4 ft	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	0-4 ft	4-8 ft	Background
Sample Date	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	(mg/kg)
PARAMETER - mg/kg										
Chromium as Cr	2.8	13.5	13.8	1.5	5.7	46	5.7	28.4	119	1.5 - 40

Old Recharge Basin
East Farmingdale, New York
Bottom Sediment Investigation

Table 1 (Cont'd)
Soil Analytical Results (mg/kg): Total Chromium

Sample ID	BC-25	BC-26	BC-26	BC-26	BC-27	BC-27	BC-27	BC-28	BC-28	Eastern USA
Sample Depth	8-12 ft	0-4 ft	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	0-4 ft	4-8 ft	Background
Sample Date	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	(mg/kg)
PARAMETER - mg/kg										
Chromium as Cr	1210	5.3	52.7	876	5.5	91.1	14.2	15.2	416	1.5 - 40

Sample ID	BC-28	Eastern USA
Sample Depth	8-12 ft	Background
Sample Date	6/17/2002	(mg/kg)
PARAMETER - mg/kg		
Chromium as Cr	74.6	1.5 - 40

Old Recharge Basin
East Farmingdale, New York
Bottom Sediment Investigation

Table 2
Soil Analytical Results (ug/l): TCLP Chromium

Sample ID	BC-1	BC-6	BC-6	BC-16	BC-16	BC-19	BC-25	BC-25	BC-26	BC-28	USEPA
Sample Depth	8-12 ft	4-8 ft	8-12 ft	4-8 ft	8-12 ft	8-12 ft	4-8 ft	8-12 ft	8-12 ft	4-8 ft	Groundwater
Sample Date	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/17/2002	6/18/2002	6/18/2002	6/18/2002	6/18/2002	Standards (ug/l)
PARAMETER - ug/l											
Chromium as Cr	39.4	386	366	64.5	49.6	20.9	26.1	53.2	38.4	39.4	5000

Old Recharge Basin
East Farmingdale, New York
Bottom Sediment Investigation

Table 3
Soil Analytical Results (ug/kg)
Volatile Organic Compounds: USEPA Method 8260

Sample ID	BS-2	BS-2	BS-2	BS-3	BS-3	BS-3	BS-4	BS-4	BS-5	NYSDEC
Sample Depth	0-4 ft	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	0-4 ft	8-12 ft	0-4 ft	Soil Cleanup
Sample Date	6/20/2002	6/20/2002	6/20/2002	6/20/2002	6/20/2002	6/20/2002	6/20/2002	6/20/2002	6/20/2002	Guidelines (ug/kg)[1]
PARAMETER - ug/kg										
Chloromethane	ND[2]	ND	ND	ND	ND	ND	ND	ND	ND	*[3]
Bromomethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Vinyl Chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	200
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	1900
Methylene Chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	100
Acetone	ND	ND	ND	ND	ND	ND	ND	20	ND	200
Carbon Disulfide	ND	ND	ND	ND	ND	ND	ND	ND	ND	2700
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	100
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	200
trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	300
cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	300
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	100
2-Butanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	300
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	800
Carbon Tetrachloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	600
Bromodichloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
cis-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Trichloroethene	ND	ND	1.4	ND	ND	ND	ND	ND	ND	700
Dibromochloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	60
t-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Bromoform	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
4-Methyl-2-Pentanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	1000
2-Hexanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1400
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	600
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1500
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1700
Ethyl Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	5500
Styrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
m/p-Xylenes	ND	ND	ND	ND	ND	ND	ND	ND	ND	1200
o-Xylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1200

Notes:

1. TAGM 4046 guidence values are listed where applicable.
2. ND - Not Deteeted
3. No TAGM soil guidence value for this compound.

Old Recharge Basin
East Farmingdale, New York
Bottom Sediment Investigation

Table 3 (cont'd)
Soil Analytical Results (ug/kg)
Volatile Organic Compounds: USEPA Method 8260

Sample ID	BS-5	BS-5	BS-6	BS-6	BS-6	BS-7	BS-7	BS-7	BS-8	NYSDEC
Sample Depth	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	0-4 ft	Soil Cleanup
Sample Date	6/20/2002	6/20/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	Guidelines (ug/kg)[1]
PARAMETER - ug/kg										
Chloromethane	ND[2]	ND	ND	ND	ND	ND	ND	ND	ND	*[3]
Bromomethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Vinyl Chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	200
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	1900
Methylene Chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	100
Acetone	ND	ND	ND	ND	ND	ND	ND	ND	ND	200
Carbon Disulfide	ND	ND	ND	ND	ND	ND	ND	ND	ND	2700
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	100
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	200
trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	300
cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	300
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	100
2-Butanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	300
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	800
Carbon Tetrachloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	600
Bromodichloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
cis-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Trichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	2	700
Dibromochloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	60
t-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Bromoform	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
4-Methyl-2-Pentanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	1000
2-Hexanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1400
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	600
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1500
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1700
Ethyl Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	5500
Styrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
m/p-Xylenes	ND	ND	ND	ND	ND	ND	ND	ND	ND	1200
o-Xylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1200

Notes:

1. TAGM 4046 guidence values are listed where applicable.
2. ND - Not Detected
3. No TAGM soil guidence value for this compound.

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Table 3 (cont'd)
Soil Analytical Results (ug/kg)
Volatile Organic Compounds: USEPA Method 8260

Sample ID	BS-8	BS-8	BS-9	BS-9	BS-9	BS-10	BS-10	BS-10	BS-11	NYSDEC
Sample Depth	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	0-4 ft	Soil Cleanup
Sample Date	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	Guidelines (ug/kg)[1]
PARAMETER - ug/kg										
Chloromethane	ND[2]	ND	ND	ND	ND	ND	ND	ND	ND	*[3]
Bromomethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Vinyl Chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	200
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	1900
Methylene Chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	100
Acetone	ND	ND	ND	ND	ND	ND	ND	ND	ND	200
Carbon Disulfide	ND	ND	ND	ND	ND	ND	ND	ND	ND	2700
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	100
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	200
trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	300
cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	300
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	100
2-Butanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	300
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	800
Carbon Tetrachloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	600
Bromodichloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
cis-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Trichloroethene	ND	ND	ND	ND	ND	ND	ND	1.8	ND	700
Dibromochloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	60
t-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Bromoform	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
4-Methyl-2-Pentanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	1000
2-Hexanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1400
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	600
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1500
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1700
Ethyl Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	5500
Styrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
m/p-Xylenes	ND	ND	ND	ND	ND	ND	ND	ND	ND	1200
o-Xylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1200

Notes:

1. TAGM 4046 guidence values are listed where applicable.
2. ND - Not Detected
3. No TAGM soil guidence value for this compound.

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Table 3 (cont'd)
Soil Analytical Results (ug/kg)
Volatile Organic Compounds: USEPA Method 8260

Sample ID	BS-11	BS-11	BS-12	BS-12	BS-12	BS-13	BS-13	BS-14	BS-14	NYSDEC
Sample Depth	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	4-8 ft	8-12 ft	0-4 ft	4-8 ft	Soil Cleanup
Sample Date	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/20/2002	6/20/2002	6/19/2002	6/19/2002	Guidelines (ug/kg)[1]
PARAMETER - ug/kg										
Chloromethane	ND[2]	ND	ND	ND	ND	ND	ND	ND	ND	*[3]
Bromomethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Vinyl Chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	200
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	1900
Methylene Chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	100
Acetone	ND	ND	ND	ND	ND	23	11	ND	ND	200
Carbon Disulfide	ND	ND	ND	ND	ND	ND	ND	ND	ND	2700
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	100
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	200
trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	300
cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	300
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	100
2-Butanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	300
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	800
Carbon Tetrachloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	600
Bromodichloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
cis-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Trichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	700
Dibromochloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	60
t-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Bromoform	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
4-Methyl-2-Pentanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	1000
2-Hexanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1400
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	600
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1500
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1700
Ethyl Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	5500
Styrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
m/p-Xylenes	ND	ND	ND	ND	ND	ND	ND	ND	ND	1200
o-Xylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1200

Notes:

1. TAGM 4046 guidence values are listed where applicable.
2. ND - Not Detected
3. No TAGM soil guidence value for this compound.

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Table 3 (cont'd)
Soil Analytical Results (ug/kg)
Volatile Organic Compounds: USEPA Method 8260

Sample ID	BS-14	BS-15	BS-15	BS-15	BS-16	BS-16	BS-16	BS-25	BS-27	NYSDEC
Sample Depth	8-12 ft	0-4 ft	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	12-16 ft	8-12 ft	Soil Cleanup
Sample Date	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	Guidelines (ug/kg)[1]
PARAMETER - ug/kg										
Chloromethane	ND[2]	ND	ND	ND	ND	ND	ND	ND	ND	*[3]
Bromomethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Vinyl Chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	200
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	1900
Methylene Chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	100
Acetone	ND	ND	ND	ND	ND	ND	ND	ND	ND	200
Carbon Disulfide	ND	ND	ND	ND	ND	ND	ND	ND	ND	2700
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	100
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	200
trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	300
cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	300
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	100
2-Butanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	300
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	800
Carbon Tetrachloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	600
Bromodichloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
cis-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Trichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	700
Dibromochloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	60
t-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Bromoform	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
4-Methyl-2-Pentanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	1000
2-Hexanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1400
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	600
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1500
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1700
Ethyl Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	5500
Styrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
m/p-Xylenes	ND	ND	ND	ND	ND	ND	ND	ND	ND	1200
o-Xylene	ND	ND	ND	ND	ND	ND	ND	6	ND	1200

Notes:

1. TAGM 4046 guidence values are listed where applicable.
2. ND - Not Detected
3. No TAGM soil guidence value for this compound.

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Table 4
Soil Analytical Results (ug/kg)
Semi-Volatile Organic Compounds: USEPA Method 8270

Sample ID	BS-2	BS-2	BS-2	BS-3	BS-3	BS-3	BS-4	BS-4	BS-5	NYSDEC
Sample Depth	0-4 ft	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	0-4 ft	8-12 ft	0-4 ft	Soil Cleanup
Sample Date	6/20/2002	6/20/2002	6/20/2002	6/20/2002	6/20/2002	6/20/2002	6/20/2002	6/20/2002	6/20/2002	Guidelines (ug/kg)[1]
PARAMETER - ug/kg										
Phenol	ND[2]	ND	ND	ND	ND	ND	ND	ND	ND	30
bis(2-Chloroethyl)ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
2-Chlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	800
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	7900
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1600
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	8500
2-Methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	100
2,2-oxybis(1-Chloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
3+4-Methylphenols	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
n-Nitroso-di-n-propylamine	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Hexachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Nitrobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	200
Isophorone	ND	ND	ND	ND	ND	ND	ND	ND	ND	4400
2-Nitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	330
2,4-Dimethylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
bis(2-Chloroethoxy)methane	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
2,4-Dichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
1,2,4-Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	3400
Naphthalene	ND	ND	65	1300	ND	70	290	ND	ND	13000
4-Chloroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	220
Hexachlorobutadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
4-Chloro-3-methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	240
2-Methylnaphthalene	ND	ND	ND	280	ND	ND	140	ND	ND	36400
Hexachlorocyclopentadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
2,4,6-Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
2,4,5-Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	100
2-Chloronaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
2-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	430
Dimethylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	2000
Acenaphthylene	ND	ND	ND	1600	ND	ND	300	ND	ND	41000
2,6-Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1000
3-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	500
Acenaphthene	ND	46	110	620	69	160	1000	100	ND	50000
2,4-Dinitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	200
4-Nitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	100
Dibenzofuran	ND	ND	54	1000	ND	88	470	41	ND	6200
2,4-Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Diethylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	7100
4-Chlorophenyl-phenylether	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Fluorene	ND	ND	100	1700	70	160	830	80	ND	50000
4-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
4,6-Dinitro-2-methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
n-Nitrosodiphenylamine	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
4-Bromophenyl-phenylether	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Hexachlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	410
Pentachlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	1000
Phenanthrene	1800	420	990	11000	940	1700	5000	700	240	50000
Anthracene	ND	100	240	2200	210	370	1400	160	61	50000
Carbazole	ND	61	120	1400	100	190	780	120	ND	*
Di-n-butylphthalate	130000	ND	ND	ND	ND	ND	ND	ND	68	8100
Fluoranthene	3000	620	1600	13000	1900	2600	4100	1200	440	50000
Pyrene	7400	1000	4600	18000	3000	4800	4500	1000	900	50000
Butylbenzylphthalate	ND	ND	ND	57	ND	510	ND	ND	ND	50000
3,3-Dichlorobenzidine	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Benzo(a)anthracene	1800	400	790	7100	1000	1200	1700	510	280	224
Chrysene	1000	200	490	6800	680	900	1600	410	130	400
Bis(2-ethylhexyl)phthalate	390	49	72	92	77	36	66	480	48	50000
Di-n-octyl phthalate	ND	ND	ND	96	110	ND	ND	ND	ND	50000
Benzo(b)fluoranthene	ND	730	2000	96000	4300	3600	4900	710	320	1100
Benzo(k)fluoranthene	ND	290	650	18000	1800	1400	2600	260	88	1100
Benzo(a)pyrene	ND	370	700	51000	930	1400	2600	360	150	61
Indeno(1,2,3-cd)pyrene	ND	ND	ND	98	ND	ND	ND	ND	ND	3200
Dibenzo(a,h)anthracene	ND	ND	ND	ND	ND	ND	ND	ND	ND	14
Benzo(g,h,i)perylene	ND	ND	ND	1700	ND	ND	ND	ND	ND	50000

Notes:
1. TAGM 4046 guidence values are listed where applicable.
2. ND - Not Detected
3. No TAGM soil guidence value for this compound.

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Table 4 (cont'd)
Soil Analytical Results (ug/kg)
Semi-Volatile Organic Compounds: USEPA Method 8270

Sample ID	BS-5	BS-5	BS-6	BS-6	BS-6	BS-7	BS-7	BS-7	BS-8	NYSDEC
Sample Depth	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	0-4 ft	Soil Cleanup
Sample Date	6/20/2002	6/20/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	Guidelines (ug/kg)[1]
PARAMETER - ug/kg										
Phenol	ND[2]	ND	ND	ND	ND	ND	ND	ND	ND	30
bis(2-Chloroethyl)ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
2-Chlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	800
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	7900
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1600
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	8500
2-Methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	100
2,2-oxybis(1-Chloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
3+4-Methylphenols	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
n-Nitroso-di-n-propylamine	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Hexachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Nitrobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	200
Isophorone	ND	ND	ND	ND	ND	ND	ND	ND	ND	4400
2-Nitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	330
2,4-Dimethylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
bis(2-Chloroethoxy)methane	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
2,4-Dichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
1,2,4-Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	3400
Naphthalene	ND	49	ND	ND	ND	150	2100	ND	ND	13000
4-Chloroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	220
Hexachlorobutadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
4-Chloro-3-methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	240
2-Methylnaphthalene	ND	53	ND	ND	ND	85	430	ND	ND	36400
Hexachlorocyclopentadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
2,4,6-Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
2,4,5-Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	100
2-Chloronaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
2-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	430
Dimethylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	2000
Acenaphthylene	ND	ND	ND	ND	ND	ND	210	ND	ND	41000
2,6-Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1000
3-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	500
Acenaphthene	80	160	ND	97	ND	1000	3200	ND	ND	50000
2,4-Dinitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	200
4-Nitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	100
Dibenzofuran	34	86	ND	ND	ND	460	1800	ND	ND	6200
2,4-Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Diethylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	7100
4-Chlorophenyl-phenylether	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Fluorene	97	200	ND	83	ND	1100	3400	ND	ND	50000
4-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
4,6-Dinitro-2-methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
n-Nitrosodiphenylamine	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
4-Bromophenyl-phenylether	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Hexachlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	410
Pentachlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	1000
Phenanthrene	740	1400	370	840	320	8500	26000	110	740	50000
Anthracene	180	370	74	200	96	2500	7200	ND	ND	50000
Carbazole	73	120	39	100	ND	710	3300	ND	ND	*
Di-n-butylphthalate	ND	120	ND	ND	ND	ND	ND	ND	ND	8100
Fluoranthene	1300	1600	340	1200	500	12000	38000	130	1100	50000
Pyrene	1900	2600	500	3900	1000	9900	34000	300	1700	50000
Butylbenzylphthalate	ND	ND	ND	ND	260	ND	ND	ND	ND	50000
3,3-Dichlorobenzidine	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Benzo(a)anthracene	710	790	210	660	290	6600	19000	64	580	224
Chrysene	520	460	120	390	220	5000	17000	ND	ND	400
Bis(2-ethylhexyl)phthalate	51	310	74	40	86	200	20000	ND	ND	50000
Di-n-octyl phthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	50000
Benzo(b)fluoranthene	990	1600	430	1700	340	44000	160000	ND	ND	1100
Benzo(k)fluoranthene	320	320	230	1000	200	26000	44000	ND	ND	1100
Benzo(a)pyrene	580	640	120	690	190	24000	81000	ND	ND	61
Indeno(1,2,3-cd)pyrene	ND	ND	ND	ND	ND	69	ND	ND	ND	3200
Dibenzo(a,h)anthracene	ND	ND	ND	ND	ND	360	850	ND	ND	14
Benzo(g,h,i)perylene	ND	ND	ND	ND	ND	280	1100	ND	ND	50000

Notes:
1. TAGM 4046 guidence values are listed where applicable.
2. ND - Not Detected
3. No TAGM soil guidence value for this compound.

Old Recharge Basin
East Farmingdale, New York
Bottom Sediment Investigation

Table 4 (cont'd)
Soil Analytical Results (ug/kg)
Semi-Volatile Organic Compounds: USEPA Method 8270

Sample ID	BS-8	BS-8	BS-9	BS-9	BS-9	BS-10	BS-10	BS-10	BS-11	NYSDEC
Sample Depth	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	0-4 ft	Soil Cleanup
Sample Date	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	Guidelines (ug/kg)[1]
PARAMETER - ug/kg										
Phenol	ND[2]	ND	ND	ND	ND	ND	ND	ND	ND	30
bis(2-Chloroethyl)ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
2-Chlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	800
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	7900
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1600
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	8500
2-Methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	100
2,2-oxybis(1-Chloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
3+4-Methylphenols	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
n-Nitroso-di-n-propylamine	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Hexachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Nitrobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	200
Isophorone	ND	ND	ND	ND	ND	ND	ND	ND	ND	4400
2-Nitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	330
2,4-Dimethylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
bis(2-Chloroethoxy)methane	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
2,4-Dichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
1,2,4-Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	3400
Naphthalene	420	ND	ND	ND	ND	ND	340	ND	ND	13000
4-Chloroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	220
Hexachlorobutadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
4-Chloro-3-methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	240
2-Methylnaphthalene	120	ND	ND	ND	ND	ND	ND	ND	ND	36400
Hexachlorocyclopentadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
4,6-Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
2,4,5-Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	100
2-Chloronaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
2-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	430
Dimethylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	2000
Acenaphthylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	41000
2,6-Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1000
3-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	500
Acenaphthene	620	ND	ND	ND	ND	110	1300	59	ND	50000
2,4-Dinitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	200
4-Nitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	100
Dibenzofuran	340	ND	ND	ND	ND	ND	530	ND	ND	6200
2,4-Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Diethylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	7100
4-Chlorophenyl-phenylether	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Fluorene	650	ND	ND	ND	ND	81	1200	52	ND	50000
4-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
4,6-Dinitro-2-methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
n-Nitrosodiphenylamine	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
4-Bromophenyl-phenylether	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Hexachlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	410
Pentachlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	1000
Phenanthrene	4500	ND	340	100	280	920	13000	560	57	50000
Anthracene	1100	ND	74	ND	54	190	3200	110	ND	50000
Carbazole	730	ND	52	ND	ND	130	2000	51	ND	*
Di-n-butylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	8100
Fluoranthene	6300	720	720	170	420	1700	24000	560	68	50000
Pyrene	6200	1300	2000	520	1100	3500	28000	770	190	50000
Butylbenzylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	50000
3,3-Dichlorobenzidine	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Benzo(a)anthracene	3100	390	450	150	210	780	12000	390	47	224
Chrysene	2700	410	360	ND	100	440	12000	410	ND	400
Bis(2-ethylhexyl)phthalate	41	ND	ND	140	84	ND	ND	130	ND	50000
Di-n-octyl phthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	50000
Benzo(b)fluoranthene	19000	200	940	520	150	1500	84000	1300	790	1100
Benzo(k)fluoranthene	7600	300	230	700	ND	640	19000	450	670	1100
Benzo(a)pyrene	8500	110	300	ND	51	560	33000	340	ND	61
Indeno(1,2,3-cd)pyrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	3200
Dibenzo(a,h)anthracene	ND	ND	ND	ND	ND	ND	ND	ND	ND	14
Benzo(g,h,i)perylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	50000

Notes:
1. TAGM 4046 guidence values are listed where applicable.
2. ND - Not Detected
3. No TAGM soil guidence value for this compound.

Old Recharge Basin
East Farmingdale, New York
Bottom Sediment Investigation

Table 4 (cont'd)
Soil Analytical Results (ug/kg)
Semi-Volatile Organic Compounds: USEPA Method 8270

Sample ID	BS-11	BS-11	BS-12	BS-12	BS-12	BS-13	BS-13	BS-14	BS-14	NYSDEC
Sample Depth	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	4-8 ft	8-12 ft	0-4 ft	4-8 ft	Soil Cleanup
Sample Date	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/20/2002	6/20/2002	6/19/2002	6/19/2002	Guidelines (ug/kg)[1]
PARAMETER - ug/kg										
Phenol	ND[2]	ND	ND	ND	ND	ND	ND	ND	ND	30
bis(2-Chloroethyl)ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
2-Chlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	800
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	7900
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1600
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	8500
2-Methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	100
2,2-oxybis(1-Chloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
3+4-Methylphenols	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
n-Nitroso-di-n-propylamine	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Hexachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Nitrobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	200
Isophorone	ND	ND	ND	ND	ND	ND	ND	ND	ND	4400
2-Nitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	330
2,4-Dimethylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
bis(2-Chloroethoxy)methane	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
2,4-Dichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
1,2,4-Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	3400
Naphthalene	90	250	ND	ND	ND	ND	ND	ND	5700	13000
4-Chloroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	220
Hexachlorobutadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
4-Chloro-3-methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	240
2-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	1900	36400
Hexachlorocyclopentadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
?,4,6-Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
,4,5-Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	100
2-Chloronaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
2-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	430
Dimethylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	2000
Acenaphthylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	41000
2,6-Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1000
3-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	500
Acenaphthene	230	420	93	ND	99	ND	ND	ND	9500	50000
2,4-Dinitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	200
4-Nitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	100
Dibenzofuran	110	210	ND	ND	ND	ND	ND	ND	5300	6200
2,4-Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Diethylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	7100
4-Chlorophenyl-phenylether	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Fluorene	200	460	80	ND	100	ND	ND	ND	9800	50000
4-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
4,6-Dinitro-2-methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
n-Nitrosodiphenylamine	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
4-Bromophenyl-phenylether	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Hexachlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	410
Pentachlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	1000
Phenanthrene	2000	4700	940	ND	1100	110	ND	2800	57000	50000
Anthracene	390	1100	210	ND	250	ND	ND	420	20000	50000
Carbazole	220	440	130	ND	110	ND	ND	180	9900	*
Di-n-butylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	8100
Fluoranthene	2400	6800	2200	ND	1700	210	35	6700	78000	50000
Pyrene	6400	10000	4000	68	3900	270	67	5300	55000	50000
Butylbenzylphthalate	ND	120	ND	ND	ND	ND	ND	ND	ND	50000
3,3-Dichlorobenzidine	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Benzo(a)anthracene	1200	3200	1000	ND	710	93	ND	2400	36000	224
Chrysene	610	2500	620	ND	490	80	ND	2400	31000	400
Bis(2-ethylhexyl)phthalate	160	560	ND	ND	ND	220	ND	ND	ND	50000
Di-n-octyl phthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	50000
Benzo(b)fluoranthene	5400	17000	3100	300	760	130	ND	2400	120000	1100
Benzo(k)fluoranthene	1100	8400	1000	340	1400	ND	ND	3000	100000	1100
enzo(a)pyrene	ND	5000	800	ND	ND	60	ND	2700	97000	61
deno(1,2,3-cd)pyrene	ND	ND	ND	ND	ND	ND	ND	ND	930	3200
Dibenzo(a,h)anthracene	ND	ND	ND	ND	ND	ND	ND	ND	1600	14
Benzo(g,h,i)perylene	ND	ND	ND	ND	ND	ND	ND	ND	2100	50000

Notes:
1. TAGM 4046 guidence values are listed where applicable.
2. ND - Not Detected
3. No TAGM soil guidence value for this compound.

Old Recharge Basin
East Farmingdale, New York
Bottom Sediment Investigation

Table 4 (cont'd)
Soil Analytical Results (ug/kg)
Semi-Volatile Organic Compounds: USEPA Method 8270

Sample ID	BS-14	BS-15	BS-15	BS-15	BS-16	BS-16	BS-16	BS-25	BS-27	NYSDEC
Sample Depth	8-12 ft	0-4 ft	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	12-16 ft	8-12 ft	Soil Cleanup
Sample Date	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	Guidelines (ug/kg)[1]
PARAMETER - ug/kg										
Phenol	ND[2]	ND	ND	ND	ND	ND	ND	ND	ND	30
bis(2-Chloroethyl)ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
2-Chlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	800
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	7900
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1600
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	8500
2-Methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	100
2,2-oxybis(1-Chloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
3+4-Methylphenols	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
n-Nitroso-di-n-propylamine	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Hexachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Nitrobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	200
Isophorone	ND	ND	ND	ND	ND	ND	ND	ND	ND	4400
2-Nitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	330
2,4-Dimethylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
bis(2-Chloroethoxy)methane	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
2,4-Dichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
1,2,4-Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	3400
Naphthalene	ND	ND	ND	ND	ND	520	ND	ND	ND	13000
4-Chloroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	220
Hexachlorobutadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
4-Chloro-3-methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	240
2-Methylnaphthalene	ND	ND	ND	550	ND	ND	ND	ND	ND	36400
Hexachlorocyclopentadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
2,4,6-Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
2,4,5-Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	100
2-Chloronaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
2-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	430
Dimethylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	2000
Acenaphthylene	ND	ND	1500	ND	ND	ND	ND	ND	ND	41000
2,6-Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1000
3-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	500
Acenaphthene	62	ND	ND	1000	420	2900	280	ND	ND	50000
2,4-Dinitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	200
4-Nitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	100
Dibenzofuran	ND	ND	ND	300	ND	940	ND	ND	ND	6200
2,4-Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Diethylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	7100
4-Chlorophenyl-phenylether	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Fluorene	59	ND	ND	1500	370	2100	340	ND	ND	50000
4-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
4,6-Dinitro-2-methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
n-Nitrosodiphenylamine	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
4-Bromophenyl-phenylether	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Hexachlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	410
Pentachlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	1000
Phenanthrene	530	1600	1300	8400	4100	60000	6100	1300	710	50000
Anthracene	100	370	370	2100	890	6200	910	ND	690	50000
Carbazole	57	ND	ND	200	450	2300	460	ND	410	*
Di-n-butylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	8100
Fluoranthene	720	3000	3500	5400	7200	69000	8900	3000	5500	50000
Pyrene	1600	3800	7600	14000	9300	67000	8400	2600	6100	50000
Butylbenzylphthalate	710	ND	ND	ND	ND	ND	ND	ND	ND	50000
3,3-Dichlorobenzidine	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Benzo(a)anthracene	290	1500	2900	2400	3200	13000	3200	1100	2100	224
Chrysene	150	960	2300	1500	2000	12000	3100	1600	2100	400
Bis(2-ethylhexyl)phthalate	36	ND	ND	190	ND	ND	ND	8300	3100	50000
Di-n-octyl phthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	50000
Benzo(b)fluoranthene	1300	1600	6300	3500	6000	8000	2800	2300	5900	1100
Benzo(k)fluoranthene	200	ND	8000	ND	2200	14000	3400	1300	3700	1100
Benzo(a)pyrene	ND	860	5200	1500	3000	8900	2600	700	1300	61
Indeno(1,2,3-cd)pyrene	ND	ND	ND	ND	ND	900	ND	ND	ND	3200
Dibenzo(a,h)anthracene	ND	ND	ND	ND	ND	ND	ND	ND	ND	14
Benzo(g,h,i)perylene	ND	ND	ND	ND	ND	6700	ND	ND	ND	50000

Notes:
1. TAGM 4046 guidence values are listed where applicable.
2. ND - Not Detected
3. No TAGM soil guidence value for this compound.

Old Recharge Basin
East Farmingdale, New York
Bottom Sediment Investigation

Table 5
Soil Analytical Results (ug/kg)
PCBs: USEPA Method 8082

Sample ID	BS-2	BS-2	BS-2	BS-3	BS-3	BS-3	BS-4	BS-4	BS-5	NYSDEC
Sample Depth	0-4 ft	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	0-4 ft	8-12 ft	0-4 ft	Soil Cleanup
Sample Date	6/20/2002	6/20/2002	6/20/2002	6/20/2002	6/20/2002	6/20/2002	6/20/2002	6/20/2002	6/20/2002	Guidelines (ug/kg)[1]
PARAMETER - ug/kg										
Aroclor-1016	ND[2]	ND	ND	ND	ND	ND	ND	ND	ND	10,000
Aroclor-1221	ND	ND	ND	ND	ND	ND	ND	ND	ND	10,000
Aroclor-1232	ND	ND	ND	ND	ND	ND	ND	ND	ND	10,000
Aroclor-1242	ND	ND	ND	ND	ND	ND	ND	ND	ND	10,000
Aroclor-1248	ND	ND	ND	ND	780	ND	ND	5900	ND	10,000
Aroclor-1254	ND	ND	ND	ND	530	ND	ND	2500	120	10,000
Aroclor-1260	300	ND	65	2100	270	50	23	ND	33	10,000

Sample ID	BS-5	BS-5	BS-6	BS-6	BS-6	BS-7	BS-7	BS-7	BS-8	NYSDEC
Sample Depth	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	0-4 ft	Soil Cleanup
Sample Date	6/20/2002	6/20/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	Guidelines (ug/kg)[1]
PARAMETER - ug/kg										
Aroclor-1016	ND	ND	ND	ND	ND	ND	ND	ND	ND	10,000
Aroclor-1221	ND	ND	ND	ND	ND	ND	ND	ND	ND	10,000
Aroclor-1232	ND	ND	ND	ND	ND	ND	ND	ND	ND	10,000
Aroclor-1242	ND	ND	ND	ND	ND	ND	1600	ND	ND	10,000
Aroclor-1248	ND	ND	ND	ND	ND	ND	ND	ND	ND	10,000
Aroclor-1254	ND	120	ND	ND	ND	820	ND	ND	ND	10,000
Aroclor-1260	15	ND	ND	ND	180	ND	ND	ND	ND	10,000

Notes:
1. TAGM 4046 guidence values
2. ND - Not Detected

Old Recharge Basin
East Farmingdale, New York
Bottom Sediment Investigation

Table 5 (cont'd)
Soil Analytical Results (ug/kg)
PCBs: USEPA Method 8082

Sample ID	BS-8	BS-8	BS-9	BS-9	BS-9	BS-10	BS-10	BS-10	BS-11	NYSDEC
Sample Depth	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	0-4 ft	Soil Cleanup
Sample Date	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	Guidelines (ug/kg)[1]
PARAMETER - ug/kg										
Aroclor-1016	ND[2]	ND	ND	ND	ND	ND	ND	ND	ND	10,000
Aroclor-1221	ND	ND	ND	ND	ND	ND	ND	ND	ND	10,000
Aroclor-1232	ND	ND	ND	ND	ND	ND	ND	ND	ND	10,000
Aroclor-1242	ND	ND	ND	ND	ND	ND	ND	ND	ND	10,000
Aroclor-1248	ND	ND	ND	ND	ND	ND	ND	ND	ND	10,000
Aroclor-1254	74	ND	ND	ND	ND	ND	660	ND	110	10,000
Aroclor-1260	ND	ND	ND	38	40	140	310	120	ND	10,000

Sample ID	BS-11	BS-11	BS-12	BS-12	BS-12	BS-13	BS-13	BS-14	BS-14	NYSDEC
Sample Depth	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	4-8 ft	8-12 ft	0-4 ft	4-8 ft	Soil Cleanup
Sample Date	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/20/2002	6/20/2002	6/19/2002	6/19/2002	Guidelines (ug/kg)[1]
PARAMETER - ug/kg										
Aroclor-1016	ND	ND	ND	ND	ND	ND	ND	ND	ND	10,000
Aroclor-1221	ND	ND	ND	ND	ND	ND	ND	ND	ND	10,000
Aroclor-1232	ND	ND	ND	ND	ND	ND	ND	ND	ND	10,000
Aroclor-1242	ND	ND	ND	ND	ND	ND	ND	ND	ND	10,000
Aroclor-1248	ND	ND	ND	ND	ND	3400	2600	ND	ND	10,000
Aroclor-1254	120	ND	ND	ND	380	1600	1400	ND	ND	10,000
Aroclor-1260	110	ND	ND	260	150	ND	ND	450	58	10,000

Notes:
1. TAGM 4046 guidence values
2. ND - Not Detected

Old Recharge Basin
East Farmingdale, New York
Bottom Sediment Investigation

Table 5 (cont'd)
Soil Analytical Results (ug/kg)
PCBs: USEPA Method 8082

Sample ID	BS-14	BS-15	BS-15	BS-15	BS-16	BS-16	BS-16	BS-18	BS-18	NYSDEC
Sample Depth	8-12 ft	0-4 ft	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	0-4 ft	4-8 ft	Soil Cleanup
Sample Date	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/18/2002	6/18/2002	Guidelines (ug/kg)[1]
PARAMETER - ug/kg										
Aroclor-1016	ND[2]	ND	ND	ND	ND	ND	ND	ND	ND	10,000
Aroclor-1221	ND	ND	ND	ND	ND	ND	ND	ND	ND	10,000
Aroclor-1232	ND	ND	ND	ND	ND	ND	ND	ND	ND	10,000
Aroclor-1242	ND	ND	ND	ND	ND	ND	ND	ND	ND	10,000
Aroclor-1248	ND	ND	ND	ND	ND	ND	ND	ND	ND	10,000
Aroclor-1254	ND	ND	ND	ND	ND	ND	ND	ND	ND	10,000
Aroclor-1260	57	220	ND	340	490	92	120	ND	46	10,000

Sample ID	BS-19	BS-19	BS-19	BS-20	BS-20	BS-20	BS-21	BS-21	BS-21	NYSDEC
Sample Depth	0-4 ft	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	Soil Cleanup
Sample Date	6/18/2002	6/18/2002	6/18/2002	6/18/2002	6/18/2002	6/18/2002	6/18/2002	6/18/2002	6/18/2002	Guidelines (ug/kg)[1]
PARAMETER - ug/kg										
Aroclor-1016	ND	ND	ND	ND	ND	ND	ND	ND	ND	10,000
Aroclor-1221	ND	ND	ND	ND	ND	ND	ND	ND	ND	10,000
Aroclor-1232	ND	ND	ND	ND	ND	ND	ND	ND	ND	10,000
Aroclor-1242	ND	ND	ND	ND	ND	ND	ND	ND	ND	10,000
Aroclor-1248	ND	ND	ND	ND	ND	ND	ND	ND	ND	10,000
Aroclor-1254	130	ND	ND	ND	280	1400	680	ND	3200	10,000
Aroclor-1260	ND	150	68	ND	ND	ND	ND	47	ND	10,000

Notes:
1. TAGM 4046 guidence values
2. ND - Not Detected

Old Recharge Basin
East Farmingdale, New York
Bottom Sediment Investigation

Table 5 (cont'd)
Soil Analytical Results (ug/kg)
PCBs: USEPA Method 8082

Sample ID	BS-22	BS-22	BS-22	BS-23	BS-23	BS-23	BS-24	BS-24	BS-24	NYSDEC
Sample Depth	0-4 ft	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	Soil Cleanup
Sample Date	6/18/2002	6/18/2002	6/18/2002	6/18/2002	6/18/2002	6/18/2002	6/18/2002	6/18/2002	6/18/2002	Guidelines (ug/kg)[1]
PARAMETER - ug/kg										
Aroclor-1016	ND[2]	ND	ND	ND	ND	ND	ND	ND	ND	10,000
Aroclor-1221	ND	ND	ND	ND	ND	ND	ND	ND	ND	10,000
Aroclor-1232	ND	ND	ND	ND	ND	ND	ND	ND	ND	10,000
Aroclor-1242	ND	ND	ND	ND	ND	ND	ND	ND	ND	10,000
Aroclor-1248	ND	ND	ND	ND	80	ND	ND	ND	ND	10,000
Aroclor-1254	ND	ND	ND	ND	ND	170	ND	160	ND	10,000
Aroclor-1260	37	22	ND	130	ND	ND	72	ND	80	10,000

Sample ID	BS-25	BS-27	BS-28	BS-29	NYSDEC
Sample Depth	12-16 ft	8-12 ft	8-12 ft	8-12 ft	Soil Cleanup
Sample Date	6/19/2002	6/19/2002	6/20/2002	6/20/2002	Guidelines (ug/kg)[1]
PARAMETER - ug/kg					
Aroclor-1016	ND	ND	ND	ND	10,000
Aroclor-1221	ND	ND	ND	ND	10,000
Aroclor-1232	ND	ND	ND	ND	10,000
Aroclor-1242	ND	ND	ND	ND	10,000
Aroclor-1248	37000	260000	ND	ND	10,000
Aroclor-1254	22000	110000	ND	ND	10,000
Aroclor-1260	ND	ND	ND	18	10,000

Notes:
1. TAGM 4046 guidence values
2. ND - Not Detected

Old Recharge Basin
East Farmingdale, New York
Bottom Sediment Investigation

Table 6
Soil Analytical Results (mg/kg)
Target Analyte List Metals: USEPA Method 6010

Sample ID	BS-2	BS-2	BS-2	BS-3	BS-3	BS-3	BS-4	BS-4	BS-5	Eastern USA
Sample Depth	0-4 ft	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	0-4 ft	8-12 ft	0-4 ft	Background
Sample Date	6/20/2002	6/20/2002	6/20/2002	6/20/2002	6/20/2002	6/20/2002	6/20/2002	6/20/2002	6/20/2002	(mg/kg)
PARAMETER - mg/kg										
Aluminum	4970	6230	6440	8540	3650	4620	5360	8950	4810	33000
Antimony	ND[1]	ND	ND	ND	ND	0.57	ND	ND	ND	*[2]
Arsenic	3.8	4.1	3.7	6	2.4	3.4	3.7	5.6	6	3 - 12 **[3]
Barium	31.5	27.7	29.4	41.2	31.3	24.2	20.7	47.9	18.4	15 - 600
Beryllium	0.2	0.28	0.26	0.32	0.17	0.24	0.24	0.5	0.2	0 - 1.75
Cadmium	0.06	ND	0.1	ND	ND	ND	ND	8.5	ND	0.1 - 1
Calcium	10400	16000	11300	5240	4400	17800	9550	20100	4130	130 - 35000 **
Chromium	12.9	10.9	14.1	17.5	11.5	11.4	7.9	1530	9.5	1.5 - 40
Cobalt	2.7	3.6	3.6	4.1	2.1	2.8	2.7	4.7	2.5	2.5 - 60
Copper	8.7	9.6	10.5	20.3	7.2	13	7.8	106	6.3	1 - 50
Iron	7110	10200	9480	11900	5990	7540	8060	11700	8240	2000 - 550000
Lead	25.2	26.9	25.1	38.4	22.1	13.9	10.4	55.2	17	***[4]
Magnesium	1370	1350	1820	1560	789	1190	1070	1700	844	100 - 5000
Manganese	90.2	273	135	116	93.9	125	94.4	182	74	50 - 5000
Mercury	0.02	0.01	0.12	0.13	ND	0.06	0.07	0.16	0.02	0.0001 - 0.2
Nickel	5.3	4.9	5.3	6.9	3.4	4.4	4.7	9.8	3.5	0.5 - 25
Potassium	302	445	433	349	256	281	231	402	217	8500 - 43000
Selenium	ND	0.54	ND	0.57	ND	ND	ND	ND	ND	0.1 - 3.9
Silver	ND	ND	0.21	0.4	0.14	0.22	0.12	10.4	ND	*
Sodium	60.5	128	117	72.3	88.4	72.8	ND	126	ND	6000 - 8000
Thallium	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Vanadium	11.6	13.2	16.1	19.4	9.2	10.8	11.5	24.5	10.1	1 - 300
Zinc	41.2	29.8	36.5	60.3	24.2	22	20.3	317	30.3	9 -50

Notes:

1. ND - Not Detected
2. No TAGM soil guidence value for this compound.
3. New York State background
4. Background levels for lead vary widely. Average levels in undeveloped, rural areas may range from 4 - 61 ppm. Average levels in metropolitan or surburban areas or near highways are much higher and typically range from 200 - 500 ppm.

Old Recharge Basin
East Farmingdale, New York
Bottom Sediment Investigation

Table 6 (cont'd)
Soil Analytical Results (mg/kg)
Target Analyte List Metals: USEPA Method 6010

Sample ID	BS-5	BS-5	BS-6	BS-6	BS-6	BS-7	BS-7	BS-7	BS-8	Eastern USA
Sample Depth	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	0-4 ft	Background
Sample Date	6/20/2002	6/20/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	(mg/kg)
PARAMETER - mg/kg										
Aluminum	2560	2810	4600	5070	7340	17200	5280	4000	4410	33000
Antimony	ND[1]	ND	ND	ND	0.95	ND	1.2	ND	8	*[2]
Arsenic	2	2.2	3.2	4	4.8	5.3	7.7	2.4	4.7	3 - 12 **[3]
Barium	13.5	14.6	23.2	16.6	25.4	31.7	178	12.4	18	15 - 600
Beryllium	0.16	0.16	0.23	0.19	0.29	0.5	0.23	0.19	0.2	0 - 1.75
Cadmium	ND	ND	ND	ND	0.23	ND	3.9	ND	0.29	0.1 - 1
Calcium	2160	3680	14600	2460	1920	2170	21900	1450	1670	130 - 35000 **
Chromium	6	15	8.1	7.2	15.7	18.8	14.6	6.2	14.5	1.5 - 40
Cobalt	2	2	2.9	2.4	3.6	6.1	4	2.4	2.6	2.5 - 60
Copper	4.5	6.4	6	7.1	9.8	8.1	26.4	5.6	16.7	1 - 50
Iron	6230	7040	7740	6770	9810	19300	9130	7610	7620	2000 - 550000
Lead	11.6	9.9	18.5	8.2	21.5	10.4	48.7	7	283	***[4]
Magnesium	480	635	987	776	1260	1900	2180	652	623	100 - 5000
Manganese	93.4	85	146	71.5	83.6	134	133	117	100	50 - 5000
Mercury	ND	ND	0.02	ND	0.1	0.04	0.21	0.03	0.05	0.0001 - 0.2
Nickel	2.3	3.5	3.5	2.6	6.3	12.1	9.6	2.4	3.6	0.5 - 25
Potassium	164	227	373	250	454	659	502	235	233	8500 - 43000
Selenium	ND	ND	ND	ND	0.52	ND	ND	ND	ND	0.1 - 3.9
Silver	ND	ND	ND	0.14	0.15	0.15	0.22	ND	0.15	*
Sodium	39.8	83.6	121	84	97.8	106	164	109	115	6000 - 8000
Thallium	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Vanadium	6.3	6.9	10.4	10.6	18.1	29	29.2	8.4	15.5	1 - 300
Zinc	17.5	21.3	22.5	17.8	29.8	23.9	154	13.5	28.6	9 -50

Notes:

1. ND - Not Detected
2. No TAGM soil guidence value for this compound.
3. New York State background
4. Background levels for lead vary widely. Average levels in undeveloped, rural areas may range from 4 - 61 ppm. Average levels in metropolitan or surburban areas or near highways are much higher and typically range from 200 - 500 ppm.

Old Recharge Basin
East Farmingdale, New York
Bottom Sediment Investigation

Table 6 (cont'd)
Soil Analytical Results (mg/kg)
Target Analyte List Metals: USEPA Method 6010

Sample ID	BS-8	BS-8	BS-9	BS-9	BS-9	BS-10	BS-10	BS-10	BS-11	Eastern USA
Sample Depth	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	0-4 ft	Background
Sample Date	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	(mg/kg)
PARAMETER - mg/kg										
Aluminum	6320	10400	3360	2540	2790	6570	5480	4850	2460	33000
Antimony	ND[1]	ND	0.67	ND	ND	0.73	1.1	0.86	ND	*[2]
Arsenic	3.1	5.6	1.9	1.9	1.9	3.6	3	4.2	1.5	3 - 12 **[3]
Barium	35.5	37.5	23.3	11.9	9.9	28.5	144	19.4	10.9	15 - 600
Beryllium	0.26	0.37	0.17	0.14	0.15	0.26	0.25	0.2	0.14	0 - 1.75
Cadmium	0.7	0.44	0.46	ND	ND	ND	0.49	ND	ND	0.1 - 1
Calcium	1650	3380	17200	4660	2430	11600	24100	15100	1030	130 - 35000 **
Chromium	11.1	13.8	11.4	5.6	4.9	10.4	31.4	9.6	4.9	1.5 - 40
Cobalt	3.6	5	1.9	1.6	2.1	3.1	2.9	3.1	1.8	2.5 - 60
Copper	11.9	15.4	5.2	3.8	6.5	8.5	12	7.5	3.6	1 - 50
Iron	9730	13500	5300	4110	10600	8360	7650	6890	4930	2000 - 550000
Lead	12.3	27.7	8.4	5.7	4.4	17.9	122	13.4	3.3	***[4]
Magnesium	892	2000	1360	564	647	1360	3390	2310	556	100 - 5000
Manganese	108	166	86.6	79.7	106	118	153	88.6	93.1	50 - 5000
Mercury	0.05	0.23	0.01	0.03	0.01	0.23	0.07	0.05	0.05	0.0001 - 0.2
Nickel	12.9	7	4.2	2	3.3	4.3	4.4	4.5	1.5	0.5 - 25
Potassium	262	460	405	201	301	403	497	433	186	8500 - 43000
Selenium	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.1 - 3.9
Silver	ND	ND	ND	ND	0.28	0.12	0.23	ND	ND	*
Sodium	94.1	91.5	149	110	78.8	114	146	137	99.1	6000 - 8000
Thallium	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Vanadium	12.5	21.1	6.9	6.1	7.1	13.8	13.4	10.3	5.6	1 - 300
Zinc	19.7	32	16.3	9.1	10.9	27.5	180	24	9.2	9 -50

Notes:

1. ND - Not Detected
2. No TAGM soil guidence value for this compound.
3. New York State background
4. Background levels for lead vary widely. Average levels in undeveloped, rural areas may range from 4 - 61 ppm. Average levels in metropolitan or surburban areas or near highways are much higher and typically range from 200 - 500 ppm.

Old Recharge Basin
East Farmingdale, New York
Bottom Sediment Investigation

Table 6 (cont'd)
Soil Analytical Results (mg/kg)
Target Analyte List Metals: USEPA Method 6010

Sample ID	BS-11	BS-11	BS-12	BS-12	BS-12	BS-13	BS-13	BS-14	BS-14	Eastern USA
Sample Depth	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	4-8 ft	8-12 ft	0-4 ft	4-8 ft	Background
Sample Date	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/20/2002	6/20/2002	6/19/2002	6/19/2002	(mg/kg)
PARAMETER - mg/kg										
Aluminum	5650	3110	2770	5620	2980	3740	1780	6260	2720	33000
Antimony	ND[1]	ND	ND	ND	ND	ND	ND	ND	ND	*[2]
Arsenic	4.4	1.8	1.4	2.6	1.7	2	2.4	5	2.3	3 - 12 **[3]
Barium	67.9	26.7	24.8	19.3	21.3	18.1	7.2	59.4	28.2	15 - 600
Beryllium	0.26	0.16	0.18	0.21	0.14	0.27	0.2	0.24	0.15	0 - 1.75
Cadmium	0.08	0.1	ND	ND	0.1	4.4	ND	ND	ND	0.1 - 1
Calcium	20200	15700	9460	3080	5360	3630	1260	6280	17300	130 - 35000 **
Chromium	11.3	9.6	4.6	7.5	52.7	493	19.9	10.3	6.1	1.5 - 40
Cobalt	3.5	2.1	1.8	5.7	1.8	2.3	1.7	3.3	1.7	2.5 - 60
Copper	13.7	6	6.6	5.7	9	32.6	4.8	12.4	8.8	1 - 50
Iron	8560	4980	4140	7590	5060	6160	6970	8640	4080	2000 - 550000
Lead	32.3	9.7	20.7	7.7	23	24.8	7.4	26.5	24.6	***[4]
Magnesium	1540	1200	1000	2240	1220	701	360	3170	2350	100 - 5000
Manganese	122	90.2	127	201	76.1	139	92.1	134	87.4	50 - 5000
Mercury	0.16	0.09	0.07	0.02	0.05	0.11	0.03	0.06	0.07	0.0001 - 0.2
Nickel	4.4	2.2	1.8	3.3	3.5	4.4	2	5.1	2.2	0.5 - 25
Potassium	543	221	215	290	234	169	108	320	294	8500 - 43000
Selenium	0.41	ND	ND	ND	ND	ND	ND	0.61	ND	0.1 - 3.9
Silver	0.66	ND	ND	ND	0.6	8.6	0.34	ND	ND	*
Sodium	207	155	142	101	102	57.8	103	115	226	6000 - 8000
Thallium	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
Vanadium	13.5	6.4	6	11.3	7	10.5	5.4	14.7	6.2	1 - 300
Zinc	67.2	20.1	32.1	16.2	27.9	114	14.2	41.9	47.2	9 -50

Notes:

1. ND - Not Detected
2. No TAGM soil guidence value for this compound.
3. New York State background
4. Background levels for lead vary widely. Average levels in undeveloped, rural areas may range from 4 - 61 ppm. Average levels in metropolitan or surburban areas or near highways are much higher and typically range from 200 - 500 ppm.

Old Recharge Basin
East Farmingdale, New York
Bottom Sediment Investigation

Table 6 (cont'd)
Soil Analytical Results (mg/kg)
Target Analyte List Metals: USEPA Method 6010

Sample ID	BS-14	BS-15	BS-15	BS-15	BS-16	BS-16	BS-16	BS-25	BS-27	Eastern USA
Sample Depth	8-12 ft	0-4 ft	4-8 ft	8-12 ft	0-4 ft	4-8 ft	8-12 ft	12-16 ft	8-12 ft	Background
Sample Date	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	6/19/2002	(mg/kg)
PARAMETER - mg/kg										
Aluminum	3220	5540	5350	4510	6680	3750	5600	16300	26000	33000
Antimony	ND[1]	0.88	ND	ND	ND	ND	ND	ND	ND	*[2]
Arsenic	2.4	3.6	7	3.7	5.3	2.3	4.1	ND	7.3	3 - 12 **[3]
Barium	15.5	27.5	30.6	24.6	35	13.8	34.4	161	189	15 - 600
Beryllium	0.2	0.21	0.23	0.2	0.26	0.16	0.22	1.5	3.2	0 - 1.75
Cadmium	ND	0.09	ND	ND	ND	ND	0.13	77.6	74.9	0.1 - 1
Calcium	7830	3100	15500	27700	15700	3080	16400	17700	20100	130 - 35000 **
Chromium	8.9	12.9	7.3	12	12.6	8	13	20200	12600	1.5 - 40
Cobalt	2	2.6	2.3	2.5	3.1	2.1	2.9	27.1	21.5	2.5 - 60
Copper	5.5	13.5	13	9.9	13.4	5.9	16.2	539	1070	1 - 50
Iron	6900	7200	7460	7330	9090	5520	8000	106000	54800	2000 - 550000
Lead	10.6	24.4	51.3	27.5	65.2	12.4	44	354	429	***[4]
Magnesium	1230	1200	6170	14200	1570	831	1820	4780	6770	100 - 5000
Manganese	97	53.8	89.7	114	116	77.4	110	1200	1190	50 - 5000
Mercury	0.1	0.03	0.22	0.08	0.07	0.14	0.22	0.1	0.1	0.0001 - 0.2
Nickel	2.4	4.2	3.3	4	4.8	2.3	4.2	46.4	61.1	0.5 - 25
Potassium	291	242	226	374	313	189	322	305	502	8500 - 43000
Selenium	ND	ND	ND	0.38	0.47	ND	ND	0.71	ND	0.1 - 3.9
Silver	ND	0.17	ND	0.29	0.14	0.17	ND	201	150	*
Sodium	150	133	137	131	113	80.1	147	558	851	6000 - 8000
Thallium	ND	ND	ND	ND	ND	ND	ND	2	ND	*
Vanadium	8.5	12.9	12.3	11.3	16.7	9.2	13.4	85.4	108	1 - 300
Zinc	21.1	41.6	25.4	28.3	36.1	18.1	54.2	2670	3890	9 -50

Notes:

1. ND - Not Detected
2. No TAGM soil guidence value for this compound.
3. New York State background
4. Background levels for lead vary widely. Average levels in undeveloped, rural areas may range from 4 - 61 ppm. Average levels in metropolitan or surburban areas or near highways are much higher and typically range from 200 - 500 ppm.

Old Recharge Basin
East Farmingdale, New York
Bottom Sediment Investigation

Table 7
Air Analytical Results (ug/m^3)
Volatile Organic Compounds: USEPA Method TO + 14

Sample ID	SG-1	SG-2	SG-3	SG-4	SG-5	SG-6	SG-7
Sample Depth	6 ft	6 ft	6 ft	6 ft	6 ft	6 ft	6 ft
Sample Date	6/20/2002	6/20/2002	6/20/2002	6/20/2002	6/20/2002	6/20/2002	6/20/2002
PARAMETER - mg/m^3							
Chloromethane	U	U	U	U	U	U	U
Bromomethane	U	U	U	U	U	U	U
Vinyl Chloride	U	U	U	U	U	U	U
Chloroethane	U	U	U	U	U	U	U
Methylene Chloride	U	U	U	U	U	U	U
1,1-Dichloroethene	U	U	U	U	U	U	U
1,1-Dichloroethane	U	0.179	U	U	U	U	U
trans-1,2-Dichloroethene	U	U	U	U	U	U	U
cis-1,2-Dichloroethene	U	0.044	U	0.013	U	U	U
Chloroform	U	U	U	U	U	U	U
1,2-Dichloroethane	U	U	U	U	U	U	U
1,1,1-Trichloroethane	U	0.021	U	U	U	U	U
Carbon Tetrachloride	U	U	U	U	U	U	U
Bromodichloromethane	U	U	U	U	U	U	U
1,2-Dichloropropane	U	U	U	U	U	U	U
Trichloroethene	0.223	0.239	0.058	0.009	0.075	U	0.027
Trichloroflouromethane	U	0.543	0.466	U	0.057	0.006	U
Benzene	U	0.006	0.005	U	U	0.007	U
cis-1,3-Dichloropropene	U	U	U	U	U	U	U
Dibromochloromethane	U	U	U	U	U	U	U
trans-1,3-Dichloropropene	U	U	U	U	U	U	U
1,1,2-Trichloroethane	U	0.041	U	U	U	U	U
Tetrachloroethene	16.869	0.024	0.107	0.008	0.025	0.003	0.264
Toluene	U	U	0.007	U	U	U	U
Chlorobenzene	U	U	U	U	U	U	U
Ethylbenzene	U	U	U	U	U	U	U
o-Xylene	U	0.012	0.004	U	U	U	U
m+pXylene	U	0.007	U	U	U	U	U
Styrene	U	U	U	U	U	U	U
1,2-Dichlorobenzene	U	U	U	U	U	U	U
1,3-Dichlorobenzene	U	U	U	U	U	U	U
1,4-Dichlorobenzene	U	U	U	U	U	U	U
Methyl Tert-butyl Ether	U	U	U	U	U	U	U
Tert-butyl Alcohol	U	U	U	U	U	U	U
Isopropylbenzene	U	U	U	U	U	U	U
1,2,4-Trimethylbenzene	U	0.013	0.007	U	0.005	0.009	0.007
1,3,5-Trimethylbenzene	U	U	U	U	U	U	U
2-Chlorotoluene	U	U	U	U	U	U	U
4-Chlorotoluene	U	U	U	U	U	U	U
Dichlorodifluoromethane	U	U	U	U	U	U	U

Notes:
U - Undetected

Old Recharge Basin
East Farmingdale, New York
Bottom Sediment Investigation

Table 7 (cont'd)
Air Analytical Results (ug/m^3)
Volatile Organic Compounds: USEPA Method TO + 14

Sample ID	SG-8	SG-9	SG-10	SG-11	SG-12	SG-13
Sample Depth	6 ft	6 ft	6 ft	6 ft	6 ft	6 ft
Sample Date	6/20/2002	6/20/2002	6/20/2002	6/20/2002	6/20/2002	6/20/2002
PARAMETER - ug/m^3						
Chloromethane	U	U	U	U	U	U
Bromomethane	U	U	U	U	U	U
Vinyl Chloride	U	U	U	U	U	U
Chloroethane	U	U	U	U	U	U
Methylene Chloride	U	U	U	U	U	U
1,1-Dichloroethene	U	U	U	U	U	U
1,1-Dichloroethane	U	U	U	U	U	U
trans-1,2-Dichloroethene	U	U	U	U	U	U
cis-1,2-Dichloroethene	U	U	U	U	0.004	U
Chloroform	U	U	U	U	U	U
1,2-Dichloroethane	U	U	U	U	U	U
1,1,1-Trichloroethane	U	U	U	U	U	U
Carbon Tetrachloride	U	U	U	U	U	U
Bromodichloromethane	U	U	U	U	U	U
1,2-Dichloropropane	U	U	U	U	U	U
Trichloroethene	0.016	0.071	0.012	U	0.004	0.005
Trichloroflouromethane	0.013	0.004	U	U	U	U
Benzene	0.005	U	U	U	0.006	U
cis-1,3-Dichloropropene	U	U	U	U	U	U
Dibromochloromethane	U	U	U	U	U	U
trans-1,3-Dichloropropene	U	U	U	U	U	U
1,1,2-Trichloroethane	U	U	U	U	U	U
Tetrachloroethene	0.01	0.034	0.008	U	0.004	0.03
Toluene	U	U	U	U	0.005	U
Chlorobenzene	U	U	U	U	U	U
Ethylbenzene	U	U	U	U	U	U
o-Xylene	U	U	U	U	U	U
m+pXylene	U	U	U	U	U	U
Styrene	U	U	U	U	U	U
1,2-Dichlorobenzene	U	U	U	U	U	U
1,3-Dichlorobenzene	U	U	U	U	U	U
1,4-Dichlorobenzene	U	U	U	U	U	U
Methyl Tert-butyl Ether	U	U	U	U	U	U
Tert-butyl Alcohol	U	U	U	U	U	U
Isopropylbenzene	U	U	U	U	U	U
1,2,4-Trimethylbenzene	0.005	0.005	0.005	0.005	0.005	0.004
1,3,5-Trimethylbenzene	U	U	U	U	U	U
2-Chlorotoluene	U	U	U	U	U	U
4-Chlorotoluene	U	U	U	U	U	U
Dichlorodifluoromethane	U	U	U	U	U	U

Notes:
U - Undetected

Appendix A

Geologic Logs

'IAC CONSULTANTS, INC.
222 Middle Country Road, Suite 209
Smithtown, New York 11787

GEOLOGIC LOG

Well/Boring No.	BC-1	**Bore Hole Data**	
Location:	Buried Chromium Soil	Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/17/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		Duplicate, Matrix Spike, and Matrix Spike Duplicate collected from 0-4 ft core.
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Yellow wet sand and cobble.
	1	60	0-4			4	
						6	Dark brown wet sand and cobble with wood debris.
	2	60	4-8			8	
						10	Yellow sand and cobble with wood and concrete.
	3	80	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

Comments

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GEOLOGIC LOG

Well/Boring No.	BC-2	**Bore Hole Data**	
Location:	Buried Chromium Soil	Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/17/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Yellow sand, cobble, and pebbles.
	1	50	0-4			4	
						6	Yellow sand and cobble.
	2	45	4-8			8	
						10	Yellow sand and cobble.
	3	80	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

Comments

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GEOLOGIC LOG

Well/Boring No.	BC-3	**Bore Hole Data**	
Location:	Buried Chromium Soil	Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/17/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

	SAMPLE						
PID/OVA (ppm)	No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Yellow sand, cobble, and pebbles.
	1	40	0-4			4	
						6	Yellow sand, cobble, and concrete.
	2	30	4-8			8	
						10	Yellow sand, cobble, and concrete.
	3	20	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

Comments

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GEOLOGIC LOG

Well/Boring No.	BC-4	**Bore Hole Data**	
Location:	Buried Chromium Soil	Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/17/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Yellow sand and gravel.
	1	60	0-4			4	
						6	Dark brown sand, cobble, and concrete.
	2	65	4-8			8	
						10	Dark brown sand and cobble.
	3	60	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

Comments

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GEOLOGIC LOG

Well/Boring No.	BC-5	**Bore Hole Data**	
Location:	Buried Chromium Soil	Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/17/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Wet yellow sand, cobble, and pebble.
	1	60	0-4			4	
						6	Dark brown wet sand, and cobble. 6 inch band of dark black silt with petroluem type odor at 8ft.
	2	60	4-8			8	
						10	Light to dark brown wet sand with fill material.
	3	80	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

Comments

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GEOLOGIC LOG

Well/Boring No.	BC-6	**Bore Hole Data**	
Location:	Buried Chromium Soil	Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/17/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Yellow sand, cobble, and pebble.
	1	60	0-4			4	
						6	Yellow sand, cobble, and pebble. 6 inch band of dark black silt with petroluem type odor at 8ft to 9ft.
2.8	2	70	4-8			8	
						10	Wet dark brown sand and cobble 6 inch band of dark black silt at 9 ft.
	3	85	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

Comments

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GEOLOGIC LOG

Well/Boring No.	BC-7	**Bore Hole Data**	
Location:	Buried Chromium Soil	Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/17/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Yellow wet sand, cobble, and pebble.
	1	50	0-4			4	
						6	Yellow wet sand, cobble, and pebble.
	2	50	4-8			8	
						10	Wet yellow sand and cobble.
	3	30	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

Comments

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GEOLOGIC LOG

Well/Boring No.	BC-8	**Bore Hole Data**	
Location:	Buried Chromium Soil	Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/17/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Yellow wet sand and pebbles.
	1	85	0-4			4	
						6	Yellow wet sand and pebbles.
	2	90	4-8			8	
						10	Yellow wet sand and pebbles.
	3	60	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

Comments

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GEOLOGIC LOG

Well/Boring No.	BC-9	**Bore Hole Data**	
Location:	Buried Chromium Soil	Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/17/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

	SAMPLE						
PID/OVA (ppm)	No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Brown sand, pebbles, cobble, concrete, and brick.
	1	50	0-4			4	
						6	Light brown sand, pebbles, and concrete.
	2	50	4-8			8	
						10	Yellow wet sand, some asphalt, and concrete.
	3	60	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

Comments

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GEOLOGIC LOG

Well/Boring No.	BC-10	**Bore Hole Data**	
Location:	Buried Chromium Soil	Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/17/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

	SAMPLE						
PID/OVA (ppm)	No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Yellow wet sand and cobble.
	1	45	0-4			4	
						6	Wet sand, cobble, and concrete.
	2	30	4-8			8	
						10	Yellow wet sand, cobble, and concrete.
	3	20	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

Comments

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GEOLOGIC LOG

Well/Boring No.	BC-11	**Bore Hole Data**	
Location:	Buried Chromium Soil	Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/17/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

	SAMPLE						
PID/OVA (ppm)	No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Dark brown wet sand, pebbles and cobble.
	1	55	0-4			4	
						6	Dark brown wet sand, some black streaks in soil, and some clay.
	2	70	4-8			8	
						10	Dark brown sand and cobble from 8 to 10 ft. Yellow wet sand and cobble 10 to 12 ft.
	3	70	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

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GEOLOGIC LOG

Well/Boring No.	BC-12	**Bore Hole Data**	
Location:	Buried Chromium Soil	Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/17/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Yellow wet sand and cobble.
	1	60	0-4			4	
						6	Yellow wet sand and cobble.
	2	50	4-8			8	
						10	Wet sand and cobble. Fine wet black silt from 11 to 12ft.
	3	60	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

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GEOLOGIC LOG

Well/Boring No.	BC-13	**Bore Hole Data**	
Location:	Buried Chromium Soil	Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/17/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		Duplicate, Matrix Spike, and Matrix Spike Duplicate
Driller:			collected from 8-12 ft core.
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Yellow wet sand and cobble.
	1	40	0-4			4	
						6	Dark brown wet sand, cobble, and pebbles.
	2	40	4-8			8	
						10	Wet sand and cobble with some concrete.
	3	70	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

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GEOLOGIC LOG

Boring No.	BC-14	**Bore Hole Data**	
Location:	Buried Chromium Soil	Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	8.5
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/17/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, and 4-8 ft. cores.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

	SAMPLE						
PID/OVA (ppm)	No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Yellow wet sand, cobble, and pebble.
	1	55	0-4			4	
						6	Dark brown sand, black silt, and cobble.
	2	55	4-8			8	
						10	Dark brown sand, glass, and cobble. Refusal @ 8.5 ft.
						12	End of Boring @ 8.5 ft.
						14	
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

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GEOLOGIC LOG

Well/Boring No.	BC-15	**Bore Hole Data**	
Location:	Buried Chromium Soil	Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/17/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

	SAMPLE						
PID/OVA (ppm)	No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Sand, cobble, concrete, and brick.
	1	90	0-4			4	
						6	Dark brown sand, cobble, concrete, asphalt, and brick.
	2	75	4-8			8	
						10	Dark brown sand, cobble, concrete, asphalt, and brick.
	3	60	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

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GEOLOGIC LOG

Well/Boring No.	BC-16	**Bore Hole Data**	
Location:	Buried Chromium Soil	Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/17/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Dark brown sand, cobble, concrete, and brick.
	1	60	0-4			4	
						6	Dark brown sand, cobble, concrete, and brick.
	2	60	4-8			8	
						10	Dark brown sand, cobble, and concrete.
	3	50	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

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GEOLOGIC LOG

Well/Boring No.	BC-17	**Bore Hole Data**	
Location:	Buried Chromium Soil	Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/17/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Dark brown sand, cobble, concrete, and brick.
	1	45	0-4			4	
						6	Dark brown sand, cobble, concrete, and brick.
	2	75	4-8			8	
						10	Yellow sand, cobble, and concrete.
	3	75	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

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GEOLOGIC LOG

Well/Boring No.	BC-18	**Bore Hole Data**	
Location:	Buried Chromium Soil	Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/17/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Light brown sand and cobble 0 to 2 ft. Dark brown sand and cobble 3 to 4 ft.
	1	30	0-4			4	
						6	Light brown sand and cobble.
	2	60	4-8			8	
						10	Light brown sand and cobble.
	3	55	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

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GEOLOGIC LOG

Well/Boring No.	BC-19	**Bore Hole Data**	
Location:	Buried Chromium Soil	Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/17/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

	SAMPLE						
PID/OVA (ppm)	No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Medium sand, cobble, and concrete.
	1	50	0-4			4	
						6	Medium sand, cobble, and concrete.
	2	55	4-8			8	
						10	Medium sand, cobble, and concrete.
	3	60	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

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GEOLOGIC LOG

Well/Boring No.	BC-20	**Bore Hole Data**	
Location:	Buried Chromium Soil	Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/17/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		Duplicate, Matrix Spike, and Matrix Spike Duplicate collected from 8-12 ft core.
Driller:			
Type of Rig:	Geoprobe		

	SAMPLE						
PID/OVA (ppm)	No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Medium sand and cobble.
	1	20	0-4			4	
						6	Medium sand and cobble.
	2	60	4-8			8	
						10	Medium sand and cobble.
	3	90	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

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GEOLOGIC LOG

Well/Boring No.	BC-21	**Bore Hole Data**	
Location:	Buried Chromium Soil	Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	6.5
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/17/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, and 4-8 ft. cores.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Dark brown sand, cobble, and conctrete.
	1	40	0-4			4	
	2	30	4-6.5			6	Fine brown silt, concrete, asphalt, and cobble. Refusal @ 6.5 ft.
						8	End of Boring @ 6.5 ft.
						10	
						12	
						14	
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

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GEOLOGIC LOG

Well/Boring No.	BC-22	**Bore Hole Data**	
Location:	Buried Chromium Soil	Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/18/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Dark brown med. sand, cobble, concrete, and asphalt.
	1	95	0-4			4	
						6	Dark brown med. sand, cobble, concrete, and asphalt.
	2	40	4-8			8	1 inch of black sediment @ 7 ft.
						10	Yellow med. sand.
	3	80	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

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GEOLOGIC LOG

Well/Boring No.	BC-23	**Bore Hole Data**	
Location:	Buried Chromium Soil	Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/18/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		Rinse blank collected after decontamination.
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Yellow med. sand, concrete, and cobble.
	1	60	0-4			4	
						6	Yellow med. sand, concrete, and cobble.
	2	80	4-8			8	
						10	Dark brown medium sand, cobble, and concrete from 8 to 9 ft.
	3	100	8-12			12	Clean yellow sand and pebbles from 9 to 12 ft.
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

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GEOLOGIC LOG

Well/Boring No.	BC-24	**Bore Hole Data**	
Location:	Buried Chromium Soil	Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/18/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Yellow med. sand, concrete, and cobble.
	1	60	0-4			4	
						6	Yellow med. sand, concrete, and cobble.
	2	75	4-8			8	
						10	Yellow med. sand, pebble, and cobble.
	3	85	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

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GEOLOGIC LOG

Well/Boring No.	BC-25	**Bore Hole Data**	
Location:	Buried Chromium Soil	Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/18/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Yellow med. sand, concrete, and cobble.
	1	60	0-4			4	
						6	Dark brown med. sand, concrete, and cobble.
	2	60	4-8			8	
						10	Yellow med. sand, cobble, and asphalt.
	3	85	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

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GEOLOGIC LOG

Well/Boring No.	BC-26	**Bore Hole Data**	
Location:	Buried Chromium Soil	Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/18/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		Duplicate, Matrix Spike, and Matrix Spike Duplicate collected from 8-12 ft core.
Driller:			
Type of Rig:	Geoprobe		

	SAMPLE						
PID/OVA (ppm)	No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Yellow med. sand and cobble.
	1	40	0-4			4	
						6	Dark brown med. sand, concrete, and cobble.
	2	50	4-8			8	
						10	Dark brown sand and cobble @ 9 ft. Concrete @ 10 ft.
	3	90	8-12			12	Med. sand and cobble 11 to 12 ft.
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

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GEOLOGIC LOG

Well/Boring No.	BC-27	**Bore Hole Data**	
Location:	Buried Chromium Soil	Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/18/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Yellow med. sand and cobble.
	1	40	0-4			4	
						6	Dark brown med. sand, concrete, and cobble.
	2	40	4-8			8	
						10	Dark brown sand and cobble 8 to 9 ft. Light sand and cobble 9 to 10 ft.
	3	60	8-12			12	Asphalt 11 to 12 ft.
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

Comments

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GEOLOGIC LOG

Well/Boring No.	BC-28	**Bore Hole Data**	
Location:	Buried Chromium Soil	Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/18/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Yellow med. sand and cobble. Brown clayey silt at 4 ft.
	1	40	0-4			4	
						6	Dark brown med. sand and cobble.
	2	40	4-8			8	
						10	Yellow med. sand.
	3	60	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

Comments

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GEOLOGIC LOG

Well/Boring No.	BS-1	**Bore Hole Data**	
Location:		Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	20
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/19/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Keith Milano / Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Brown med. sand with brick, concrete debris, and coarse gravel.
	1	55	0-4			4	
					Wet at 6 ft.	6	Dark brown med. sand with red brick and gravel.
	2	60	4-8			8	
						10	Light brown med. sand with red brick and coarse gravel. Dark black silty material at 13 ft. with slight petroluem odor.
	3	45	8-12			12	
						14	Med. and fine wet brown sand Black bottom sediment at 14ft. with streaks throughout core.
	4	45	12-16			16	
						18	Wet brown sand.
	5	60	16-20			20	
						22	End of Boring @ 20 ft.
						24	
						26	
						28	
						30	
						32	

Comments

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GEOLOGIC LOG

Well/Boring No.	BS-2	**Bore Hole Data**	
Location:		Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/20/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Dark brown med. sand, concrete, asphalt, and cobble.
	1	40	0-4			4	Fine brown sand at 4ft.
						6	Med. and fine sand, concrete, and asphalt.
	2	50	4-8			8	
						10	Dark brown fine to medium sand, asphalt, concrete, and brick.
	3	60	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

Comments

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GEOLOGIC LOG

Well/Boring No.	BS-3	**Bore Hole Data**	
Location:		Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/20/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores. Duplicate, Matrix Spike, and Matrix Spike Duplicate collected from 8-12 ft core.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Dark brown med. sand, concrete, and cobble.
	1	40	0-4			4	
						6	Dark brown med. sand, concrete, and cobble.
	2	50	4-8			8	
						10	Dark brown fine to medium sand, concrete and asphalt.
	3	60	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

Comments

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GEOLOGIC LOG

Well/Boring No.	BS-4	**Bore Hole Data**	
Location:		Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/20/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4 and 8-12 ft cores.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Dark brown med. sand, concrete, and cobble.
	1	60	0-4			4	
						6	Dark brown med. sand, concrete, and cobble.
	2	40	4-8			8	
						10	Dark brown med. sand, concrete, and cobble.
	3	25	8-12			12	Black bottom sediment from 11.5 to 12 ft.
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

Comments

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GEOLOGIC LOG

Well/Boring No.	BS-5	**Bore Hole Data**	
Location:		Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/20/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Brown fine to med. sand, concrete, and brick.
	1	80	0-4			4	Wet at 4 ft.
						6	Yellow med. sand, concrete, brick, and cobble.
	2	80	4-8			8	
						10	Dark brown med. sand and cobble.
	3	70	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

Comments

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GEOLOGIC LOG

Well/Boring No.	BS-6	**Bore Hole Data**	
Location:		Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/19/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Brown fine to med. sand, concrete, and cobble.
	1	50	0-4			4	
						6	Brown med. sand, concrete, brick, and cobble.
	2	50	4-8			8	
						10	Brown med. sand, concrete, brick and cobble. Wet at 10 ft.
	3	50	8-12			12	Streaks of black bottom sediment throughout core.
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

Comments

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GEOLOGIC LOG

Well/Boring No.	BS-7	**Bore Hole Data**	
Location:		Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/19/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Brown fine to med. sand, concrete, and asphalt.
	1	80	0-4			4	Brown clay from 3 to 4 ft.
						6	Brown med. sand, concrete, brick, cobble, and asphalt.
	2	50	4-8			8	
						10	Brown med. sand, concrete, brick, cobble, and asphalt.
	3	50	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

Comments

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GEOLOGIC LOG

Well/Boring No.	BS-8	**Bore Hole Data**	
Location:		Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/19/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Brown fine to med. sand, concrete, and cobble.
	1	60	0-4			4	Dark brown sand at 4 ft.
						6	Brown med. sand, concrete, and asphalt.
	2	55	4-8			8	
						10	Brown med. sand.
	3	50	8-12			12	Yellow sand at 12 ft.
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

Comments

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GEOLOGIC LOG

Well/Boring No.	BS-9	**Bore Hole Data**	
Location:		Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/19/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Brown fine to med. sand, concrete, cobble, and asphalt.
	1	80	0-4			4	
						6	Brown fine to med. sand, concrete, cobble, and asphalt.
	2	40	4-8			8	
						10	Brown fine to med. sand, concrete, cobble, and asphalt.
	3	30	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

Comments Refusal on first boring at 5 feet. Second boring moved 2 ft. to the east.

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GEOLOGIC LOG

Well/Boring No.	BS-10	**Bore Hole Data**	
Location:		Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/19/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Brown fine to med. sand, concrete, and cobble.
	1	50	0-4			4	
						6	Brown fine to med. sand, concrete, cobble, and asphalt.
	2	40	4-8		Wet at 7 ft.	8	
						10	Brown fine to med. sand, concrete, cobble, and asphalt.
	3	60	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

Comments

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GEOLOGIC LOG

Well/Boring No.	BS-11	**Bore Hole Data**	
Location:		Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/19/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

	SAMPLE						
PID/OVA (ppm)	No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Brown fine to med. sand, asphalt, and cobble.
	1	60	0-4			4	
						6	Brown fine to med. sand, concrete, cobble, and asphalt.
	2	50	4-8		Wet at 8 ft.	8	
						10	Brown fine to med. sand, concrete, cobble, and asphalt.
	3	25	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

Comments

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GEOLOGIC LOG

Well/Boring No.	BS-12	**Bore Hole Data**	
Location:		Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/19/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		Duplicate, Matrix Spike, and Matrix Spike Duplicate collected from 8-12 ft core.
Driller:			
Type of Rig:	Geoprobe		

	SAMPLE						
PID/OVA (ppm)	No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Brown fine to med. sand, concrete, and brick.
	1	80	0-4			4	
						6	Brown fine to med. sand, concrete, and brick.
	2	60	4-8			8	
						10	Brown fine to med. sand, concrete, brick, Fine silty clay at 10 ft.
	3	90	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

Comments

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GEOLOGIC LOG

Well/Boring No.	BS-13	**Bore Hole Data**	
Location:		Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/20/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 4-8 and 8-12 ft cores. Rinse blank collected after decontamination.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Brown fine to med. sand and cobble.
	1	80	0-4			4	
						6	Brown fine to med. sand and cobble. Bottom sediment from 7 to 8 ft.
	2	60	4-8			8	
						10	Brown fine to med. sand and cobble. Bottom sediment from 10 to 12 ft and streaks of sediment throughout core.
	3	60	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

Comments

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GEOLOGIC LOG

Well/Boring No.	BS-14	**Bore Hole Data**	
Location:		Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	10.5
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/19/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

	SAMPLE						
PID/OVA (ppm)	No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Brown fine to med. sand, cobble, brick, and asphalt.
	1	80	0-4			4	Fine brown sand at 4 ft.
						6	Brown fine to med. sand, cobble, and brick. Most of core is concrete.
	2	80	4-8			8	
						10	Brown fine to med. sand, cobble, concrete, and asphalt. Refusal at 10.5 ft.
	3	40	8-10.5			12	End of Boring @ 10.5 ft.
						14	
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

Comments

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GEOLOGIC LOG

Well/Boring No.	BS-15	**Bore Hole Data**	
Location:		Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/19/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Dark brown wet sand, asphalt, and concrete.
	1	50	0-4			4	
						6	Brown sand, concrete, and asphalt.
	2	50	4-8			8	
						10	Brown sand, concrete, and asphalt.
	3	65	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

Comments

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GEOLOGIC LOG

Well/Boring No.	BS-16	**Bore Hole Data**	
Location:		Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/19/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Med. brown sand, asphalt, concrete, and cobble.
	1	60	0-4			4	
						6	Brown med. sand, asphalt, brick, and cobble.
	2	40	4-8			8	
						10	Brown med. sand, asphalt, brick, cobble, and concrete. Wet sample.
	3	80	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

Comments

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GEOLOGIC LOG

Well/Boring No.	BS-17	**Bore Hole Data**	
Location:		Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	10
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/19/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Keith Milano	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Fine brown sand with red brick and concrete debris.
	1	70	0-4			4	
						6	Light brown fine sand with asphalt, crushed concrete and coarse gravel.
	2	60	4-8			8	
						10	Med. brown sand with crushed concrete and coarse gravel. Refusal at 10 ft.
	3	50	8-12			12	End of Boring @ 10 ft.
						14	
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

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GEOLOGIC LOG

Well/Boring No.	BS-18	**Bore Hole Data**	
Location:		Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	8.5
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/18/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4 and 4-8 ft cores.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Med. brown sand, brick, and concrete.
	1	95	0-4			4	
						6	Concrete and brick with brown med. sand.
	2	50	4-8			8	Refusal at 8.5 ft.
						10	End of Boring @ 8.5 ft.
	3	10	8-8.5			12	
						14	
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

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GEOLOGIC LOG

Well/Boring No.	BS-19	**Bore Hole Data**	
Location:		Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/18/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Brown fine to med. sand, concrete, and cobble.
	1	60	0-4			4	
						6	Brown fine to med. sand and concrete
	2	30	4-8			8	
						10	Brown fine to med. sand and concrete with some silt.
	3	40	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

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GEOLOGIC LOG

Well/Boring No.	BS-20	**Bore Hole Data**	
Location:		Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/18/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		Duplicate, Matrix Spike, and Matrix Spike Duplicate collected from 4-8 ft core.
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	SAMPLE Recovery (%)	SAMPLE Depth (ft.)	SAMPLE Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Med. sand, cobble, and concrete. 6 inch band of black sediment at 4 ft.
	1	75	0-4			4	
						6	Dark brown med. sand, wood, and cobble from 6 to 7 ft.
	2	75	4-8			8	Yellow med. sand from 7 to 8 ft.
						10	Brown fine to med. sand and cobble.
	3	75	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

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GEOLOGIC LOG

Well/Boring No.	BS-21	**Bore Hole Data**	
Location:		Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/18/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Med. sand, cobble, and concrete.
	1	80	0-4			4	
						6	Wet brown sand from 5 to 7 ft. Med. sand, concrete, and cobble from 7 to 8 ft.
	2	70	4-8			8	
						10	Reddish brown clayey sand, concrete, and cobble.
	3	50	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

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GEOLOGIC LOG

Well/Boring No.	BS-22	**Bore Hole Data**	
Location:		Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	11
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/18/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Light brown med. sand, cobble, and asphalt.
	1	50	0-4			4	
						6	Dark brown med. sand, cobble, and asphalt.
	2	75	4-8			8	
						10	Dark brown wet sand and cobble with some black sediment streaks throughout core. Refusal at 11 ft.
	3	75	8-11			12	End of Boring @ 11 ft.
						14	
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

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GEOLOGIC LOG

Well/Boring No.	BS-23	**Bore Hole Data**	
Location:		Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/18/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

	SAMPLE						
PID/OVA (ppm)	No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Light brown med. sand, cobble, and concrete.
	1	60	0-4			4	
						6	Light brown med. sand, cobble, and concrete.
	2	60	4-8			8	
						10	Reddish brown med. sand, cobble, and concrete.
	3	80	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

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GEOLOGIC LOG

Well/Boring No.	BS-24	**Bore Hole Data**	
Location:		Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/18/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil samples collected from 0-4, 4-8, and 8-12 ft cores.
Drilling Started:	Ended:		Rinse blank collected after decontamination.
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Dark brown wet med. sand, asphalt, concrete, and cobble.
	1	60	0-4			4	
						6	Dark brown wet med. sand, asphalt, concrete, and cobble.
	2	60	4-8			8	
						10	Dark brown wet med. sand, asphalt, concrete, and cobble.
	3	70	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

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GEOLOGIC LOG

Well/Boring No.	BS-25	**Bore Hole Data**	
Location:		Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	16
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/19/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil sample collected from 12 to 16 ft. core.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Dark brown wet med. sand, asphalt, concrete, brick, and cobble.
	1	60	0-4			4	
						6	Dark brown wet med. sand, brick, concrete, and cobble.
	2	40	4-8			8	6 inch band of black sediment at 8 ft.
						10	Dark brown wet med. sand, cobble and some brick.
	3	70	8-12			12	Black bottom sediment from 11 to 12 ft.
						14	Wet brown sand, sludge, and cobble.
	4	55	12-16			16	Black bottom sediment at 16 ft.
						18	End of Boring @ 16 ft.
						20	
						22	
						24	
						26	
						28	
						30	
						32	

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GEOLOGIC LOG

Well/Boring No.	BS-26	**Bore Hole Data**	
Location:		Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	16
Project.	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/19/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Brown med. sand, concrete, and cobble. Some black bottom sediment at 4 ft.
	1	70	0-4			4	
						6	Brown med. sand, concrete, and cobble. Some black sediment streaks throughout core.
	2	50	4-8			8	
						10	Dark brown wet med. sand, cobble, concrete, and some brick. Some black sediment streaks throughout core.
	3	60	8-12			12	
						14	Dark brown med. sand and cobble. Some black sediment streaks 12 to 14 ft. Yellow sand and cobble 14 to 16 ft.
	4	90	12-16			16	
						18	End of Boring @ 16 ft.
						20	
						22	
						24	
						26	
						28	
						30	
						32	

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GEOLOGIC LOG

Well/Boring No.	BS-27	**Bore Hole Data**	
Location:		Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/19/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil sample collected from 8-12 ft core.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Med. sand, cobble, brick, and concrete. 6 inch band of black sediment at 4 ft.
	1	75	0-4			4	Dried black bottom sediment at 3.5 ft.
						6	Med. to fine brown sand and cobble. Yellow med. sand from 7 to 8 ft.
	2	80	4-8		Wet at 7 ft.	8	
						10	Wet brown sand and sludge. Black bottom sediment at 11 ft.
	3	85	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

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GEOLOGIC LOG

Well/Boring No.	BS-28	**Bore Hole Data**	
Location:		Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/20/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil sample collected from 8-12 ft core.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Med. sand, cobble, and concrete.
	1	60	0-4			4	
						6	Med. to fine brown sand and asphalt.
	2	60	4-8			8	
						10	Med. to fine brown sand and cobble.
	3	55	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

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GEOLOGIC LOG

Well/Boring No.	BS-29	**Bore Hole Data**	
Location:		Hole diameter (inches):	2
M.P. Elevation:		Total Depth (ft):	12
Project:	ORB Bottom Sediment Investigation	**Sampler**	
Date:	6/20/2002	Type:	Macro core 48" x 1.5" ID sampler
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	Soil sample collected from 8-12 ft core.
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	Light brown med. sand and cobble.
	1	60	0-4			4	
						6	Light brown med. sand and cobble.
	2	70	4-8			8	
						10	Light brown med. sand and cobble.
	3	55	8-12			12	
						14	End of Boring @ 12 ft.
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

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GEOLOGIC LOG

Well/Boring No.	SG-1	**Bore Hole Data**	
Location:		Hole diameter (inches):	1
M.P. Elevation:		Total Depth (ft):	6
Project:	ORB Bottom Sediment Investigation - Soil Gas Survey	**Sampler**	
Date:	6/20/2002	Type:	Summa Canister
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

	SAMPLE				Strata Change	Depth	SAMPLE
PID/OVA (ppm)	No.	Recovery (%)	Depth (ft.)	Blows/6"	General Description	(feet)	DESCRIPTION
						2	
						4	
0.9	1		5.5-6			6	
						8	
						10	
						12	
						14	
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

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GEOLOGIC LOG

Well/Boring No.	SG-2	**Bore Hole Data**	
Location:		Hole diameter (inches):	1
M.P. Elevation:		Total Depth (ft):	6
Project:	ORB Bottom Sediment Investigation - Soil Gas Survey	**Sampler**	
Date:	6/20/2002	Type:	Summa Canister
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	
						4	
1.0	1		5.5-6			6	
						8	
						10	
						12	
						14	
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

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GEOLOGIC LOG

Well/Boring No.	SG-3	**Bore Hole Data**	
Location:		Hole diameter (inches):	1
M.P. Elevation:		Total Depth (ft):	6
Project:	ORB Bottom Sediment Investigation - Soil Gas Survey	**Sampler**	
Date:	6/20/2002	Type:	Summa Canister
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Deseription	Depth (feet)	SAMPLE DESCRIPTION
						2	
						4	
0.1	1		5.5-6			6	
						8	
						10	
						12	
						14	
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

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GEOLOGIC LOG

Well/Boring No.	SG-4	**Bore Hole Data**	
Location:		Hole diameter (inches):	1
M.P. Elevation:		Total Depth (ft):	6
Project:	ORB Bottom Sediment Investigation - Soil Gas Survey	**Sampler**	
Date:	6/20/2002	Type:	Summa Canister
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

	SAMPLE						
PID/OVA (ppm)	No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	
						4	
0.0	1		5.5-6			6	
						8	
						10	
						12	
						14	
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

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GEOLOGIC LOG

Well/Boring No.	SG-5	**Bore Hole Data**	
Location:		Hole diameter (inches):	1
M.P. Elevation:		Total Depth (ft):	6
Project:	ORB Bottom Sediment Investigation - Soil Gas Survey	**Sampler**	
Date:	6/20/2002	Type:	Summa Canister
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

	SAMPLE						
PID/OVA (ppm)	No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	
						4	
0.0	1		5.5-6			6	
						8	
						10	
						12	
						14	
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

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GEOLOGIC LOG

Well/Boring No.	SG-6	**Bore Hole Data**	
Location:		Hole diameter (inches):	1
M.P. Elevation:		Total Depth (ft):	6
Project:	ORB Bottom Sediment Investigation - Soil Gas Survey	**Sampler**	
Date:	6/20/2002	Type:	Summa Canister
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	
						4	
0.0	1		5.5-6			6	
						8	
						10	
						12	
						14	
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

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GEOLOGIC LOG

Well/Boring No.	SG-7	**Bore Hole Data**	
Location:		Hole diameter (inches):	1
M.P. Elevation:		Total Depth (ft):	6
Project:	ORB Bottom Sediment Investigation - Soil Gas Survey	**Sampler**	
Date:	6/20/2002	Type:	Summa Canister
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

	SAMPLE						
PID/OVA (ppm)	No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	
						4	
0.0	1		5.5-6			6	
						8	
						10	
						12	
						14	
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

Comments

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GEOLOGIC LOG

Well/Boring No.	SG-8	**Bore Hole Data**	
Location:		Hole diameter (inches):	1
M.P. Elevation:		Total Depth (ft):	6
Project:	ORB Bottom Sediment Investigation - Soil Gas Survey	**Sampler**	
Date:	6/20/2002	Type:	Summa Canister
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

	SAMPLE						
PID/OVA (ppm)	No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	
						4	
0.0	1		5.5-6			6	
						8	
						10	
						12	
						14	
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

Comments

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GEOLOGIC LOG

Well/Boring No.	SG-9	**Bore Hole Data**	
Location:		Hole diameter (inches):	1
M.P. Elevation:		Total Depth (ft):	6
Project:	ORB Bottom Sediment Investigation - Soil Gas Survey	**Sampler**	
Date:	6/20/2002	Type:	Summa Canister
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

	SAMPLE						
PID/OVA (ppm)	No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	
						4	
0.0	1		5.5-6			6	
						8	
						10	
						12	
						14	
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

Comments

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GEOLOGIC LOG

Well/Boring No.	SG-10	**Bore Hole Data**	
Location:		Hole diameter (inches):	1
M.P. Elevation:		Total Depth (ft):	6
Project:	ORB Bottom Sediment Investigation - Soil Gas Survey	**Sampler**	
Date:	6/20/2002	Type:	Summa Canister
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

	SAMPLE						
PID/OVA (ppm)	No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	
						4	
0.0	1		5.5-6			6	
						8	
						10	
						12	
						14	
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

Comments

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GEOLOGIC LOG

Well/Boring No.	SG-11	**Bore Hole Data**	
Location:		Hole diameter (inches):	1
M.P. Elevation:		Total Depth (ft):	6
Project:	ORB Bottom Sediment Investigation - Soil Gas Survey	**Sampler**	
Date:	6/20/2002	Type:	Summa Canister
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

PID/OVA (ppm)	SAMPLE No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	
						4	
0.0	1		5.5-6			6	
						8	
						10	
						12	
						14	
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

Comments

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GEOLOGIC LOG

Well/Boring No.	SG-12	**Bore Hole Data**	
Location:		Hole diameter (inches):	1
M.P. Elevation:		Total Depth (ft):	6
Project:	ORB Bottom Sediment Investigation - Soil Gas Survey	**Sampler**	
Date:	6/20/2002	Type:	Summa Canister
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

	SAMPLE						
PID/OVA (ppm)	No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	
						4	
0.0	1		5.5-6			6	
						8	
						10	
						12	
						14	
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

Comments

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GEOLOGIC LOG

Well/Boring No.	SG-13	**Bore Hole Data**	
Location:		Hole diameter (inches):	1
M.P. Elevation:		Total Depth (ft):	6
Project:	ORB Bottom Sediment Investigation - Soil Gas Survey	**Sampler**	
Date:	6/20/2002	Type:	Summa Canister
Page	1 of 1	Hammer:	Pounds:
Logged By:	Frank Mancini	Fall (inches):	
Company:	Zebra Environmental, Inc.	**Remarks:**	
Drilling Started:	Ended:		
Driller:			
Type of Rig:	Geoprobe		

	SAMPLE						
PID/OVA (ppm)	No.	Recovery (%)	Depth (ft.)	Blows/6"	Strata Change General Description	Depth (feet)	SAMPLE DESCRIPTION
						2	
						4	
0.0	1		5.5-6			6	
						8	
						10	
						12	
						14	
						16	
						18	
						20	
						22	
						24	
						26	
						28	
						30	
						32	

Comments

Appendix B

Chemtech Electronic Data

Appendix C

Data Usability Validation Report

CHEMTECH

Data Usability Summary Report (DUSR)

Project of Site Name: **ORB** SDG # : **P3045**

Prepared By: Carole Collins

Laboratory Name: Chemtech Date: August 7, 2002

Laboratory Project #: P3045

Sample (s) Taken: June 17, 2002

Sample Matrix: Soil

Client Sample ID:

BC-1 0`-4`	BC-4 0`-4`
BC-1 0`-4`DUP	BC-4 4`-8``
BC-1 0`-4` MS	BC-4 8`-12`
BC-1 0-`4` MSD	BC-5 0`-4`
BC-1 4`-8`	BC-5 4`-8`
BC-1 8`-12`	BC-5 8`-12
BC-2 0`-4``	BC-6 0`-4`
BC-2 4`-8`	BC-6 4`-8`
BC-2 8`-12`	BC-6 8`-12`
BC-3 0`-4`	BC-7 0`-4`
BC-3 4`-8`	BC-7 4`-8`
BC-3 8`-12`	

Analytical Parameters: Total Chromium

The DUSR was prepared by reviewing and evaluating the analytical data per the Region II guidelines from USEPA, Revision II/January 92 Inorganics analysis and NYSDEC ASP guidelines. The following checklist has been designed to ensure a thorough ad complete review of the analytical results based on the requirements in these guidelines. The analytical results are considered valid and usable for the purpose of this project, with any exceptions addressed in the Data Deficiencies comments section below.

CHEMTECH

Data Usability Summary Report (DUSR)

Project of Site Name: **ORB** SDG # : **P3045**

Data Verification Parameters		**Circle One**		
1.	Were all chain of custody records present and completed?	(Yes)	No	NA
2.	Were statements made in the analytical data case narrative supported by the analytical data?	(Yes)	No	NA
3.	Were the analysis performed as per method requested?	(Yes)	No	NA
4.	Was the data package complete as defined under the requirements for the NYSDEC ASP or USEPA CLP deliverables?	(Yes)	No	NA
5.	Were the required holing times met for all matrices and analytical parameter (metals, mercury, cyanide)?	(Yes)	No	NA
6.	Were samples correctly preserved?	Yes	(No)	NA
7.	Was sample preservation documented?	(Yes)	No	NA
8.	Was % solids greater than 50% for all soils samples?	(Yes)	No	NA
9.	Were preparation log/distillation log provided for all the analytes?	(Yes)	No	NA
10.	Did the preservation/distillation log include all the information about weight/volume and preparation date(s)?	(Yes)	No	NA
11.	Were there raw data included for all the analytes?	(Yes)	No	NA
12.	Were the instrument(s) calibrated correctly using proper standards?	(Yes)	No	NA
13.	Were the initial and continuing calibrations performed at the required frequency?	(Yes)	No	NA
14.	Were the initial and continuing calibration within the acceptance criteria?	(Yes)	No	NA
15.	Were CRDL standard(s) run at the beginning and end of each run?	(Yes)	No	NA
16.	Were percent recoveries (%R) for CRDL standard within the acceptance criteria?	(Yes)	No	NA
17.	Were the calibration blanks less than CRDL?	(Yes)	No	NA
18.	Were the preparation blanks free of contaminants?	(Yes)	No	NA
19.	Were the field blank free of contaminants?	Yes	No	(NA)
20.	Were ICP Interference Check Samples (ICS) analyzed at the beginning and end of each ICP run?	(Yes)	No	NA
21.	Were percent recoveries (%R) for ICS within the acceptance criteria?	(Yes)	No	NA
22.	Was the matrix spike (MS) analysis performed at the required frequency?	(Yes)	No	NA
23.	Did the MS meet the percent recovery (%R) criteria?	(Yes)	No	NA
24.	Was the post digestion spike sample analysis performed when required?	(Yes)	No	NA
25.	Was the laboratory duplicate analysis performed at the required frequency?	(Yes)	No	NA

CHEMTECH

Data Usability Summary Report (DUSR)

Project of Site Name: **ORB** SDG # : **P3045**

26.	Did the duplicate analysis meet the Relative Percent Difference (RPD) acceptance criteria?	Yes	(No)	NA
27.	Did the results for any field duplicate samples meet expected precision requirements?	Yes	(No)	NA
28.	Was the Laboratory Control Sample analysis performed for each matrix and analysis at the required frequency?	(Yes)	No	NA
29.	Did the LCS meet the percent recovery (%R) criteria?	(Yes)	No	NA
30.	Was ICP Serial Dilution analysis preformed at the required frequency?	(Yes)	No	NA
31.	Did the ICP serial dilution analysis meet the percent difference (%D) criteria?	(Yes)	No	NA
32.	Was proper quantitation procedure followed for Method of Standard Addition (MSA) analysis?	Yes	No	(NA)
33.	Was coefficient of correlation greater than 0.0995 for MSA analysis?	Yes	No	(NA)
34.	Were there any analysis performed for dissolved as total analysis?	Yes	No	(NA)
35.	Was the concentration of any dissolved analyte greater than its total concentration by 10%?	Yes	No	(NA)
36.	Did the laboratory submit Instrument Detection Limit (IDL), ICP linear ranges and ICP Interelement Correction Factors?	(Yes)	No	NA
37.	Were dilutions made appropriately when required?	(Yes)	No	NA
38.	No discrepancies were noted when review of raw data (instrument printouts) was performed.	(Yes)	No	NA
39.	Were results reported in correct units and soil samples corrected for % solid?	(Yes)	No	NA

If NO for any of the above questions, give further explanation in the comments section:

CHEMTECH

Data Usability Summary Report (DUSR)

Project of Site Name: **ORB** SDG # : **P3045**

COMMENTS:

Samples were not received within the Temperature QC range, but were preserved once received in the laboratory.

The Duplicates for sample # 1 did not meet QC criteria for Chromium. The samples associated with the duplicate are flagged with an "*".

The Duplicates are field sampled. The non-homogenous nature of the soil sample is the suspected cause, duplicate sample results should be considered estimated concentrations.

Samples are flagged with a "J" qualifier.

All other data met QC requirements. Data usability is acceptable.

R= Rejected
E= Estimated

Reviewer Signature: Carol Cairns **Date** 8/16/02

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3045 **Method Type:** SW846

Sample ID: P3045-01 **Client ID:** BC-10-4

Contract: MAC Consultants. Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3045

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 90.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	3.7	mg/Kg		*	P	0.08	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3045 **Method Type:** SW846

Sample ID: P3045-02 **Client ID:** BC-10-4DUP

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3045

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 88.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	7.5	mg/Kg		*	P	0.08	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3045 **Method Type:** SW846

Sample ID: P3045-05 **Client ID:** BC-14-8

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3045

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 86.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	80.3	mg/Kg		*	P	0.08	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3045 **Method Type:** SW846

Sample ID: P3045-06 **Client ID:** BC-18-12

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3045

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 71.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	115	mg/Kg		*	P	0.10	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3045 **Method Type:** SW846

Sample ID: P3045-07 **Client ID:** BC-20-4

Contract: MAC Consultants Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3045

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 89.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	6.1	mg/Kg		*	P	0.08	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3045 **Method Type:** SW846

Sample ID: P3045-08 **Client ID:** BC-24-8

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3045

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 90.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	5.4	mg/Kg		*	P	0.08	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3045 **Method Type:** SW846

Sample ID: P3045-09 **Client ID:** BC-28-12

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3045

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 95.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	6.6	mg/Kg		*	P	0.07	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants. Inc. **SDG No.:** P3045 **Method Type:** SW846

Sample ID: P3045-10 **Client ID:** BC-30-4

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3045

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 95.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	4.2	mg/Kg		*	P	0.07	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3045 **Method Type:** SW846

Sample ID: P3045-11 **Client ID:** BC-34-8

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3045

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 96.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	3.3	mg/Kg		*	P	0.07	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3045 **Method Type:** SW846

Sample ID: P3045-12 **Client ID:** BC-38-12

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3045

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 88.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	4.5	mg/Kg		*	P	0.08	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3045 **Method Type:** SW846

Sample ID: P3045-13 **Client ID:** BC-40-4

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3045

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 96.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	4.8	mg/Kg		*	P	0.07	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3045 **Method Type:** SW846

Sample ID: P3045-14 **Client ID:** BC-44-8

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3045

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 86.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	4.0	mg/Kg		*	P	0.08	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3045 **Method Type:** SW846

Sample ID: P3045-15 **Client ID:** BC-48-12

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3045

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 89.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	13.4	mg/Kg		*	P	0.08	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3045 **Method Type:** SW846

Sample ID: P3045-16 **Client ID:** BC-50-4

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3045

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 87.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	9.5	mg/Kg		*	P	0.08	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3045 **Method Type:** SW846

Sample ID: P3045-17 **Client ID:** BC-54-8

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3045

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 91.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	25.2	mg/Kg		*	P	0.08	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3045 **Method Type:** SW846

Sample ID: P3045-18 **Client ID:** BC-58-12

Contract: MAC Consultants. Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3045

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 93.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	5.8	mg/Kg		*	P	0.08	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3045 **Method Type:** SW846

Sample ID: P3045-19 **Client ID:** BC-60-4

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3045

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 93.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	5.7	mg/Kg		*	P	0.07	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3045 **Method Type:** SW846

Sample ID: P3045-20 **Client ID:** BC-64-8

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3045

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 67.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	1180	mg/Kg		*	P	0.10	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3045 **Method Type:** SW846

Sample ID: P3045-21 **Client ID:** BC-68-12

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3045

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 65.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	108	mg/Kg		*	P	0.11	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3045 **Method Type:** SW846

Sample ID: P3045-22 **Client ID:** BC-70-4

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3045

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 86.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	3.2	mg/Kg		*	P	0.08	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3045 **Method Type:** SW846

Sample ID: P3045-23 **Client ID:** BC-74-8

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3045

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 87.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	5.8	mg/Kg			P	0.08	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

CHEMTECH

Data Usability Summary Report (DUSR)

Project of Site Name: **ORB** SDG # : **P3046**

Prepared By: Carole Collins

Laboratory Name: Chemtech Date: August 7, 2002

Laboratory Project #: P3046

Sample (s) Taken: June 17, 2002

Sample Matrix: Soil

Client Sample ID:

BC-7 8`-12`	BC-11 8`-12`
BC-8 0`-4`	BC-12 0`-4`
BC-8 4`-8`	BC-12 4`-8`
BC-8 8`-12`	BC-12 8`-12`
BC-9 0`-4``	BC-13 0`-4`
BC-9 4`-8`	BC-13 4`-8`
BC-9 8`-12`	BC-13 8`-12`
BC-10 0`-4`	BC-13 8`-12`DUP
BC-10 4`-8`	BC-13 8`-12`MS
BC-10 8`-12`	BC-13 8`-12` MSD
BC-11 0`-4`	BC-14 0`-4`
BC-11 4`-8`	BC-14 4`-8`

Analytical Parameters: Total Chromium

The DUSR was prepared by reviewing and evaluating the analytical data per the Region II guidelines from USEPA, Revision II/January 92 Inorganics analysis and NYSDEC ASP guidelines. The following checklist has been designed to ensure a thorough ad complete review of the analytical results based on the requirements in these guidelines. The analytical results are considered valid and usable for the purpose of this project, with any exceptions addressed in the Data Deficiencies comments section below.

CHEMTECH

Data Usability Summary Report (DUSR)

Project of Site Name: **ORB** SDG # : **P3046**

Data Verification Parameters		**Circle One**		
1.	Were all chain of custody records present and completed?	(Yes)	No	NA
2.	Were statements made in the analytical data case narrative supported by the analytical data?	(Yes)	No	NA
3.	Were the analysis performed as per method requested?	(Yes)	No	NA
4.	Was the data package complete as defined under the requirements for the NYSDEC ASP or USEPA CLP deliverables?	(Yes)	No	NA
5.	Were the required holing times met for all matrices and analytical parameter (metals, mercury, cyanide)?	(Yes)	No	NA
6.	Were samples correctly preserved?	Yes	(No)	NA
7.	Was sample preservation documented?	(Yes)	No	NA
8.	Was % solids greater than 50% for all soils samples?	(Yes)	No	NA
9.	Were preparation log/distillation log provided for all the analytes?	(Yes)	No	NA
10.	Did the preservation/distillation log include all the information about weight/volume and preparation date(s)?	(Yes)	No	NA
11.	Were there raw data included for all the analytes?	(Yes)	No	NA
12.	Were the instrument(s) calibrated correctly using proper standards?	(Yes)	No	NA
13.	Were the initial and continuing calibrations performed at the required frequency?	(Yes)	No	NA
14.	Were the initial and continuing calibration within the acceptance criteria?	(Yes)	No	NA
15.	Were CRDL standard(s) run at the beginning and end of each run?	(Yes)	No	NA
16.	Were percent recoveries (%R) for CRDL standard within the acceptance criteria?	(Yes)	No	NA
17.	Were the calibration blanks less than CRDL?	(Yes)	No	NA
18.	Were the preparation blanks free of contaminants?	(Yes)	No	NA
19.	Were the field blank free of contaminants?	Yes	No	(NA)
20.	Were ICP Interference Check Samples (ICS) analyzed at the beginning and end of each ICP run?	(Yes)	No	NA
21.	Were percent recoveries (%R) for ICS within the acceptance criteria?	(Yes)	No	NA
22.	Was the matrix spike (MS) analysis performed at the required frequency?	(Yes)	No	NA
23.	Did the MS meet the percent recovery (%R) criteria?	(Yes)	No	NA
24.	Was the post digestion spike sample analysis performed when required?	(Yes)	No	NA
25.	Was the laboratory duplicate analysis performed at the required frequency?	(Yes)	No	NA

CHEMTECH

Data Usability Summary Report (DUSR)

Project of Site Name: **ORB** SDG # : **P3046**

26.	Did the duplicate analysis meet the Relative Percent Difference (RPD) acceptance criteria?	Yes	(No)	NA
27.	Did the results for any field duplicate samples meet expected precision requirements?	Yes	(No)	NA
28.	Was the Laboratory Control Sample analysis performed for each matrix and analysis at the required frequency?	(Yes)	No	NA
29.	Did the LCS meet the percent recovery (%R) criteria?	(Yes)	No	NA
30.	Was ICP Serial Dilution analysis preformed at the required frequency?	(Yes)	No	NA
31.	Did the ICP serial dilution analysis meet the percent difference (%D) criteria?	(Yes)	No	NA
32.	Was proper quantitation procedure followed for Method of Standard Addition (MSA) analysis?	Yes	No	(NA)
33.	Was coefficient of correlation greater than 0.0995 for MSA analysis?	Yes	No	(NA)
34.	Were there any analysis performed for dissolved as total analysis?	Yes	No	(NA)
35.	Was the concentration of any dissolved analyte greater than its total concentration by 10%?	Yes	No	(NA)
36.	Did the laboratory submit Instrument Detection Limit (IDL), ICP linear ranges and ICP Interelement Correction Factors?	(Yes)	No	NA
37.	Were dilutions made appropriately when required?	(Yes)	No	NA
38.	No discrepancies were noted when review of raw data (instrument printouts) was performed.	(Yes)	No	NA
39.	Were results reported in correct units and soil samples corrected for % solid?	(Yes)	No	NA

If NO for any of the above questions, give further explanation in the comments section:

CHEMTECH

Data Usability Summary Report (DUSR)

Project of Site Name: **ORB** SDG # : **P3046**

COMMENTS:

Samples were not received within the acceptable Temperature range, but were preserved once received in the laboratory.

The Matrix spike and Matrix spike duplicate for sample P3046-19 did not meet QC requirements. The samples associated with the spike sample are flagged with an "N" qualifier.

The Duplicates for sample P3046-19 did not meet QC criteria for Chromium. The samples associated with the spike sample are flagged with an "*".

The serial dilution for sample P3046-23 did not meet QC criteria. A chemical of physical interference effect is suspected. The samples associated with serial dilution are flagged with an "E" qualifier.

The MS/MSD and Duplicate for sample P3046-19 were field sampled. The non-homogeneous nature of the soil sample is the suspected cause.

Samples are qualified with "J".

All other QC met requirements. Data usability is acceptable.

R= Rejected
E= Estimated

Reviewer Signature: Carol Collins **Date** 8/1/02

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3046 **Method Type:** SW846

Sample ID: P3046-01 **Client ID:** BC-78-12

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3046

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 84.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	4.9	mg/Kg		N*	P	0.07	P2	P260621

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3046 **Method Type:** SW846

Sample ID: P3046-02 **Client ID:** BC-80-4

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3046

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 91.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	2.6	mg/Kg		N*	P	0.07	P2	P260621

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3046 **Method Type:** SW846

Sample ID: P3046-03 **Client ID:** BC-84-8

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3046

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 88.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	8.0	mg/Kg		N*	P	0.07	P2	P260621

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3046 **Method Type:** SW846

Sample ID: P3046-04 **Client ID:** BC-88-12

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3046

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 86.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	16.4	mg/Kg		N*	P	0.07	P2	P260621

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3046 **Method Type:** SW846

Sample ID: P3046-05 **Client ID:** BC-90-4

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3046

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 94.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	8.3	mg/Kg		N*	P	0.06	P2	P260621

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3046 **Method Type:** SW846

Sample ID: P3046-06 **Client ID:** BC-94-8

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3046

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 88.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	6.0	mg/Kg		N*	P	0.07	P2	P260621

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3046 **Method Type:** SW846

Sample ID: P3046-07 **Client ID:** BC-98-12

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3046

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 93.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	4.6	mg/Kg		N*	P	0.06	P2	P260621

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3046 **Method Type:** SW846

Sample ID: P3046-08 **Client ID:** BC-100-4

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3046

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 90.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	8.2	mg/Kg		N*	P	0.07	P2	P260621

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3046 **Method Type:** SW846

Sample ID: P3046-09 **Client ID:** BC-104-8

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3046

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 94.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	6.6	mg/Kg		N*	P	0.06	P2	P260621

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3046 **Method Type:** SW846

Sample ID: P3046-10 **Client ID:** BC-108-12

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3046

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 95.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	6.7	mg/Kg		N*	P	0.06	P2	P260621

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3046 **Method Type:** SW846

Sample ID: P3046-11 **Client ID:** BC-110-4

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3046

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 91.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	14.9	mg/Kg		N*	P	0.07	P2	P260621

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3046 **Method Type:** SW846

Sample ID: P3046-12 **Client ID:** BC-114-8

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3046

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 95.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	8.2	mg/Kg		N*	P	0.06	P2	P260621

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3046 **Method Type:** SW846

Sample ID: P3046-13 **Client ID:** BC-118-12

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3046

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 97.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	2.0	mg/Kg		N*	P	0.06	P2	P260621

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3046 **Method Type:** SW846

Sample ID: P3046-14 **Client ID:** BC-120-4

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3046

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 97.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	3.7	mg/Kg		N*	P	0.06	P2	P260621

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3046 **Method Type:** SW846

Sample ID: P3046-15 **Client ID:** BC-124-8

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3046

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 96.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	4.6	mg/Kg		N*	P	0.06	P2	P260621

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3046 **Method Type:** SW846

Sample ID: P3046-16 **Client ID:** BC-128-12

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3046

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 95.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	4.4	mg/Kg		N*	P	0.06	P2	P260621

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3046 **Method Type:** SW846

Sample ID: P3046-17 **Client ID:** BC-130-4

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3046

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 95.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	14.5	mg/Kg		N*	P	0.06	P2	P260621

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3046 **Method Type:** SW846

Sample ID: P3046-18 **Client ID:** BC-134-8

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3046

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 95.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	13.6	mg/Kg		N*	P	0.06	P2	P260621

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3046 **Method Type:** SW846

Sample ID: P3046-19 **Client ID:** BC-138-12

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3046

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 96.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	6.2	mg/Kg		N*	P	0.06	P2	P260621

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3046 **Method Type:** SW846

Sample ID: P3046-20 **Client ID:** BC-138-12DUP

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3046

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 94.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	8.7	mg/Kg		N*	P	0.06	P2	P260621

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3046 **Method Type:** SW846

Sample ID: P3046-23 **Client ID:** BC-140-4

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3046

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 95.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	13.5	mg/Kg		E	P	0.06	P2	P260621

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3046 **Method Type:** SW846

Sample ID: P3046-24 **Client ID:** BC-144-8

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3046

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 81.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	46.3	mg/Kg		E	P	0.07	P2	P260621

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

CHEMTECH

Data Usability Summary Report (DUSR)

Project of Site Name: **ORB** SDG # : **P3047**

Prepared By: Carole Collins

Laboratory Name: Chemtech Date: August 7, 2002

Laboratory Project #: P3047

Sample (s) Taken: June 17, 2002

Sample Matrix: Soil

Client Sample ID:

BC-15 0`-4`	BC-19 0`-4`
BC-15 4`-8`	BC-19 4`-8`
BC-15 8`-12`	BC-19 8`-12`
BC-16 0`-4`	BC-20 0`-4`
BC-16 4`-8`	BC-20 4`-8`
BC-16 8`-12`	BC-20 8`-12`
BC-17 0`-4`	BC-20 8`-12`DUP
BC-17 4`-8`	BC-20 8`-12`MS
BC-17 8`-12`	BC-20 8`-12`MSD
BC-18 0`-4`	BC-21 0`-4`
BC-18 4`-8`	BC-21 4`-8`
BC-18 8`-12`	

Analytical Parameters: Total Chromium

The DUSR was prepared by reviewing and evaluating the analytical data per the Region II guidelines from USEPA, Revision II/January 92 Inorganics analysis and NYSDEC ASP guidelines. The following checklist has been designed to ensure a thorough ad complete review of the analytical results based on the requirements in these guidelines. The analytical results are considered valid and usable for the purpose of this project, with any exceptions addressed in the Data Deficiencies comments section below.

CHEMTECH

Data Usability Summary Report (DUSR)

Project of Site Name: **ORB** SDG # : **P3047**

Data Verification Parameters		**Circle One**		
1.	Were all chain of custody records present and completed?	(Yes)	No	NA
2.	Were statements made in the analytical data case narrative supported by the analytical data?	(Yes)	No	NA
3.	Were the analysis performed as per method requested?	(Yes)	No	NA
4.	Was the data package complete as defined under the requirements for the NYSDEC ASP or USEPA CLP deliverables?	(Yes)	No	NA
5.	Were the required holing times met for all matrices and analytical parameter (metals, mercury, cyanide)?	(Yes)	No	NA
6.	Were samples correctly preserved?	Yes	(No)	NA
7.	Was sample preservation documented?	(Yes)	No	NA
8.	Was % solids greater than 50% for all soils samples?	(Yes)	No	NA
9.	Were preparation log/distillation log provided for all the analytes?	(Yes)	No	NA
10.	Did the preservation/distillation log include all the information about weight/volume and preparation date(s)?	(Yes)	No	NA
11.	Were there raw data included for all the analytes?	(Yes)	No	NA
12.	Were the instrument(s) calibrated correctly using proper standards?	(Yes)	No	NA
13.	Were the initial and continuing calibrations performed at the required frequency?	(Yes)	No	NA
14.	Were the initial and continuing calibration within the acceptance criteria?	(Yes)	No	NA
15.	Were CRDL standard(s) run at the beginning and end of each run?	(Yes)	No	NA
16.	Were percent recoveries (%R) for CRDL standard within the acceptance criteria?	(Yes)	No	NA
17.	Were the calibration blanks less than CRDL?	(Yes)	No	NA
18.	Were the preparation blanks free of contaminants?	(Yes)	No	NA
19.	Were the field blank free of contaminants?	Yes	No	(NA)
20.	Were ICP Interference Check Samples (ICS) analyzed at the beginning and end of each ICP run?	(Yes)	No	NA
21.	Were percent recoveries (%R) for ICS within the acceptance criteria?	(Yes)	No	NA
22.	Was the matrix spike (MS) analysis performed at the required frequency?	(Yes)	No	NA
23.	Did the MS meet the percent recovery (%R) criteria?	Yes	(No)	NA
24.	Was the post digestion spike sample analysis performed when required?	(Yes)	No	NA
25.	Was the laboratory duplicate analysis performed at the required frequency?	(Yes)	No	NA

CHEMTECH

Data Usability Summary Report (DUSR)

Project of Site Name: **ORB** SDG # : **P3047**

26.	Did the duplicate analysis meet the Relative Percent Difference (RPD) acceptance criteria?	Yes	(No)	NA
27.	Did the results for any field duplicate samples meet expected precision requirements?	Yes	(No)	NA
28.	Was the Laboratory Control Sample analysis performed for each matrix and analysis at the required frequency?	(Yes)	No	NA
29.	Did the LCS meet the percent recovery (%R) criteria?	(Yes)	No	NA
30.	Was ICP Serial Dilution analysis preformed at the required frequency?	(Yes)	No	NA
31.	Did the ICP serial dilution analysis meet the percent difference (%D) criteria?	(Yes)	No	NA
32.	Was proper quantitation procedure followed for Method of Standard Addition (MSA) analysis?	Yes	No	(NA)
33.	Was coefficient of correlation greater than 0.0995 for MSA analysis?	Yes	No	(NA)
34.	Were there any analysis performed for dissolved as total analysis?	Yes	No	(NA)
35.	Was the concentration of any dissolved analyte greater than its total concentration by 10%?	Yes	No	(NA)
36.	Did the laboratory submit Instrument Detection Limit (IDL), ICP linear ranges and ICP Interelement Correction Factors?	(Yes)	No	NA
37.	Were dilutions made appropriately when required?	(Yes)	No	NA
38.	No discrepancies were noted when review of raw data (instrument printouts) was performed.	(Yes)	No	NA
39.	Were results reported in correct units and soil samples corrected for % solid?	(Yes)	No	NA

If NO for any of the above questions, give further explanation in the comments section:

CHEMTECH

Data Usability Summary Report (DUSR)

Project of Site Name: **ORB** SDG # : **P3047**

COMMENTS:

Samples were not received within the acceptable Temperature range, but were preserved once received in the laboratory.

The Matrix spike and Matrix spike duplicate for sample P3046-18 did not meet QC requirements. The samples associated with the spike sample are flagged with an "N" qualifier.

The Duplicates for sample P3046-18 did not meet QC criteria for Chromium. The samples associated with the spike sample are flagged with an "*".

The MS/MSD and Duplicate for sample P3046-18 were field sampled. The non-homogeneous nature of the soil sample is the suspected cause.

Samples are qualified with "J".

All other QC met requirements. Data usability is acceptable.

R= Rejected
E= Estimated

Reviewer Signature: Carole Collins **Date** 8/16/02

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3047 **Method Type:** SW846

Sample ID: P3047-01 **Client ID:** BC-150-4

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3047

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 95.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	8.2	mg/Kg		N*	P	0.07	P1	P161902

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3047 **Method Type:** SW846

Sample ID: P3047-02 **Client ID:** BC-154-8

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3047

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 92.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	38.2	mg/Kg		N*	P	0.08	P1	P161902

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3047 **Method Type:** SW846

Sample ID: P3047-03 **Client ID:** BC-158-12

Contract: MAC Consultants. Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3047

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 94.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	13.0	mg/Kg		N*	P	0.07	P1	P161902

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3047 **Method Type:** SW846

Sample ID: P3047-04 **Client ID:** BC-160-4

Contract: MAC Consultants. Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3047

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 94.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	12.7	mg/Kg		N*	P	0.07	P1	P161902

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3047 **Method Type:** SW846

Sample ID: P3047-05 **Client ID:** BC-164-8

Contract: MAC Consultants. Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3047

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 94.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	209	mg/Kg		N*	P	0.07	P1	P161902

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. SDG No.: P3047 Method Type: SW846

Sample ID: P3047-06 Client ID: BC-168-12

Contract: MAC Consultants, Inc. Lab Code: CHEMED Case No.: SAS No.: P3047

Matrix: SOIL Date Received: 6/19/02 Level: LOW

% Solids: 93.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	101	mg/Kg		N*	P	0.07	P1	P161902

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3047 **Method Type:** SW846

Sample ID: P3047-07 **Client ID:** BC-170-4

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3047

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 94.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	9.7	mg/Kg		N*	P	0.07	P1	P161902

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3047 **Method Type:** SW846

Sample ID: P3047-08 **Client ID:** BC-174-8

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3047

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 97.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	61.0	mg/Kg		N*	P	0.07	P1	P161902

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3047 **Method Type:** SW846

Sample ID: P3047-09 **Client ID:** BC-178-12

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3047

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 96.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	55.7	mg/Kg		N*	P	0.07	P1	P161902

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3047 **Method Type:** SW846

Sample ID: P3047-10 **Client ID:** BC-180-4

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3047

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 94.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	6.6	mg/Kg		N*	P	0.07	P1	P161902

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3047 **Method Type:** SW846

Sample ID: P3047-11 **Client ID:** BC-184-8

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3047

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 95.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	5.3	mg/Kg		N*	P	0.07	P1	P161902

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3047 **Method Type:** SW846

Sample ID: P3047-12 **Client ID:** BC-188-12

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3047

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 96.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	78.8	mg/Kg		N*	P	0.07	P1	P161902

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3047 **Method Type:** SW846

Sample ID: P3047-13 **Client ID:** BC-190-4

Contract: MAC Consultants. Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3047

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 97.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	5.8	mg/Kg		N*	P	0.07	P1	P161902

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3047 **Method Type:** SW846

Sample ID: P3047-14 **Client ID:** BC-194-8

Contract: MAC Consultants Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3047

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 95.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	32.9	mg/Kg		N*	P	0.07	P1	P161902

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3047 **Method Type:** SW846

Sample ID: P3047-15 **Client ID:** BC-198-12

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3047

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 96.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	87.9	mg/Kg		N*	P	0.07	P1	P161902

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3047 **Method Type:** SW846

Sample ID: P3047-16 **Client ID:** BC-200-4

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3047

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 96.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	5.8	mg/Kg		N*	P	0.07	P1	P161902

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3047 **Method Type:** SW846

Sample ID: P3047-17 **Client ID:** BC-204-8

Contract: MAC Consultants. Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3047

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 97.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	47.4	mg/Kg		N*	P	0.07	P1	P161902

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3047 **Method Type:** SW846

Sample ID: P3047-18 **Client ID:** BC-208-12

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3047

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 96.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	72.2	mg/Kg		N*	P	0.07	P1	P161902

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3047 **Method Type:** SW846

Sample ID: P3047-19 **Client ID:** BC-208-12DUP

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3047

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 96.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	12.0	mg/Kg		N*	P	0.07	P1	P161902

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3047 **Method Type:** SW846

Sample ID: P3047-22 **Client ID:** BC-210-4

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3047

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 96.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	4.0	mg/Kg		N*	P	0.07	P1	P161902

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3047 **Method Type:** SW846

Sample ID: P3047-23 **Client ID:** BC-214-8

Contract: MAC Consultants. Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3047

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 92.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	16.9	mg/Kg			P	0.08	P1	P161902

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

CHEMTECH

Data Usability Summary Report (DUSR)

Project of Site Name: **ORB** SDG # : **P3048**

Prepared By: Carole Collins

Laboratory Name: Chemtech Date: August 7, 2002

Laboratory Project #:P3048

Sample (s) Taken: June 18, 2002

Sample Matrix: Soil and Water

Client Sample ID:

BC-22 0`-4`	BC-26 0`-4`
BC-22 4`-8`	BC-26 4`-8`
BC-22 8`-12`	BC-26 8`-12`
BC-23 0`-4`	BC-26 8`-12` DUP
BC-23 4`-8`	BC-26 8`-12` MS
BC-23 8`-12`	BC-26 8`-12` MSD
BC-24 0`-4`	BC-27 0`-4`
BC-24 4`-8`	BC-27 4`-8`
BC-24 8`-12`	BC-27 8`-12`
BC-25 0`-4`	BC-28 0`-4`
BC-25 4`-8`	BC-28 4`-8`
BC-25 8`-12`	BC-28 8`-12`
	RINSE BLANK

Analytical Parameters: Total Chromium

The DUSR was prepared by reviewing and evaluating the analytical data per the Region II guidelines from USEPA, Revision II/January 92 Inorganics analysis and NYSDEC ASP guidelines. The following checklist has been designed to ensure a thorough ad complete review of the analytical results based on the requirements in these guidelines. The analytical results are considered valid and usable for the purpose of this project, with any exceptions addressed in the Data Deficiencies comments section below.

CHEMTECH

Data Usability Summary Report (DUSR)

Project of Site Name: **ORB** SDG # : **P3048**

Data Verification Parameters		Circle One		
1.	Were all chain of custody records present and completed?	(Yes)	No	NA
2.	Were statements made in the analytical data case narrative supported by the analytical data?	(Yes)	No	NA
3.	Were the analysis performed as per method requested?	(Yes)	No	NA
4.	Was the data package complete as defined under the requirements for the NYSDEC ASP or USEPA CLP deliverables?	(Yes)	No	NA
5.	Were the required holing times met for all matrices and analytical parameter (metals, mercury, cyanide)?	(Yes)	No	NA
6.	Were samples correctly preserved?	Yes	(No)	NA
7.	Was sample preservation documented?	(Yes)	No	NA
8.	Was % solids greater than 50% for all soils samples?	(Yes)	No	NA
9.	Were preparation log/distillation log provided for all the analytes?	(Yes)	No	NA
10.	Did the preservation/distillation log include all the information about weight/volume and preparation date(s)?	(Yes)	No	NA
11.	Were there raw data included for all the analytes?	(Yes)	No	NA
12.	Were the instrument(s) calibrated correctly using proper standards?	(Yes)	No	NA
13.	Were the initial and continuing calibrations performed at the required frequency?	(Yes)	No	NA
14.	Were the initial and continuing calibration within the acceptance criteria?	(Yes)	No	NA
15.	Were CRDL standard(s) run at the beginning and end of each run?	(Yes)	No	NA
16.	Were percent recoveries (%R) for CRDL standard within the acceptance criteria?	(Yes)	No	NA
17.	Were the calibration blanks less than CRDL?	(Yes)	No	NA
18.	Were the preparation blanks free of contaminants?	(Yes)	No	NA
19.	Were the field blank free of contaminants?	Yes	No	(NA)
20.	Were ICP Interference Check Samples (ICS) analyzed at the beginning and end of each ICP run?	(Yes)	No	NA
21.	Were percent recoveries (%R) for ICS within the acceptance criteria?	(Yes)	No	NA
22.	Was the matrix spike (MS) analysis performed at the required frequency?	(Yes)	No	NA
23.	Did the MS meet the percent recovery (%R) criteria?	(Yes)	No	NA
24.	Was the post digestion spike sample analysis performed when required?	(Yes)	No	NA
25.	Was the laboratory duplicate analysis performed at the required frequency?	(Yes)	No	NA

CHEMTECH

Data Usability Summary Report (DUSR)

Project of Site Name: **ORB** SDG # : **P3048**

26.	Did the duplicate analysis meet the Relative Percent Difference (RPD) acceptance criteria?	Yes	(No)	NA
27.	Did the results for any field duplicate samples meet expected precision requirements?	Yes	(No)	NA
28.	Was the Laboratory Control Sample analysis performed for each matrix and analysis at the required frequency?	(Yes)	No	NA
29.	Did the LCS meet the percent recovery (%R) criteria?	(Yes)	No	NA
30.	Was ICP Serial Dilution analysis preformed at the required frequency?	(Yes)	No	NA
31.	Did the ICP serial dilution analysis meet the percent difference (%D) criteria?	(Yes)	No	NA
32.	Was proper quantitation procedure followed for Method of Standard Addition (MSA) analysis?	Yes	No	(NA)
33.	Was coefficient of correlation greater than 0.0995 for MSA analysis?	Yes	No	(NA)
34.	Were there any analysis performed for dissolved as total analysis?	Yes	No	(NA)
35.	Was the concentration of any dissolved analyte greater than its total concentration by 10%?	Yes	No	(NA)
36.	Did the laboratory submit Instrument Detection Limit (IDL), ICP linear ranges and ICP Interelement Correction Factors?	(Yes)	No	NA
37.	Were dilutions made appropriately when required?	(Yes)	No	NA
38.	No discrepancies were noted when review of raw data (instrument printouts) was performed.	(Yes)	No	NA
39.	Were results reported in correct units and soil samples corrected for % solid?	(Yes)	No	NA

If NO for any of the above questions, give further explanation in the comments section:

CHEMTECH

Data Usability Summary Report (DUSR)

Project of Site Name: **ORB** SDG # : **P3048**

COMMENTS:

Samples were not received within the acceptable QC Temperature range, but were preserved once received in the laboratory.

The Duplicates for sample # 15 did not meet QC criteria for Chromium. The duplicates were field sampled. The samples associated with the duplicate sample are flagged with an "*".

The MS/MSD and Duplicate for sample P3048-15 were field sampled. The non-homogeneous nature of the soil sample is the suspected cause.

The samples are flagged with a "J" qualifier.

All other QC data met requirements. Data usability is acceptable.

R= Rejected
E= Estimated

Reviewer Signature: Carole Collins **Date** 8/16/02

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3048 **Method Type:** SW846

Sample ID: P3048-01 **Client ID:** BC-220-4

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3048

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 93.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	37.8	mg/Kg		*	P	0.07	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3048 **Method Type:** SW846

Sample ID: P3048-02 **Client ID:** BC-224-8

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3048

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 97.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	3.3	mg/Kg		*	P	0.07	PI	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3048 **Method Type:** SW846

Sample ID: P3048-03 **Client ID:** BC-228-12

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3048

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 96.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	2.8	mg/Kg		*	P	0.07	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3048 **Method Type:** SW846

Sample ID: P3048-04 **Client ID:** BC-230-4

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3048

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 95.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	13.5	mg/Kg		*	P	0.07	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3048 **Method Type:** SW846

Sample ID: P3048-05 **Client ID:** BC-234-8

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3048

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 94.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	13.8	mg/Kg		*	P	0.07	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3048 **Method Type:** SW846

Sample ID: P3048-06 **Client ID:** BC-238-12

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3048

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 97.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	1.5	mg/Kg		*	P	0.07	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3048 **Method Type:** SW846

Sample ID: P3048-07 **Client ID:** BC-240-4

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3048

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 97.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	5.7	mg/Kg		*	P	0.07	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3048 **Method Type:** SW846

Sample ID: P3048-08 **Client ID:** BC-244-8

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3048

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 96.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	46.0	mg/Kg		*	P	0.07	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3048 **Method Type:** SW846

Sample ID: P3048-09 **Client ID:** BC-248-12

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3048

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 97.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	5.7	mg/Kg		*	P	0.07	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3048 **Method Type:** SW846

Sample ID: P3048-10 **Client ID:** BC-250-4

Contract: MAC Consultants. Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3048

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 94.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	28.4	mg/Kg		*	P	0.07	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3048 **Method Type:** SW846

Sample ID: P3048-11 **Client ID:** BC-254-8

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3048

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 97.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	119	mg/Kg		*	P	0.07	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3048 **Method Type:** SW846

Sample ID: P3048-12 **Client ID:** BC-258-12

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3048

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 86.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	1210	mg/Kg		*	P	0.08	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3048 **Method Type:** SW846

Sample ID: P3048-13 **Client ID:** BC-260-4

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3048

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 96.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	5.3	mg/Kg		*	P	0.07	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3048 **Method Type:** SW846

Sample ID: P3048-14 **Client ID:** BC-264-8

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3048

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 90.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	52.7	mg/Kg		*	P	0.08	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3048 **Method Type:** SW846

Sample ID: P3048-15 **Client ID:** BC-268-12

Contract: MAC Consultants. Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3048

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 97.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	876	mg/Kg		*	P	0.07	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3048 **Method Type:** SW846

Sample ID: P3048-16 **Client ID:** BC-268-12DUP

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3048

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 94.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	1230	mg/Kg		*	P	0.07	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3048 **Method Type:** SW846

Sample ID: P3048-19 **Client ID:** BC-270-4

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3048

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 97.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	5.5	mg/Kg		*	P	0.07	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3048 **Method Type:** SW846

Sample ID: P3048-20 **Client ID:** BC-274-8

Contract: MAC Consultants. Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3048

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 97.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	91.1	mg/Kg		*	P	0.07	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3048 **Method Type:** SW846

Sample ID: P3048-21 **Client ID:** BC-278-12

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3048

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 94.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	14.2	mg/Kg		*	P	0.07	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3048 **Method Type:** SW846

Sample ID: P3048-22 **Client ID:** BC-280-4

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3048

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 91.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	15.2	mg/Kg		*	P	0.08	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3048 **Method Type:** SW846

Sample ID: P3048-23 **Client ID:** BC-284-8

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3048

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 96.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	416	mg/Kg			P	0.07	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3048 **Method Type:** SW846

Sample ID: P3048-24 **Client ID:** BC-288-12

Contract: MAC Consultants. Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3048

Matrix: SOIL **Date Received:** 6/19/02 **Level:** LOW

% Solids: 95.0

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	74.6	mg/Kg			P	0.07	P1	P162402

Color Before: BROWN **Clarity Before:** **Texture:** MEDIUM

Color After: YELLOW **Clarity After:** **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3048 **Method Type:** SW846

Sample ID: P3048-25 **Client ID:** RINSEBLANK

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3048

Matrix: WATER **Date Received:** 6/19/02 **Level:** LOW

% Solids:

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	1.4	ug/L	U		P	1.4	P1	P162402

Color Before: COLORLESS **Clarity Before:** CLEAR **Texture:**

Color After: COLORLESS **Clarity After:** CLEAR **Artifacts:**

Comments:

CHEMTECH

Data Usability Summary Report (DUSR)

Project of Site Name: **ORB** SDG # : **P3190**

Prepared By: Carole Collins

Laboratory Name: Chemtech Date: August 7, 2002

Laboratory Project #: P3190

Sample (s) Taken: June 17 & 18, 2002

Sample Matrix: Soil

Client Sample ID:

BC-1 8`-12`	BC-19 8`-12`
BC-6 4`-8`	BC-25 4`-8`
BC-6 8`-12`	BC-25 8`-12`
BC-16 4`-8`	BC-26 8`-12`
BC-16 8`-12`	BC-28 4`-8`

Analytical Parameters: TCLP Chromium

The DUSR was prepared by reviewing and evaluating the analytical data per the Region II guidelines from USEPA, Revision II/January 92 Inorganics analysis and NYSDEC ASP guidelines. The following checklist has been designed to ensure a thorough ad complete review of the analytical results based on the requirements in these guidelines. The analytical results are considered valid and usable for the purpose of this project, with any exceptions addressed in the Data Deficiencies comments section below.

CHEMTECH

Data Usability Summary Report (DUSR)

Project of Site Name: **ORB** SDG # : **P3190**

Data Verification Parameters		**Circle One**		
1.	Were all chain of custody records present and completed?	(Yes)	No	NA
2.	Were statements made in the analytical data case narrative supported by the analytical data?	(Yes)	No	NA
3.	Were the analysis performed as per method requested?	(Yes)	No	NA
4.	Was the data package complete as defined under the requirements for the NYSDEC ASP or USEPA CLP deliverables?	(Yes)	No	NA
5.	Were the required holing times met for all matrices and analytical parameter (metals, mercury, cyanide)?	(Yes)	No	NA
6.	Were samples correctly preserved?	Yes	(No)	NA
7.	Was sample preservation documented?	(Yes)	No	NA
8.	Was % solids greater than 50% for all soils samples?	(Yes)	No	NA
9.	Were preparation log/distillation log provided for all the analytes?	(Yes)	No	NA
10.	Did the preservation/distillation log include all the information about weight/volume and preparation date(s)?	(Yes)	No	NA
11.	Were there raw data included for all the analytes?	(Yes)	No	NA
12.	Were the instrument(s) calibrated correctly using proper standards?	(Yes)	No	NA
13.	Were the initial and continuing calibrations performed at the required frequency?	(Yes)	No	NA
14.	Were the initial and continuing calibration within the acceptance criteria?	(Yes)	No	NA
15.	Were CRDL standard(s) run at the beginning and end of each run?	(Yes)	No	NA
16.	Were percent recoveries (%R) for CRDL standard within the acceptance criteria?	(Yes)	No	NA
17.	Were the calibration blanks less than CRDL?	(Yes)	No	NA
18.	Were the preparation blanks free of contaminants?	(Yes)	No	NA
19.	Were the field blank free of contaminants?	Yes	No	(NA)
20.	Were ICP Interference Check Samples (ICS) analyzed at the beginning and end of each ICP run?	(Yes)	No	NA
21.	Were percent recoveries (%R) for ICS within the acceptance criteria?	(Yes)	No	NA
22.	Was the matrix spike (MS) analysis performed at the required frequency?	(Yes)	No	NA
23.	Did the MS meet the percent recovery (%R) criteria?	(Yes)	No	NA
24.	Was the post digestion spike sample analysis performed when required?	(Yes)	No	NA
25.	Was the laboratory duplicate analysis performed at the required frequency?	(Yes)	No	NA

CHEMTECH

Data Usability Summary Report (DUSR)

Project of Site Name: **ORB** SDG # : **P3190**

26.	Did the duplicate analysis meet the Relative Percent Difference (RPD) acceptance criteria?	(Yes)	No	NA
27.	Did the results for any field duplicate samples meet expected precision requirements?	Yes	No	(NA)
28.	Was the Laboratory Control Sample analysis performed for each matrix and analysis at the required frequency?	(Yes)	No	NA
29.	Did the LCS meet the percent recovery (%R) criteria?	(Yes)	No	NA
30.	Was ICP Serial Dilution analysis preformed at the required frequency?	(Yes)	No	NA
31.	Did the ICP serial dilution analysis meet the percent difference (%D) criteria?	(Yes)	No	NA
32.	Was proper quantitation procedure followed for Method of Standard Addition (MSA) analysis?	Yes	No	(NA)
33.	Was coefficient of correlation greater than 0.0995 for MSA analysis?	Yes	No	(NA)
34.	Were there any analysis performed for dissolved as total analysis?	Yes	No	(NA)
35.	Was the concentration of any dissolved analyte greater than its total concentration by 10%?	Yes	No	(NA)
36.	Did the laboratory submit Instrument Detection Limit (IDL), ICP linear ranges and ICP Interelement Correction Factors?	(Yes)	No	NA
37.	Were dilutions made appropriately when required?	(Yes)	No	NA
38.	No discrepancies were noted when review of raw data (instrument printouts) was performed.	(Yes)	No	NA
39.	Were results reported in correct units and soil samples corrected for % solid?	(Yes)	No	NA

If NO for any of the above questions, give further explanation in the comments section:

CHEMTECH

Data Usability Summary Report (DUSR)

Project of Site Name: **ORB** SDG # : **P3190**

COMMENTS:

Samples were not received within the Temperature QC range, but preserved once received in the laboratory.

All QC meet QC requirements. Data usability acceptable.

R= Rejected
E= Estimated

Reviewer Signature: Carole Collins **Date** 2/10/02

METALS

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INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3190 **Method Type:** SW846

Sample ID: P3190-01 **Client ID:** BC-18-12

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3190

Matrix: TCLP **Date Received:** 7/1/02 **Level:** LOW

% Solids:

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	39.4	ug/L	B		P	14.0	P1	P170902

Color Before: COLORLESS **Clarity Before:** CLEAR **Texture:**

Color After: COLORLESS **Clarity After:** CLEAR **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3190 **Method Type:** SW846

Sample ID: P3190-02 **Client ID:** BC-64-8

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3190

Matrix: TCLP **Date Received:** 7/1/02 **Level:** LOW

% Solids:

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	386	ug/L			P	14.0	P1	P170902

Color Before: COLORLESS **Clarity Before:** CLEAR **Texture:**

Color After: COLORLESS **Clarity After:** CLEAR **Artifacts:**

Comments:

METALS

- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3190 **Method Type:** SW846

Sample ID: P3190-03 **Client ID:** BC-68-12

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3190

Matrix: TCLP **Date Received:** 7/1/02 **Level:** LOW

% Solids:

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	366	ug/L			P	14.0	P1	P170902

Color Before: COLORLESS **Clarity Before:** CLEAR **Texture:**

Color After: COLORLESS **Clarity After:** CLEAR **Artifacts:**

Comments:

METALS

- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3190 **Method Type:** SW846

Sample ID: P3190-04 **Client ID:** BC-164-8

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3190

Matrix: TCLP **Date Received:** 7/1/02 **Level:** LOW

% Solids:

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	64.5	ug/L	B		P	14.0	P1	P170902

Color Before: COLORLESS **Clarity Before:** CLEAR **Texture:**

Color After: COLORLESS **Clarity After:** CLEAR **Artifacts:**

Comments:

METALS

- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3190 **Method Type:** SW846

Sample ID: P3190-05 **Client ID:** BC-168-12

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3190

Matrix: TCLP **Date Received:** 7/1/02 **Level:** LOW

% Solids:

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	49.6	ug/L	B		P	14.0	P1	P170902

Color Before: COLORLESS **Clarity Before:** CLEAR **Texture:**

Color After: COLORLESS **Clarity After:** CLEAR **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3190 **Method Type:** SW846

Sample ID: P3190-06 **Client ID:** BC-198-12

Contract: MAC Consultants, inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3190

Matrix: TCLP **Date Received:** 7/1/02 **Level:** LOW

% Solids:

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	20.9	ug/L	B		P	14.0	P1	P170902

Color Before: COLORLESS **Clarity Before:** CLEAR **Texture:**

Color After: COLORLESS **Clarity After:** CLEAR **Artifacts:**

Comments:

METALS

- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3190 **Method Type:** SW846

Sample ID: P3190-07 **Client ID:** BC-254-8

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3190

Matrix: TCLP **Date Received:** 7/1/02 **Level:** LOW

% Solids:

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	26.1	ug/L	B		P	14.0	P1	P170902

Color Before: COLORLESS **Clarity Before:** CLEAR **Texture:**

Color After: COLORLESS **Clarity After:** CLEAR **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3190 **Method Type:** SW846

Sample ID: P3190-08 **Client ID:** BC-258-12

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3190

Matrix: TCLP **Date Received:** 7/1/02 **Level:** LOW

% Solids:

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	53.2	ug/L	B		P	14.0	P1	P170902

Color Before: COLORLESS **Clarity Before:** CLEAR **Texture:**

Color After: COLORLESS **Clarity After:** CLEAR **Artifacts:**

Comments:

METALS

- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3190 **Method Type:** SW846

Sample ID: P3190-09 **Client ID:** BC-268-12

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3190

Matrix: TCLP **Date Received:** 7/1/02 **Level:** LOW

% Solids:

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	38.4	ug/L	B		P	14.0	P1	P170902

Color Before: COLORLESS **Clarity Before:** CLEAR **Texture:**

Color After: COLORLESS **Clarity After:** CLEAR **Artifacts:**

Comments:

METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: MAC Consultants, Inc. **SDG No.:** P3190 **Method Type:** SW846

Sample ID: P3190-10 **Client ID:** BC-284-8

Contract: MAC Consultants, Inc. **Lab Code:** CHEMED **Case No.:** **SAS No.:** P3190

Matrix: TCLP **Date Received:** 7/1/02 **Level:** LOW

% Solids:

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-47-3	Chromium	39.4	ug/L	B		P	14.0	P1	P170902

Color Before: COLORLESS **Clarity Before:** CLEAR **Texture:**

Color After: COLORLESS **Clarity After:** CLEAR **Artifacts:**

Comments:

CHEMTECH

Data Usability Summary Report (DUSR)

Project of Site Name: **ORB** SDG # : **P3097**

Prepared by: Carole Collins

Laboratory Name: Chemtech Date: August 8, 2002

Laboratory Project: P3097

Analytical parameters: Volatile Organics by method 8260- SW846

Sample (s) Taken: June 19, 2002

Sample Matrix: Soil

Client Sample ID:

BS-6 0`-4`	BS-10 0`-4`
BS-6 4`-8`	BS-10 4`-8`
BS-6 8`-12`	BS-10 8`-12`
BS-7 0`-4`	BS-11 0`-4`
BS-7 4`-8`	BS-11 4`-8`
BS-7 8`-12`	BS-11 8`-12`
BS-8 0`-4`	BS-12 0`-4`
BS-8 4`-8`	BS-12 4`-8`
BS-8 8`-12`	BS-12 8`-12
BS-9 0`-4`	BS-12 8`-12` DUP
BS-9 4`-8`	BS-12 8`-12` MS
BS-9 8`-12`	BS-12 8`-12` MSD

The DUSR was prepared by reviewing and evaluating the analytical data per the method 8260, SW846 and NYSDEC ASP guidelines. The following checklist has been designed to ensure a thorough and complete review of the analytical results based on the requirements in these guidelines. The analytical results are considered valid and usable for the purpose of this project, with any exceptions addressed in the Data Deficiencies comments section below.

CHEMTECH

Data Usability Summary Report (DUSR)

Project of Site Name: **ORB** SDG # : **P3097**

Data Verification Parameters

		Circle One		
1.	Were all chain of custody records present and completed?	(Yes)	No	NA
2.	Were statements made in the analytical data case narrative supported by the analytical data?	(Yes)	No	NA
3.	Were the analysis performed as per method requested?	(Yes)	No	NA
4.	Was the data package complete as defined under the requirements for the NYSDEC ASP or USEPA CLP deliverables?	(Yes)	No	NA
5.	Were the required holding times met for all matrices and analytical parameter?	(Yes)	No	NA
6.	Were samples correctly preserved?	(Yes)	No	NA
7.	Was sample preservation documented?	(Yes)	No	NA
8.	Was % moisture less than 50 % for all soil samples?	(Yes)	No	NA
9.	Were the initial and continuing calibrations performed at the required frequency?	(Yes)	No	NA
10.	Were the initial calibration within the acceptance criteria?	(Yes)	No	NA
11.	Were the midpoint check std. within the acceptance criteria?	(Yes)	No	NA
12.	Were the method blanks free of contaminants?	(Yes)	No	NA
13.	Were the field blank free of contaminants?	Yes	No	(NA)
14.	Were system monitoring compounds within the acceptance limits?	(Yes)	No	NA
15.	Were matrix spike/matrix spike duplicate (MS/MSD) Analyzed at the correct frequency?	(Yes)	No	NA
16.	Did the MS/MSD met the percent recovery (%R) and Relative percent difference (RPD) acceptance criteria?	(Yes)	No	NA
17.	Was the matrix spike blank sample (MSB) analysis performed at the required frequency?	(Yes)	No	NA
18.	Did the MSB meet the percent recovery (%R) criteria?	(Yes)	No	NA
19.	Did the result for any field duplicate samples meet expected precision requirements?	(Yes)	No	NA
20.	Were dilutions made appropriately?	(Yes)	No	NA
21.	No discrepancies were noted when the review of raw data (instrument printouts and chromatograms was performed.	(Yes)	No	NA
22.	Were results reported in correct units and soil samples corrected for % moisture?	(Yes)	No	NA

If no answered for any of the above questions, give further explanation in the comments section:

CHEMTECH

Data Usability Summary Report (DUSR)

Project of Site Name: **ORB** SDG # : **P3097**

COMMENTS:

The following samples did not meet surrogates QC requirements. The samples were rerun to confirm that the surrogates were not within QC requirements. Samples are flagged with "J" qualifiers.

BS-8 0`-4'	BS-9 8`-12`
BS-9 4`-8`	BS-11 8`-12`

All other data met requirements. All data is usable.

R= Rejected
E= Estimated

Reviewer Signature: Carol Collins **Date** 8/16/02

Volatiles

SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID: P3097-01 Client ID: BS-60-4

Date Collected: 6/19/02 Date Received: 6/21/02
Date Analyzed: 6/26/02 Matrix: SOIL
File ID: VA062620.D Analytical Run ID: VA061202
Dilution: 1 Instrument ID: MSVOAA
Analytical Method: 8260 Associated Blank: VBA0626S3
Sample Wt/Vol: 5.0 Units: g Soil Extract Vol:
Soil Aliquot Vol: % Moisture: 2

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
TARGETS						
Chloromethane	74-87-3	< 1.7	U	5.1	1.7	ug/Kg
Bromomethane	74-83-9	< 1.0	U	5.1	1.0	ug/Kg
Vinyl chloride	75-01-4	< 1.0	U	5.1	1.0	ug/Kg
Chloroethane	75-00-3	< 1.3	U	5.1	1.3	ug/Kg
Methylene Chloride	75-09-2	< 1.3	U	5.1	1.3	ug/Kg
Acetone	67-64-1	< 3.6	U	5.1	3.6	ug/Kg
Carbon disulfide	75-15-0	< 1.3	U	5.1	1.3	ug/Kg
1,1-Dichloroethene	75-35-4	< 1.1	U	5.1	1.1	ug/Kg
1,1-Dichloroethane	75-34-3	< 0.92	U	5.1	0.92	ug/Kg
trans-1,2-Dichloroethene	156-60-5	< 1.1	U	5.1	1.1	ug/Kg
cis-1,2-Dichloroethene	156-59-2	< 0.92	U	5.1	0.92	ug/Kg
Chloroform	67-66-3	< 1.0	U	5.1	1.0	ug/Kg
1,2-Dichloroethane	107-06-2	< 1.1	U	5.1	1.1	ug/Kg
2-Butanone	78-93-3	< 5.5	U	5.1	5.5	ug/Kg
1,1,1-Trichloroethane	71-55-6	< 1.0	U	5.1	1.0	ug/Kg
Carbon Tetrachloride	56-23-5	< 2.1	U	5.1	2.1	ug/Kg
Bromodichloromethane	75-27-4	< 0.82	U	5.1	0.82	ug/Kg
1,2-Dichloropropane	78-87-5	< 0.82	U	5.1	0.82	ug/Kg
cis-1,3-Dichloropropene	10061-01-5	< 0.92	U	5.1	0.92	ug/Kg
Trichloroethene	79-01-6	< 1.0	U	5.1	1.0	ug/Kg
Dibromochloromethane	124-48-1	< 0.92	U	5.1	0.92	ug/Kg
1,1,2-Trichloroethane	79-00-5	< 1.1	U	5.1	1.1	ug/Kg
Benzene	71-43-2	< 1.0	U	5.1	1.0	ug/Kg
t-1,3-Dichloropropene	10061-02-6	< 1.0	U	5.1	1.0	ug/Kg
Bromoform	75-25-2	< 1.1	U	5.1	1.1	ug/Kg
4-Methyl-2-Pentanone	108-10-1	< 4.1	U	5.1	4.1	ug/Kg
2-Hexanone	591-78-6	< 6.1	U	5.1	6.1	ug/Kg
Tetrachloroethene	127-18-4	< 1.2	U	5.1	1.2	ug/Kg
1,1,2,2-Tetrachloroethane	79-34-5	< 1.0	U	5.1	1.0	ug/Kg
Toluene	108-88-3	< 1.1	U	5.1	1.1	ug/Kg
Chlorobenzene	108-90-7	< 1.1	U	5.1	1.1	ug/Kg
Ethyl Benzene	100-41-4	< 1.0	U	5.1	1.0	ug/Kg
Styrene	100-42-5	< 1.4	U	5.1	1.4	ug/Kg
m/p-Xylenes	136777-61-2	< 2.9	U	5.1	2.9	ug/Kg

07/01

Volatiles
SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID: P3097-01 Client ID: BS-60-4

Date Collected:	6/19/02	Date Received:	6/21/02
Date Analyzed:	6/26/02	Matrix:	SOIL
File ID:	VA062620.D	Analytical Run ID:	VA061202
Dilution:	1	Instrument ID:	MSVOAA
Analytical Method:	8260	Associated Blank:	VBA0626S3
Sample Wt/Wol:	5.0 Units: g	Soil Extract Vol:	
Soil Aliquot Vol:		% Moisture:	2

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
o-Xylene	95-47-6	< 1.1	U	5.1	1.1	ug/Kg
SURROGATES						
1,2-Dichloroethane-d4	79-00-5	45.11	90 %	70 - 121		SPK: 50
Toluene-d8	2037-26-5	51.43	103 %	81 - 117		SPK: 50
4-Bromofluorobenzene	460-00-4	39.33	79 %	74 - 121		SPK: 50
Dibromofluoromethane		50.82	102 %	80 - 120		SPK: 50
INTERNAL STANDARDS						
Pentafluorobenzene	363-72-4	3089374	6.02			
1,4-Difluorobenzene	540-36-3	3250280	7.82			
obenzene-d5	3114-55-4	2648886	14.04			
Dichlorobenzene-d4	3855-82-1	1593953	19.54			

Volatiles

SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID: P3097-02 Client ID: BS-64-8

Date Collected: 6/19/02 Date Received: 6/21/02
Date Analyzed: 6/26/02 Matrix: SOIL
File ID: VA062621.D Analytical Run ID: VA061202
Dilution: 1 Instrument ID: MSVOAA
Analytical Method: 8260 Associated Blank: VBA0626S3
Sample Wt/Vol: 5.0 Units: g Soil Extract Vol:
Soil Aliquot Vol: % Moisture: 11

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
TARGETS						
Chloromethane	74-87-3	< 1.9	U	5.6	1.9	ug/Kg
Bromomethane	74-83-9	< 1.1	U	5.6	1.1	ug/Kg
Vinyl chloride	75-01-4	< 1.1	U	5.6	1.1	ug/Kg
Chloroethane	75-00-3	< 1.5	U	5.6	1.5	ug/Kg
Methylene Chloride	75-09-2	< 1.5	U	5.6	1.5	ug/Kg
Acetone	67-64-1	< 3.9	U	5.6	3.9	ug/Kg
Carbon disulfide	75-15-0	< 1.5	U	5.6	1.5	ug/Kg
1,1-Dichloroethene	75-35-4	< 1.2	U	5.6	1.2	ug/Kg
ichloroethane	75-34-3	< 1.0	U	5.6	1.0	ug/Kg
trans-1,2-Dichloroethene	156-60-5	< 1.2	U	5.6	1.2	ug/Kg
cis-1,2-Dichloroethene	156-59-2	< 1.0	U	5.6	1.0	ug/Kg
Chloroform	67-66-3	< 1.1	U	5.6	1.1	ug/Kg
1,2-Dichloroethane	107-06-2	< 1.2	U	5.6	1.2	ug/Kg
2-Butanone	78-93-3	< 6.1	U	5.6	6.1	ug/Kg
1,1,1-Trichloroethane	71-55-6	< 1.1	U	5.6	1.1	ug/Kg
Carbon Tetrachloride	56-23-5	< 2.4	U	5.6	2.4	ug/Kg
Bromodichloromethane	75-27-4	< 0.90	U	5.6	0.90	ug/Kg
1,2-Dichloropropane	78-87-5	< 0.90	U	5.6	0.90	ug/Kg
cis-1,3-Dichloropropene	10061-01-5	< 1.0	U	5.6	1.0	ug/Kg
Trichloroethene	79-01-6	< 1.1	U	5.6	1.1	ug/Kg
Dibromochloromethane	124-48-1	< 1.0	U	5.6	1.0	ug/Kg
1,1,2-Trichloroethane	79-00-5	< 1.2	U	5.6	1.2	ug/Kg
Benzene	71-43-2	< 1.1	U	5.6	1.1	ug/Kg
t-1,3-Dichloropropene	10061-02-6	< 1.1	U	5.6	1.1	ug/Kg
Bromoform	75-25-2	< 1.2	U	5.6	1.2	ug/Kg
4-Methyl-2-Pentanone	108-10-1	< 4.5	U	5.6	4.5	ug/Kg
2-Hexanone	591-78-6	< 6.7	U	5.6	6.7	ug/Kg
Tetrachloroethene	127-18-4	< 1.3	U	5.6	1.3	ug/Kg
1,1,2,2-Tetrachloroethane	79-34-5	< 1.1	U	5.6	1.1	ug/Kg
Tc e	108-88-3	< 1.2	U	5.6	1.2	ug/Kg
Chlorobenzene	108-90-7	< 1.2	U	5.6	1.2	ug/Kg
Ethyl Benzene	100-41-4	< 1.1	U	5.6	1.1	ug/Kg
Styrene	100-42-5	< 1.6	U	5.6	1.6	ug/Kg
m/p-Xylenes	136777-61-2	< 3.1	U	5.6	3.1	ug/Kg

07/01

Volatiles

SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID: P3097-02 Client ID: BS-64-8

Date Collected:	6/19/02	Date Received:	6/21/02
Date Analyzed:	6/26/02	Matrix:	SOIL
File ID:	VA062621.D	Analytical Run ID:	VA061202
Dilution:	1	Instrument ID:	MSVOAA
Analytical Method:	8260	Associated Blank:	VBA0626S3
Sample Wt/Vol:	5.0 Units: g	Soil Extract Vol:	
Soil Aliquot Vol:		% Moisture:	11

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
o-Xylene	95-47-6	< 1.2	U	5.6	1.2	ug/Kg
SURROGATES						
1,2-Dichloroethane-d4	79-00-5	41.62	83 %	70 - 121		SPK: 50
Toluene-d8	2037-26-5	51.63	103 %	81 - 117		SPK: 50
4-Bromofluorobenzene	460-00-4	38.57	77 %	74 - 121		SPK: 50
Dibromofluoromethane		51.46	103 %	80 - 120		SPK: 50
INTERNAL STANDARDS						
Pentafluorobenzene	363-72-4	3150420	6.07			
1,4-Difluorobenzene	540-36-3	3182911	7.85			
obenzene-d5	3114-55-4	2552568	14.06			
1,4-Dichlorobenzene-d4	3855-82-1	1556237	19.57			

Volatiles

SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID:	P3097-03	Client ID:	BS-68-12
Date Collected:	6/19/02	Date Received:	6/21/02
Date Analyzed:	6/28/02	Matrix:	SOIL
File ID:	VA062804.D	Analytical Run ID:	VA061202
Dilution:	1	Instrument ID:	MSVOAA
Analytical Method:	8260	Associated Blank:	VBA0628S1
Sample Wt/Vol:	5.0 Units: g	Soil Extract Vol:	
Soil Aliquot Vol:		% Moisture:	9

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
TARGETS						
Chloromethane	74-87-3	< 1.9	U	5.5	1.9	ug/Kg
Bromomethane	74-83-9	< 1.1	U	5.5	1.1	ug/Kg
Vinyl chloride	75-01-4	< 1.1	U	5.5	1.1	ug/Kg
Chloroethane	75-00-3	< 1.4	U	5.5	1.4	ug/Kg
Methylene Chloride	75-09-2	< 1.4	U	5.5	1.4	ug/Kg
Acetone	67-64-1	< 3.8	U	5.5	3.8	ug/Kg
Carbon disulfide	75-15-0	< 1.4	U	5.5	1.4	ug/Kg
1,1-Dichloroethene	75-35-4	< 1.2	U	5.5	1.2	ug/Kg
ichloroethane	75-34-3	< 0.99	U	5.5	0.99	ug/Kg
trans-1,2-Dichloroethene	156-60-5	< 1.2	U	5.5	1.2	ug/Kg
cis-1,2-Dichloroethene	156-59-2	< 0.99	U	5.5	0.99	ug/Kg
Chloroform	67-66-3	< 1.1	U	5.5	1.1	ug/Kg
1,2-Dichloroethane	107-06-2	< 1.2	U	5.5	1.2	ug/Kg
2-Butanone	78-93-3	< 5.9	U	5.5	5.9	ug/Kg
1,1,1-Trichloroethane	71-55-6	< 1.1	U	5.5	1.1	ug/Kg
Carbon Tetrachloride	56-23-5	< 2.3	U	5.5	2.3	ug/Kg
Bromodichloromethane	75-27-4	< 0.88	U	5.5	0.88	ug/Kg
1,2-Dichloropropane	78-87-5	< 0.88	U	5.5	0.88	ug/Kg
cis-1,3-Dichloropropene	10061-01-5	< 0.99	U	5.5	0.99	ug/Kg
Trichloroethene	79-01-6	< 1.1	U	5.5	1.1	ug/Kg
Dibromochloromethane	124-48-1	< 0.99	U	5.5	0.99	ug/Kg
1,1,2-Trichloroethane	79-00-5	< 1.2	U	5.5	1.2	ug/Kg
Benzene	71-43-2	< 1.1	U	5.5	1.1	ug/Kg
t-1,3-Dichloropropene	10061-02-6	< 1.1	U	5.5	1.1	ug/Kg
Bromoform	75-25-2	< 1.2	U	5.5	1.2	ug/Kg
4-Methyl-2-Pentanone	108-10-1	< 4.4	U	5.5	4.4	ug/Kg
2-Hexanone	591-78-6	< 6.6	U	5.5	6.6	ug/Kg
Tetrachloroethene	127-18-4	< 1.3	U	5.5	1.3	ug/Kg
1,1,2,2-Tetrachloroethane	79-34-5	< 1.1	U	5.5	1.1	ug/Kg
T e	108-88-3	< 1.2	U	5.5	1.2	ug/Kg
Chlorobenzene	108-90-7	< 1.2	U	5.5	1.2	ug/Kg
Ethyl Benzene	100-41-4	< 1.1	U	5.5	1.1	ug/Kg
Styrene	100-42-5	< 1.5	U	5.5	1.5	ug/Kg
m/p-Xylenes	136 777-61-2	< 3.1	U	5.5	3.1	ug/Kg

7/01

Volatiles

SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID: P3097-03 Client ID: BS-68-12

Date Collected: 6/19/02 Date Received: 6/21/02
Date Analyzed: 6/28/02 Matrix: SOIL
File ID: VA062804.D Analytical Run ID: VA061202
Dilution: 1 Instrument ID: MSVOAA
Analytical Method: 8260 Associated Blank: VBA0628S1
Sample Wt/Vol: 5.0 Units: g Soil Extract Vol:
Soil Aliquot Vol: % Moisture: 9

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
o-Xylene	95-47-6	< 1.2	U	5.5	1.2	ug/Kg
SURROGATES						
1,2-Dichloroethane-d4	79-00-5	44.99	90 %	70 - 121		SPK: 50
Toluene-d8	2037-26-5	54.71	109 %	81 - 117		SPK: 50
4-Bromofluorobenzene	460-00-4	41.34	83 %	74 - 121		SPK: 50
Dibromofluoromethane		54.35	109 %	80 - 120		SPK: 50
INTERNAL STANDARDS						
Pentafluorobenzene	363-72-4	2955186	6.05			
1,4-Difluorobenzene	540-36-3	3306121	7.82			
obenzene-d5	3114-55-4	2642875	14.06			
1,2-Dichlorobenzene-d4	3855-82-1	1543324	19.60			
TENTITIVE IDENTIFIED COMPOUNDS						
Coulmn Bleed	74779616	6.1	J	20.62		ug/kg

Volatiles

SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID:	P3097-04	Client ID:	BS-70-4
Date Collected:	6/19/02	Date Received:	6/21/02
Date Analyzed:	6/28/02	Matrix:	SOIL
File ID:	VA062805.D	Analytical Run ID:	VA061202
Dilution:	1	Instrument ID:	MSVOAA
Analytical Method:	8260	Associated Blank:	VBA0628S1
Sample Wt/Vol:	5.0 Units: g	Soil Extract Vol:	
Soil Aliquot Vol:		% Moisture:	24

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
TARGETS						
Chloromethane	74-87-3	< 2.2	U	6.6	2.2	ug/Kg
Bromomethane	74-83-9	< 1.3	U	6.6	1.3	ug/Kg
Vinyl chloride	75-01-4	< 1.3	U	6.6	1.3	ug/Kg
Chloroethane	75-00-3	< 1.7	U	6.6	1.7	ug/Kg
Methylene Chloride	75-09-2	< 1.7	U	6.6	1.7	ug/Kg
Acetone	67-64-1	< 4.6	U	6.6	4.6	ug/Kg
Carbon disulfide	75-15-0	< 1.7	U	6.6	1.7	ug/Kg
1,1-Dichloroethene	75-35-4	< 1.4	U	6.6	1.4	ug/Kg
ichloroethane	75-34-3	< 1.2	U	6.6	1.2	ug/Kg
trans-1,2-Dichloroethene	156-60-5	< 1.4	U	6.6	1.4	ug/Kg
cis-1,2-Dichloroethene	156-59-2	< 1.2	U	6.6	1.2	ug/Kg
Chloroform	67-66-3	< 1.3	U	6.6	1.3	ug/Kg
1,2-Dichloroethane	107-06-2	< 1.4	U	6.6	1.4	ug/Kg
2-Butanone	78-93-3	< 7.1	U	6.6	7.1	ug/Kg
1,1,1-Trichloroethane	71-55-6	< 1.3	U	6.6	1.3	ug/Kg
Carbon Tetrachloride	56-23-5	< 2.8	U	6.6	2.8	ug/Kg
Bromodichloromethane	75-27-4	< 1.1	U	6.6	1.1	ug/Kg
1,2-Dichloropropane	78-87-5	< 1.1	U	6.6	1.1	ug/Kg
cis-1,3-Dichloropropene	10061-01-5	< 1.2	U	6.6	1.2	ug/Kg
Trichloroethene	79-01-6	< 1.3	U	6.6	1.3	ug/Kg
Dibromochloromethane	124-48-1	< 1.2	U	6.6	1.2	ug/Kg
1,1,2-Trichloroethane	79-00-5	< 1.4	U	6.6	1.4	ug/Kg
Benzene	71-43-2	< 1.3	U	6.6	1.3	ug/Kg
t-1,3-Dichloropropene	10061-02-6	< 1.3	U	6.6	1.3	ug/Kg
Bromoform	75-25-2	< 1.4	U	6.6	1.4	ug/Kg
4-Methyl-2-Pentanone	108-10-1	< 5.3	U	6.6	5.3	ug/Kg
2-Hexanone	591-78-6	< 7.9	U	6.6	7.9	ug/Kg
Tetrachloroethene	127-18-4	< 1.6	U	6.6	1.6	ug/Kg
1,1,2,2-Tetrachloroethane	79-34-5	< 1.3	U	6.6	1.3	ug/Kg
T ne	108-88-3	< 1.4	U	6.6	1.4	ug/Kg
Chlorobenzene	108-90-7	< 1.4	U	6.6	1.4	ug/Kg
Ethyl Benzene	100-41-4	< 1.3	U	6.6	1.3	ug/Kg
Styrene	100-42-5	< 1.8	U	6.6	1.8	ug/Kg
m/p-Xylenes	136777-61-2	< 3.7	U	6.6	3.7	ug/Kg

07/01

Volatiles

SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID:	P3097-04	Client ID:	BS-70-4
Date Collected:	6/19/02	Date Received:	6/21/02
Date Analyzed:	6/28/02	Matrix:	SOIL
File ID:	VA062805.D	Analytical Run ID:	VA061202
Dilution:	1	Instrument ID:	MSVOAA
Analytical Method:	8260	Associated Blank:	VBA0628S1
Sample Wt/Vol:	5.0 Units: g	Soil Extract Vol:	
Soil Aliquot Vol:		% Moisture:	24

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
o-Xylene	95-47-6	1.4	U	5.0	1.4	ug/Kg
SURROGATES						
1,2-Dichloroethane-d4	79-00-5	45.19	90 %	70 - 121		SPK: 50
Toluene-d8	2037-26-5	55.1	110 %	81 - 117		SPK: 50
4-Bromofluorobenzene	460-00-4	39.3	79 %	74 - 121		SPK: 50
Dibromofluoromethane		53.35	107 %	80 - 120		SPK: 50
INTERNAL STANDARDS						
Pentafluorobenzene	363-72-4	3157976	6.02			
1,4-Difluorobenzene	540-36-3	3560072	7.82			
obenzene-d5	3114-55-4	2725586	14.04			
1,4-Dichlorobenzene-d4	3855-82-1	1574581	19.57			
TENTITIVE IDENTIFIED COMPOUNDS						
Column Bleed	7385106	10	J	20.58		ug/kg

Volatiles

SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID: P3097-05 Client ID: BS-74-8

Date Collected: 6/19/02 Date Received: 6/21/02
Date Analyzed: 6/27/02 Matrix: SOIL
File ID: VA062624.D Analytical Run ID: VA061202
Dilution: 1 Instrument ID: MSVOAA
Analytical Method: 8260 Associated Blank: VBA062683
Sample Wt/Vol: 5.0 Units: g Soil Extract Vol:
Soil Aliquot Vol: % Moisture: 1

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
TARGETS						
Chloromethane	74-87-3	< 1.7	U	5.1	1.7	ug/Kg
Bromomethane	74-83-9	< 1.0	U	5.1	1.0	ug/Kg
Vinyl chloride	75-01-4	< 1.0	U	5.1	1.0	ug/Kg
Chloroethane	75-00-3	< 1.3	U	5.1	1.3	ug/Kg
Methylene Chloride	75-09-2	< 1.3	U	5.1	1.3	ug/Kg
Acetone	67-64-1	< 3.5	U	5.1	3.5	ug/Kg
Carbon disulfide	75-15-0	< 1.3	U	5.1	1.3	ug/Kg
1,1-Dichloroethene	75-35-4	< 1.1	U	5.1	1.1	ug/Kg
ichloroethane	75-34-3	< 0.91	U	5.1	0.91	ug/Kg
trans-1,2-Dichloroethene	156-60-5	< 1.1	U	5.1	1.1	ug/Kg
cis-1,2-Dichloroethene	156-59-2	< 0.91	U	5.1	0.91	ug/Kg
Chloroform	67-66-3	< 1.0	U	5.1	1.0	ug/Kg
1,2-Dichloroethane	107-06-2	< 1.1	U	5.1	1.1	ug/Kg
2-Butanone	78-93-3	< 5.5	U	5.1	5.5	ug/Kg
1,1,1-Trichloroethane	71-55-6	< 1.0	U	5.1	1.0	ug/Kg
Carbon Tetrachloride	56-23-5	< 2.1	U	5.1	2.1	ug/Kg
Bromodichloromethane	75-27-4	< 0.81	U	5.1	0.81	ug/Kg
1,2-Dichloropropane	78-87-5	< 0.81	U	5.1	0.81	ug/Kg
cis-1,3-Dichloropropene	10061-01-5	< 0.91	U	5.1	0.91	ug/Kg
Trichloroethene	79-01-6	< 1.0	U	5.1	1.0	ug/Kg
Dibromochloromethane	124-48-1	< 0.91	U	5.1	0.91	ug/Kg
1,1,2-Trichloroethane	79-00-5	< 1.1	U	5.1	1.1	ug/Kg
Benzene	71-43-2	< 1.0	U	5.1	1.0	ug/Kg
t-1,3-Dichloropropene	10061-02-6	< 1.0	U	5.1	1.0	ug/Kg
Bromoform	75-25-2	< 1.1	U	5.1	1.1	ug/Kg
4-Methyl-2-Pentanone	108-10-1	< 4.0	U	5.1	4.0	ug/Kg
2-Hexanone	591-78-6	< 6.1	U	5.1	6.1	ug/Kg
Tetrachloroethene	127-18-4	< 1.2	U	5.1	1.2	ug/Kg
1,1,2,2-Tetrachloroethane	79-34-5	< 1.0	U	5.1	1.0	ug/Kg
T e	108-88-3	< 1.1	U	5.1	1.1	ug/Kg
Chlorobenzene	108-90-7	< 1.1	U	5.1	1.1	ug/Kg
Ethyl Benzene	100-41-4	< 1.0	U	5.1	1.0	ug/Kg
Styrene	100-42-5	< 1.4	U	5.1	1.4	ug/Kg
m/p-Xylenes	136777-61-2	< 2.8	U	5.1	2.8	ug/Kg

Volatiles

SW-846

SDG No.: P3097

Client: MAC Consultants. Inc.

Sample ID: P3097-05 — Client ID: BS-74-8

Date Collected: 6/19/02 — Date Received: 6/21/02
Date Analyzed: 6/27/02 — Matrix: SOIL
File ID: VA062624.D — Analytical Run ID: VA061202
Dilution: 1 — Instrument ID: MSVOAA
Analytical Method: 8260 — Associated Blank: VBA0626S3
Sample Wt/Vol: 5.0 Units: g — Soil Extract Vol:
Soil Aliquot Vol: — % Moisture: 1

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
o-Xylene	95-47-6	< 1.1	U	5.1	1.1	ug/Kg
SURROGATES						
1,2-Dichloroethane-d4	79-00-5	43.25	87 %	70 - 121		SPK: 50
Toluene-d8	2037-26-5	51.2	102 %	81 - 117		SPK: 50
4-Bromofluorobenzene	460-00-4	40.15	80 %	74 - 121		SPK: 50
Dibromofluoromethane		47.72	95 %	80 - 120		SPK: 50
INTERNAL STANDARDS						
Pentafluorobenzene	363-72-4	2823505	6.07			
1,4-Difluorobenzene	540-36-3	2935344	7.85			
obenzene-d5	3114-55-4	2315317	14.06			
1,4-Dichlorobenzene-d4	3855-82-1	1414400	19.57			
TENTITIVE IDENTIFIED COMPOUNDS						
Octane, 2,3,7-trimethyl-	62016346	6.6	J	24.59		ug/kg
Tridecane	629505	7.2	J	25.38		ug/kg
Dodecane, 2,6,10-trimethyl-	3891983	6.0	J	27.08		ug/kg
Eicosane	112958	11	J	27.73		ug/kg
Heptadecane, 2,6,10,14-tetramethy	18344371	6.0	J	28.96		ug/kg

Volatiles

SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID:	P3097-06	Client ID:	BS-78-12
Date Collected:	6/19/02	Date Received:	6/21/02
Date Analyzed:	6/27/02	Matrix:	SOIL
File ID:	VA062626.D	Analytical Run ID:	VA061202
Dilution:	1	Instrument ID:	MSVOAA
Analytical Method:	8260	Associated Blank:	VBA0626S3
Sample Wt/Vol:	5.0 Units: g	Soil Extract Vol:	
Soil Aliquot Vol:		% Moisture:	6

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
TARGETS						
Chloromethane	74-87-3	< 1.8	U	5.3	1.8	ug/Kg
Bromomethane	74-83-9	< 1.1	U	5.3	1.1	ug/Kg
Vinyl chloride	75-01-4	< 1.1	U	5.3	1.1	ug/Kg
Chloroethane	75-00-3	< 1.4	U	5.3	1.4	ug/Kg
Methylene Chloride	75-09-2	< 1.4	U	5.3	1.4	ug/Kg
Acetone	67-64-1	< 3.7	U	5.3	3.7	ug/Kg
Carbon disulfide	75-15-0	< 1.4	U	5.3	1.4	ug/Kg
1,1-Dichloroethene	75-35-4	< 1.2	U	5.3	1.2	ug/Kg
[illegible]ichloroethane	75-34-3	< 0.96	U	5.3	0.96	ug/Kg
trans-1,2-Dichloroethene	156-60-5	< 1.2	U	5.3	1.2	ug/Kg
cis-1,2-Dichloroethene	156-59-2	< 0.96	U	5.3	0.96	ug/Kg
Chloroform	67-66-3	< 1.1	U	5.3	1.1	ug/Kg
1,2-Dichloroethane	107-06-2	< 1.2	U	5.3	1.2	ug/Kg
2-Butanone	78-93-3	< 5.7	U	5.3	5.7	ug/Kg
1,1,1-Trichloroethane	71-55-6	< 1.1	U	5.3	1.1	ug/Kg
Carbon Tetrachloride	56-23-5	< 2.2	U	5.3	2.2	ug/Kg
Bromodichloromethane	75-27-4	< 0.85	U	5.3	0.85	ug/Kg
1,2-Dichloropropane	78-87-5	< 0.85	U	5.3	0.85	ug/Kg
cis-1,3-Dichloropropene	10061-01-5	< 0.96	U	5.3	0.96	ug/Kg
Trichloroethene	79-01-6	< 1.1	U	5.3	1.1	ug/Kg
Dibromochloromethane	124-48-1	< 0.96	U	5.3	0.96	ug/Kg
1,1,2-Trichloroethane	79-00-5	< 1.2	U	5.3	1.2	ug/Kg
Benzene	71-43-2	< 1.1	U	5.3	1.1	ug/Kg
t-1,3-Dichloropropene	10061-02-6	< 1.1	U	5.3	1.1	ug/Kg
Bromoform	75-25-2	< 1.2	U	5.3	1.2	ug/Kg
4-Methyl-2-Pentanone	108-10-1	< 4.3	U	5.3	4.3	ug/Kg
2-Hexanone	591-78-6	< 6.4	U	5.3	6.4	ug/Kg
Tetrachloroethene	127-18-4	< 1.3	U	5.3	1.3	ug/Kg
1,1,2,2-Tetrachloroethane	79-34-5	< 1.1	U	5.3	1.1	ug/Kg
T[illegible]ne	108-88-3	< 1.2	U	5.3	1.2	ug/Kg
C[illegible]robenzene	108-90-7	< 1.2	U	5.3	1.2	ug/Kg
Ethyl Benzene	100-41-4	< 1.1	U	5.3	1.1	ug/Kg
Styrene	100-42-5	< 1.5	U	5.3	1.5	ug/Kg
m/p-Xylenes	136777-61-2	< 3.0	U	5.3	3.0	ug/Kg

07/01
SG

Volatiles

SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID: P3097-06 Client ID: BS-78-12

Date Collected: 6/19/02 Date Received: 6/21/02
Date Analyzed: 6/27/02 Matrix: SOIL
File ID: VA062626.D Analytical Run ID: VA061202
Dilution: 1 Instrument ID: MSVOAA
Analytical Method: 8260 Associated Blank: VBA0626S3
Sample Wt/Vol: 5.0 Units: g Soil Extract Vol:
Soil Aliquot Vol: % Moisture: 6

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
o-Xylene	95-47-6	< 1.2	U	5.5	1.2	ug/Kg
SURROGATES						
1,2-Dichloroethane-d4	79-00-5	44.35	89 %	70 - 121		SPK: 50
Toluene-d8	2037-26-5	49.21	98 %	81 - 117		SPK: 50
4-Bromofluorobenzene	460-00-4	36.85	74 %	74 - 121		SPK: 50
Dibromofluoromethane		49.94	100 %	80 - 120		SPK: 50
INTERNAL STANDARDS						
Pentafluorobenzene	363-72-4	3125595	6.10			
1,4-Difluorobenzene	540-36-3	3318740	7.87			
[illegible]obenzene-d5	3114-55-4	2702719	14.12			
1,4-Dichlorobenzene-d4	3855-82-1	1540669	19.63			

Chemtech Consulting Group

Volatiles

SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID:	P3097-07	Client ID:	BS-80-4
Date Collected:	6/19/02	Date Received:	6/21/02
Date Analyzed:	6/27/02	Matrix:	SOIL
File ID:	VA062625.D	Analytical Run ID:	VA061202
Dilution:	1	Instrument ID:	MSVOAA
Analytical Method:	8260	Associated Blank:	VBA062683
Sample Wt/Vol:	5.0 Units: g	Soil Extract Vol:	
Soil Aliquot Vol:		% Moisture:	8

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
TARGETS						
Chloromethane	74-87-3	< 1.8	U	5.4	1.8	ug/Kg
Bromomethane	74-83-9	< 1.1	U	5.4	1.1	ug/Kg
Vinyl chloride	75-01-4	< 1.1	U	5.4	1.1	ug/Kg
Chloroethane	75-00-3	< 1.4	U	5.4	1.4	ug/Kg
Methylene Chloride	75-09-2	< 1.4	U	5.4	1.4	ug/Kg
Acetone	67-64-1	< 3.8	U	5.4	3.8	ug/Kg
Carbon disulfide	75-15-0	< 1.4	U	5.4	1.4	ug/Kg
1,1-Dichloroethene	75-35-4	< 1.2	U	5.4	1.2	ug/Kg
ichloroethane	75-34-3	< 0.98	U	5.4	0.98	ug/Kg
trans-1,2-Dichloroethene	156-60-5	< 1.2	U	5.4	1.2	ug/Kg
cis-1,2-Dichloroethene	156-59-2	< 0.98	U	5.4	0.98	ug/Kg
Chloroform	67-66-3	< 1.1	U	5.4	1.1	ug/Kg
1,2-Dichloroethane	107-06-2	< 1.2	U	5.4	1.2	ug/Kg
2-Butanone	78-93-3	< 5.9	U	5.4	5.9	ug/Kg
1,1,1-Trichloroethane	71-55-6	< 1.1	U	5.4	1.1	ug/Kg
Carbon Tetrachloride	56-23-5	< 2.3	U	5.4	2.3	ug/Kg
Bromodichloromethane	75-27-4	< 0.87	U	5.4	0.87	ug/Kg
1,2-Dichloropropane	78-87-5	< 0.87	U	5.4	0.87	ug/Kg
cis-1,3-Dichloropropene	10061-01-5	< 0.98	U	5.4	0.98	ug/Kg
Trichloroethene	79-01-6	2.0	J	5.4	1.1	ug/Kg
Dibromochloromethane	124-48-1	< 0.98	U	5.4	0.98	ug/Kg
1,1,2-Trichloroethane	79-00-5	< 1.2	U	5.4	1.2	ug/Kg
Benzene	71-43-2	< 1.1	U	5.4	1.1	ug/Kg
t-1,3-Dichloropropene	10061-02-6	< 1.1	U	5.4	1.1	ug/Kg
Bromoform	75-25-2	< 1.2	U	5.4	1.2	ug/Kg
4-Methyl-2-Pentanone	108-10-1	< 4.3	U	5.4	4.3	ug/Kg
2-Hexanone	591-78-6	< 6.5	U	5.4	6.5	ug/Kg
Tetrachloroethene	127-18-4	< 1.3	U	5.4	1.3	ug/Kg
1,1,2,2-Tetrachloroethane	79-34-5	< 1.1	U	5.4	1.1	ug/Kg
T e	108-88-3	< 1.2	U	5.4	1.2	ug/Kg
Ch obenzene	108-90-7	< 1.2	U	5.4	1.2	ug/Kg
Ethyl Benzene	100-41-4	< 1.1	U	5.4	1.1	ug/Kg
Styrene	100-42-5	< 1.5	U	5.4	1.5	ug/Kg
m/p-Xylenes	136777-61-2	< 3.0	U	5.4	3.0	ug/Kg

Volatiles
SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID:	P3097-07	Client ID:	BS-80-4
Date Collected:	6/19/02	Date Received:	6/21/02
Date Analyzed:	6/27/02	Matrix:	SOIL
File ID:	VA062625.D	Analytical Run ID:	VA061202
Dilution:	1	Instrument ID:	MSVOAA
Analytical Method:	8260	Associated Blank:	VBA0626S3
Sample Wt/Vol:	5.0 Units: g	Soil Extract Vol:	
Soil Aliquot Vol:		% Moisture:	8

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
o-Xylene	95-47-6	< 1.2	U	5.4	1.2	ug/Kg
SURROGATES						
1,2-Dichloroethane-d4	79-00-5	45.45	91 %	70 - 121		SPK: 50
Toluene-d8	2037-26-5	51.77	104 %	81 - 117		SPK: 50
4-Bromofluorobenzene	460-00-4	36.65	73 %	74 - 121		SPK: 50
Dibromofluoromethane		50.81	102 %	80 - 120		SPK: 50
INTERNAL STANDARDS						
Pentafluorobenzene	363-72-4	2480334	6.07			
1,4-Difluorobenzene	540-36-3	2653396	7.85			
obenzene-d5	3114-55-4	2084394	14.06			
1,4-Dichlorobenzene-d4	3855-82-1	1169085	19.57			

Volatiles

SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID: P3097-08 Client ID: BS-84-8

Date Collected: 6/19/02 Date Received: 6/21/02
Date Analyzed: 6/27/02 Matrix: SOIL
File ID: VA062704.D Analytical Run ID: VA061202
Dilution: 1 Instrument ID: MSVOAA
Analytical Method: 8260 Associated Blank: VBA0627S1
Sample Wt/Vol: 5.0 Units: g Soil Extract Vol:
Soil Aliquot Vol: % Moisture: 11

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
TARGETS						
Chloromethane	74-87-3	< 1.9	U	5.6	1.9	ug/Kg
Bromomethane	74-83-9	< 1.1	U	5.6	1.1	ug/Kg
Vinyl chloride	75-01-4	< 1.1	U	5.6	1.1	ug/Kg
Chloroethane	75-00-3	< 1.5	U	5.6	1.5	ug/Kg
Methylene Chloride	75-09-2	< 1.5	U	5.6	1.5	ug/Kg
Acetone	67-64-1	< 3.9	U	5.6	3.9	ug/Kg
Carbon disulfide	75-15-0	< 1.5	U	5.6	1.5	ug/Kg
1,1-Dichloroethene	75-35-4	< 1.2	U	5.6	1.2	ug/Kg
[illegible]ichloroethane	75-34-3	< 1.0	U	5.6	1.0	ug/Kg
trans-1,2-Dichloroethene	156-60-5	< 1.2	U	5.6	1.2	ug/Kg
cis-1,2-Dichloroethene	156-59-2	< 1.0	U	5.6	1.0	ug/Kg
Chloroform	67-66-3	< 1.1	U	5.6	1.1	ug/Kg
1,2-Dichloroethane	107-06-2	< 1.2	U	5.6	1.2	ug/Kg
2-Butanone	78-93-3	< 6.1	U	5.6	6.1	ug/Kg
1,1,1-Trichloroethane	71-55-6	< 1.1	U	5.6	1.1	ug/Kg
Carbon Tetrachloride	56-23-5	< 2.4	U	5.6	2.4	ug/Kg
Bromodichloromethane	75-27-4	< 0.90	U	5.6	0.90	ug/Kg
1,2-Dichloropropane	78-87-5	< 0.90	U	5.6	0.90	ug/Kg
cis-1,3-Dichloropropene	10061-01-5	< 1.0	U	5.6	1.0	ug/Kg
Trichloroethene	79-01-6	< 1.1	U	5.6	1.1	ug/Kg
Dibromochloromethane	124-48-1	< 1.0	U	5.6	1.0	ug/Kg
1,1,2-Trichloroethane	79-00-5	< 1.2	U	5.6	1.2	ug/Kg
Benzene	71-43-2	< 1.1	U	5.6	1.1	ug/Kg
t-1,3-Dichloropropene	10061-02-6	< 1.1	U	5.6	1.1	ug/Kg
Bromoform	75-25-2	< 1.2	U	5.6	1.2	ug/Kg
4-Methyl-2-Pentanone	108-10-1	< 4.5	U	5.6	4.5	ug/Kg
2-Hexanone	591-78-6	< 6.7	U	5.6	6.7	ug/Kg
Tetrachloroethene	127-18-4	< 1.3	U	5.6	1.3	ug/Kg
1,1,2,2-Tetrachloroethane	79-34-5	< 1.1	U	5.6	1.1	ug/Kg
To[illegible]ne	108-88-3	< 1.2	U	5.6	1.2	ug/Kg
C[illegible]obenzene	108-90-7	< 1.2	U	5.6	1.2	ug/Kg
Ethyl Benzene	100-41-4	< 1.1	U	5.6	1.1	ug/Kg
Styrene	100-42-5	< 1.6	U	5.6	1.6	ug/Kg
m/p-Xylenes	136777-61-2	< 3.1	U	5.6	3.1	ug/Kg

6/27/02

Volatiles

SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID:	P3097-08	Client ID:	BS-84-8
Date Collected:	6/19/02	Date Received:	6/21/02
Date Analyzed:	6/27/02	Matrix:	SOIL
File ID:	VA062704.D	Analytical Run ID:	VA061202
Dilution:	1	Instrument ID:	MSVOAA
Analytical Method:	8260	Associated Blank:	VBA0627S1
Sample Wt/Vol:	5.0 Units: g	Soil Extract Vol:	
Soil Aliquot Vol:		% Moisture:	11

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
o-Xylene	95-47-6	< 1.2	U	5.0	1.2	ug/Kg
SURROGATES						
1,2-Dichloroethane-d4	79-00-5	38.59	77 %	70 - 121		SPK: 50
Toluene-d8	2037-26-5	50.22	100 %	81 - 117		SPK: 50
4-Bromofluorobenzene	460-00-4	39.54	79 %	74 - 121		SPK: 50
Dibromofluoromethane		48.55	97 %	80 - 120		SPK: 50
INTERNAL STANDARDS						
Pentafluorobenzene	363-72-4	3034199	6.13			
1,4-Difluorobenzene	540-36-3	3155498	7.93			
obenzene-d5	3114-55-4	2602733	14.17			
1,4-Dichlorobenzene-d4	3855-82-1	1589529	19.68			

Volatiles
SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID:	P3097-09	Client ID:	BS-88-12
Date Collected:	6/19/02	Date Received:	6/21/02
Date Analyzed:	6/27/02	Matrix:	SOIL
File ID:	VA062705.D	Analytical Run ID:	VA061202
Dilution:	1	Instrument ID:	MSVOAA
Analytical Method:	8260	Associated Blank:	VBA0627S1
Sample Wt/Vol:	5.0 Units: g	Soil Extract Vol:	
Soil Aliquot Vol:		% Moisture:	17

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
TARGETS						
Chloromethane	74-87-3	< 2.0	U	6.0	2.0	ug/Kg
Bromomethane	74-83-9	< 1.2	U	6.0	1.2	ug/Kg
Vinyl chloride	75-01-4	< 1.2	U	6.0	1.2	ug/Kg
Chloroethane	75-00-3	< 1.6	U	6.0	1.6	ug/Kg
Methylene Chloride	75-09-2	< 1.6	U	6.0	1.6	ug/Kg
Acetone	67-64-1	< 4.2	U	6.0	4.2	ug/Kg
Carbon disulfide	75-15-0	< 1.6	U	6.0	1.6	ug/Kg
1,1-Dichloroethene	75-35-4	< 1.3	U	6.0	1.3	ug/Kg
ichloroethane	75-34-3	< 1.1	U	6.0	1.1	ug/Kg
trans-1,2-Dichloroethene	156-60-5	< 1.3	U	6.0	1.3	ug/Kg
cis-1,2-Dichloroethene	156-59-2	< 1.1	U	6.0	1.1	ug/Kg
Chloroform	67-66-3	< 1.2	U	6.0	1.2	ug/Kg
1,2-Dichloroethane	107-06-2	< 1.3	U	6.0	1.3	ug/Kg
2-Butanone	78-93-3	< 6.5	U	6.0	6.5	ug/Kg
1,1,1-Trichloroethane	71-55-6	< 1.2	U	6.0	1.2	ug/Kg
Carbon Tetrachloride	56-23-5	< 2.5	U	6.0	2.5	ug/Kg
Bromodichloromethane	75-27-4	< 0.96	U	6.0	0.96	ug/Kg
1,2-Dichloropropane	78-87-5	< 0.96	U	6.0	0.96	ug/Kg
cis-1,3-Dichloropropene	10061-01-5	< 1.1	U	6.0	1.1	ug/Kg
Trichloroethene	79-01-6	< 1.2	U	6.0	1.2	ug/Kg
Dibromochloromethane	124-48-1	< 1.1	U	6.0	1.1	ug/Kg
1,1,2-Trichloroethane	79-00-5	< 1.3	U	6.0	1.3	ug/Kg
Benzene	71-43-2	< 1.2	U	6.0	1.2	ug/Kg
t-1,3-Dichloropropene	10061-02-6	< 1.2	U	6.0	1.2	ug/Kg
Bromoform	75-25-2	< 1.3	U	6.0	1.3	ug/Kg
4-Methyl-2-Pentanone	108-10-1	< 4.8	U	6.0	4.8	ug/Kg
2-Hexanone	591-78-6	< 7.2	U	6.0	7.2	ug/Kg
Tetrachloroethene	127-18-4	< 1.4	U	6.0	1.4	ug/Kg
1,1,2,2-Tetrachloroethane	79-34-5	< 1.2	U	6.0	1.2	ug/Kg
T ne	108-88-3	< 1.3	U	6.0	1.3	ug/Kg
Chlorobenzene	108-90-7	< 1.3	U	6.0	1.3	ug/Kg
Ethyl Benzene	100-41-4	< 1.2	U	6.0	1.2	ug/Kg
Styrene	100-42-5	< 1.7	U	6.0	1.7	ug/Kg
m/p-Xylenes	136777-61-2	< 3.4	U	6.0	3.4	ug/Kg

Volatiles

SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID:	P3097-09	Client ID:	BS-88-12
Date Collected:	6/19/02	Date Received:	6/21/02
Date Analyzed:	6/27/02	Matrix:	SOIL
File ID:	VA062705.D	Analytical Run ID:	VA061202
Dilution:	1	Instrument ID:	MSVOAA
Analytical Method:	8260	Associated Blank:	VBA0627S1
Sample Wt/Vol:	5.0 Units: g	Soil Extract Vol:	
Soil Aliquot Vol:		% Moisture:	17

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
o-Xylene	95-47-6	< 1.5	U	6.0	1.5	ug/Kg
SURROGATES						
1,2-Dichloroethane-d4	79-00-5	41.76	84 %	70 - 121		SPK: 50
Toluene-d8	2037-26-5	50.28	101 %	81 - 117		SPK: 50
4-Bromofluorobenzene	460-00-4	39.4	79 %	74 - 121		SPK: 50
Dibromofluoromethane		48.77	98 %	80 - 120		SPK: 50
INTERNAL STANDARDS						
Pentafluorobenzene	363-72-4	3082702	6.13			
1,4-Difluorobenzene	540-36-3	3293365	7.93			
obenzene-d5	3114-55-4	2770148	14.14			
1,4-Dichlorobenzene-d4	3855-82-1	1680860	19.65			

Chemtech Consulting Group

Volatiles
SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID: P3097-10 Client ID: BS-90-4

Date Collected: 6/19/02 Date Received: 6/21/02
Date Analyzed: 6/27/02 Matrix: SOIL
File ID: VA062725.D Analytical Run ID: VA061202
Dilution: 1 Instrument ID: MSVOAA
Analytical Method: 8260 Associated Blank: VBA0627S2
Sample Wt/Vol: 5.0 Units: g Soil Extract Vol:
Soil Aliquot Vol: % Moisture: 4

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
TARGETS						
Chloromethane	74-87-3	< 1.8	U	5.2	1.8	ug/Kg
Bromomethane	74-83-9	< 1.0	U	5.2	1.0	ug/Kg
Vinyl chloride	75-01-4	< 1.0	U	5.2	1.0	ug/Kg
Chloroethane	75-00-3	< 1.4	U	5.2	1.4	ug/Kg
Methylene Chloride	75-09-2	< 1.4	U	5.2	1.4	ug/Kg
Acetone	67-64-1	< 3.6	U	5.2	3.6	ug/Kg
Carbon disulfide	75-15-0	< 1.4	U	5.2	1.4	ug/Kg
1,1-Dichloroethene	75-35-4	< 1.1	U	5.2	1.1	ug/Kg
ichloroethane	75-34-3	< 0.94	U	5.2	0.94	ug/Kg
trans-1,2-Dichloroethene	156-60-5	< 1.1	U	5.2	1.1	ug/Kg
cis-1,2-Dichloroethene	156-59-2	< 0.94	U	5.2	0.94	ug/Kg
Chloroform	67-66-3	< 1.0	U	5.2	1.0	ug/Kg
1,2-Dichloroethane	107-06-2	< 1.1	U	5.2	1.1	ug/Kg
2-Butanone	78-93-3	< 5.6	U	5.2	5.6	ug/Kg
1,1,1-Trichloroethane	71-55-6	< 1.0	U	5.2	1.0	ug/Kg
Carbon Tetrachloride	56-23-5	< 2.2	U	5.2	2.2	ug/Kg
Bromodichloromethane	75-27-4	< 0.83	U	5.2	0.83	ug/Kg
1,2-Dichloropropane	78-87-5	< 0.83	U	5.2	0.83	ug/Kg
cis-1,3-Dichloropropene	10061-01-5	< 0.94	U	5.2	0.94	ug/Kg
Trichloroethene	79-01-6	< 1.0	U	5.2	1.0	ug/Kg
Dibromochloromethane	124-48-1	< 0.94	U	5.2	0.94	ug/Kg
1,1,2-Trichloroethane	79-00-5	< 1.1	U	5.2	1.1	ug/Kg
Benzene	71-43-2	< 1.0	U	5.2	1.0	ug/Kg
t-1,3-Dichloropropene	10061-02-6	< 1.0	U	5.2	1.0	ug/Kg
Bromoform	75-25-2	< 1.1	U	5.2	1.1	ug/Kg
4-Methyl-2-Pentanone	108-10-1	< 4.2	U	5.2	4.2	ug/Kg
2-Hexanone	591-78-6	< 6.2	U	5.2	6.2	ug/Kg
Tetrachloroethene	127-18-4	< 1.2	U	5.2	1.2	ug/Kg
1,1,2,2-Tetrachloroethane	79-34-5	< 1.0	U	5.2	1.0	ug/Kg
T ne	108-88-3	< 1.1	U	5.2	1.1	ug/Kg
Chlorobenzene	108-90-7	< 1.1	U	5.2	1.1	ug/Kg
Ethyl Benzene	100-41-4	< 1.0	U	5.2	1.0	ug/Kg
Styrene	100-42-5	< 1.5	U	5.2	1.5	ug/Kg
m/p-Xylenes	136777-61-2	< 2.9	U	5.2	2.9	ug/Kg

07/01
SY

Volatiles

SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID:	P3097-10	Client ID:	BS-90-4
Date Collected:	6/19/02	Date Received:	6/21/02
Date Analyzed:	6/27/02	Matrix:	SOIL
File ID:	VA062725.D	Analytical Run ID:	VA061202
Dilution:	1	Instrument ID:	MSVOAA
Analytical Method:	8260	Associated Blank:	VBA0627S2
Sample Wt/Wol:	5.0 Units: g	Soil Extract Vol:	
Soil Aliquot Vol:		% Moisture:	4

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
o-Xylene	95-47-6	< 1.1	U	5.2	1.1	ug/Kg
SURROGATES						
1,2-Dichloroethane-d4	79-00-5	38.06	76 %	70 - 121		SPK: 50
Toluene-d8	2037-26-5	49.97	100 %	81 - 117		SPK: 50
4-Bromofluorobenzene	460-00-4	40.09	80 %	74 - 121		SPK: 50
Dibromofluoromethane		47.74	95 %	80 - 120		SPK: 50
INTERNAL STANDARDS						
Pentafluorobenzene	363-72-4	3502658	6.10			
1,4-Difluorobenzene	540-36-3	3885119	7.88			
obenzene-d5	3114-55-4	3352565	14.09			
1,4-Dichlorobenzene-d4	3855-82-1	1980548	19.57			

Chemtech Consulting Group

Volatiles
SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID: P3097-11 Client ID: BS-94-8

Date Collected: 6/19/02 Date Received: 6/21/02
Date Analyzed: 6/27/02 Matrix: SOIL
File ID: VA062707.D Analytical Run ID: VA061202
Dilution: 1 Instrument ID: MSVOAA
Analytical Method: 8260 Associated Blank: VBA0627S1
Sample Wt/Vol: 5.0 Units: g Soil Extract Vol:
Soil Aliquot Vol: % Moisture: 4

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
TARGETS						
Chloromethane	74-87-3	< 1.8	U	5.2	1.8	ug/Kg
Bromomethane	74-83-9	< 1.0	U	5.2	1.0	ug/Kg
Vinyl chloride	75-01-4	< 1.0	U	5.2	1.0	ug/Kg
Chloroethane	75-00-3	< 1.4	U	5.2	1.4	ug/Kg
Methylene Chloride	75-09-2	< 1.4	U	5.2	1.4	ug/Kg
Acetone	67-64-1	< 3.6	U	5.2	3.6	ug/Kg
Carbon disulfide	75-15-0	< 1.4	U	5.2	1.4	ug/Kg
1,1-Dichloroethene	75-35-4	< 1.1	U	5.2	1.1	ug/Kg
[illegible]ichloroethane	75-34-3	< 0.94	U	5.2	0.94	ug/Kg
trans-1,2-Dichloroethene	156-60-5	< 1.1	U	5.2	1.1	ug/Kg
cis-1,2-Dichloroethene	156-59-2	< 0.94	U	5.2	0.94	ug/Kg
Chloroform	67-66-3	< 1.0	U	5.2	1.0	ug/Kg
1,2-Dichloroethane	107-06-2	< 1.1	U	5.2	1.1	ug/Kg
2-Butanone	78-93-3	< 5.6	U	5.2	5.6	ug/Kg
1,1,1-Trichloroethane	71-55-6	< 1.0	U	5.2	1.0	ug/Kg
Carbon Tetrachloride	56-23-5	< 2.2	U	5.2	2.2	ug/Kg
Bromodichloromethane	75-27-4	< 0.83	U	5.2	0.83	ug/Kg
1,2-Dichloropropane	78-87-5	< 0.83	U	5.2	0.83	ug/Kg
cis-1,3-Dichloropropene	10061-01-5	< 0.94	U	5.2	0.94	ug/Kg
Trichloroethene	79-01-6	< 1.0	U	5.2	1.0	ug/Kg
Dibromochloromethane	124-48-1	< 0.94	U	5.2	0.94	ug/Kg
1,1,2-Trichloroethane	79-00-5	< 1.1	U	5.2	1.1	ug/Kg
Benzene	71-43-2	< 1.0	U	5.2	1.0	ug/Kg
t-1,3-Dichloropropene	10061-02-6	< 1.0	U	5.2	1.0	ug/Kg
Bromoform	75-25-2	< 1.1	U	5.2	1.1	ug/Kg
4-Methyl-2-Pentanone	108-10-1	< 4.2	U	5.2	4.2	ug/Kg
2-Hexanone	591-78-6	< 6.2	U	5.2	6.2	ug/Kg
Tetrachloroethene	127-18-4	< 1.2	U	5.2	1.2	ug/Kg
1,1,2,2-Tetrachloroethane	79-34-5	< 1.0	U	5.2	1.0	ug/Kg
T[illegible]e	108-88-3	< 1.1	U	5.2	1.1	ug/Kg
Ch[illegible]obenzene	108-90-7	< 1.1	U	5.2	1.1	ug/Kg
Ethyl Benzene	100-41-4	< 1.0	U	5.2	1.0	ug/Kg
Styrene	100-42-5	< 1.5	U	5.2	1.5	ug/Kg
m/p-Xylenes	13677[illegible]-61-2	< 2.9	U	5.2	2.9	ug/Kg

Volatiles

SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID:	P3097-11	Client ID:	BS-94-8
Date Collected:	6/19/02	Date Received:	6/21/02
Date Analyzed:	6/27/02	Matrix:	SOIL
File ID:	VA062707.D	Analytical Run ID:	VA061202
Dilution:	1	Instrument ID:	MSVOAA
Analytical Method:	8260	Associated Blank:	VBA0627S1
Sample Wt/Vol:	5.0 Units: g	Soil Extract Vol:	
Soil Aliquot Vol:		% Moisture:	4

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
o-Xylene	95-47-6	< 1.1	U	5.2	1.1	ug/Kg
SURROGATES						
1,2-Dichloroethane-d4	79-00-5	38.52	77 %	70 - 121		SPK: 50
Toluene-d8	2037-26-5	44.43	89 %	81 - 117		SPK: 50
4-Bromofluorobenzene	460-00-4	36.26	73 %	74 - 121		SPK: 50
Dibromofluoromethane		22.56	45 %	80 - 120		SPK: 50
INTERNAL STANDARDS						
Pentafluorobenzene	363-72-4	3146885	6.10			
1,4-Difluorobenzene	540-36-3	3332438	7.90			
obenzene-d5	3114-55-4	2738590	14.12			
1,4-Dichlorobenzene-d4	3855-82-1	1725040	19.65			

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Volatiles
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SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID:	P3097-12RE	Client ID:	BS-98-12RE
Date Collected:	6/19/02	Date Received:	6/21/02
Date Analyzed:	6/28/02	Matrix:	SOIL
File ID:	VA062807.D	Analytical Run ID:	VA061202
Dilution:	1	Instrument ID:	MSVOAA
Analytical Method:	8260	Associated Blank:	VBA0628S1
Sample Wt/Vol:	5.0 Units: g	Soil Extract Vol:	
Soil Aliquot Vol:		% Moisture:	4

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
TARGETS						
Chloromethane	74-87-3	< 1.8	U	5.2	1.8	ug/Kg
Bromomethane	74-83-9	< 1.0	U	5.2	1.0	ug/Kg
Vinyl chloride	75-01-4	< 1.0	U	5.2	1.0	ug/Kg
Chloroethane	75-00-3	< 1.4	U	5.2	1.4	ug/Kg
Methylene Chloride	75-09-2	< 1.4	U	5.2	1.4	ug/Kg
Acetone	67-64-1	< 3.6	U	5.2	3.6	ug/Kg
Carbon disulfide	75-15-0	< 1.4	U	5.2	1.4	ug/Kg
1,1-Dichloroethene	75-35-4	< 1.1	U	5.2	1.1	ug/Kg
ichloroethane	75-34-3	< 0.94	U	5.2	0.94	ug/Kg
trans-1,2-Dichloroethene	156-60-5	< 1.1	U	5.2	1.1	ug/Kg
cis-1,2-Dichloroethene	156-59-2	< 0.94	U	5.2	0.94	ug/Kg
Chloroform	67-66-3	< 1.0	U	5.2	1.0	ug/Kg
1,2-Dichloroethane	107-06-2	< 1.1	U	5.2	1.1	ug/Kg
2-Butanone	78-93-3	< 5.6	U	5.2	5.6	ug/Kg
1,1,1-Trichloroethane	71-55-6	< 1.0	U	5.2	1.0	ug/Kg
Carbon Tetrachloride	56-23-5	< 2.2	U	5.2	2.2	ug/Kg
Bromodichloromethane	75-27-4	< 0.83	U	5.2	0.83	ug/Kg
1,2-Dichloropropane	78-87-5	< 0.83	U	5.2	0.83	ug/Kg
cis-1,3-Dichloropropene	10061-01-5	< 0.94	U	5.2	0.94	ug/Kg
Trichloroethene	79-01-6	< 1.0	U	5.2	1.0	ug/Kg
Dibromochloromethane	124-48-1	< 0.94	U	5.2	0.94	ug/Kg
1,1,2-Trichloroethane	79-00-5	< 1.1	U	5.2	1.1	ug/Kg
Benzene	71-43-2	< 1.0	U	5.2	1.0	ug/Kg
t-1,3-Dichloropropene	10061-02-6	< 1.0	U	5.2	1.0	ug/Kg
Bromoform	75-25-2	< 1.1	U	5.2	1.1	ug/Kg
4-Methyl-2-Pentanone	108-10-1	< 4.2	U	5.2	4.2	ug/Kg
2-Hexanone	591-78-6	< 6.2	U	5.2	6.2	ug/Kg
Tetrachloroethene	127-18-4	< 1.2	U	5.2	1.2	ug/Kg
1,1,2,2-Tetrachloroethane	79-34-5	< 1.0	U	5.2	1.0	ug/Kg
T e	108-88-3	< 1.1	U	5.2	1.1	ug/Kg
Chlorobenzene	108-90-7	< 1.1	U	5.2	1.1	ug/Kg
Ethyl Benzene	100-41-4	< 1.0	U	5.2	1.0	ug/Kg
Styrene	100-42-5	< 1.5	U	5.2	1.5	ug/Kg
m/p-Xylenes	136777-61-2	< 2.9	U	5.2	2.9	ug/Kg

07/01

Volatiles

SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID:	P3097-12RE	Client ID:	BS-98-12RE
Date Collected:	6/19/02	Date Received:	6/21/02
Date Analyzed:	6/28/02	Matrix:	SOIL
File ID:	VA062807.D	Analytical Run ID:	VA061202
Dilution:	1	Instrument ID:	MSVOAA
Analytical Method:	8260	Associated Blank:	VBA0628S1
Sample Wt/Vol:	5.0 Units: g	Soil Extract Vol:	
Soil Aliquot Vol:		% Moisture:	4

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
o-Xylene	95-47-6	< 1.1	U	5.2	1.1	ug/Kg
SURROGATES						
1,2-Dichloroethane-d4	79-00-5	46.45	93 %	70 - 121		SPK: 50
Toluene-d8	2037-26-5	55.98	112 %	81 - 117		SPK: 50
4-Bromofluorobenzene	460-00-4	46.11	92 %	74 - 121		SPK: 50
Dibromofluoromethane		17.51	35 %	80 - 120		SPK: 50
INTERNAL STANDARDS						
Pentafluorobenzene	363-72-4	3021647	6.02			
1,4-Difluorobenzene	540-36-3	3138540	7.82			
Chlorobenzene-d5	3114-55-4	2787303	14.08			
1,4-Dichlorobenzene-d4	3855-82-1	1663526	19.61			
TENTITIVE IDENTIFIED COMPOUNDS						
Column Bleed	14629664	13	J	20.59		ug/kg

Volatiles

SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID:	P3097-13	Client ID:	BS-100-4
Date Collected:	6/19/02	Date Received:	6/21/02
Date Analyzed:	6/28/02	Matrix:	SOIL
File ID:	VA062808.D	Analytical Run ID:	VA061202
Dilution:	1	Instrument ID:	MSVOAA
Analytical Method:	8260	Associated Blank:	VBA0628S1
Sample Wt/Vol:	5.0 Units: g	Soil Extract Vol:	
Soil Aliquot Vol:		% Moisture:	8

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
TARGETS						
Chloromethane	74-87-3	< 1.8	U	5.4	1.8	ug/Kg
Bromomethane	74-83-9	< 1.1	U	5.4	1.1	ug/Kg
Vinyl chloride	75-01-4	< 1.1	U	5.4	1.1	ug/Kg
Chloroethane	75-00-3	< 1.4	U	5.4	1.4	ug/Kg
Methylene Chloride	75-09-2	< 1.4	U	5.4	1.4	ug/Kg
Acetone	67-64-1	< 3.8	U	5.4	3.8	ug/Kg
Carbon disulfide	75-15-0	< 1.4	U	5.4	1.4	ug/Kg
1,1-Dichloroethene	75-35-4	< 1.2	U	5.4	1.2	ug/Kg
)ichloroethane	75-34-3	< 0.98	U	5.4	0.98	ug/Kg
trans-1,2-Dichloroethene	156-60-5	< 1.2	U	5.4	1.2	ug/Kg
cis-1,2-Dichloroethene	156-59-2	< 0.98	U	5.4	0.98	ug/Kg
Chloroform	67-66-3	< 1.1	U	5.4	1.1	ug/Kg
1,2-Dichloroethane	107-06-2	< 1.2	U	5.4	1.2	ug/Kg
2-Butanone	78-93-3	< 5.9	U	5.4	5.9	ug/Kg
1,1,1-Trichloroethane	71-55-6	< 1.1	U	5.4	1.1	ug/Kg
Carbon Tetrachloride	56-23-5	< 2.3	U	5.4	2.3	ug/Kg
Bromodichloromethane	75-27-4	< 0.87	U	5.4	0.87	ug/Kg
1,2-Dichloropropane	78-87-5	< 0.87	U	5.4	0.87	ug/Kg
cis-1,3-Dichloropropene	10061-01-5	< 0.98	U	5.4	0.98	ug/Kg
Trichloroethene	79-01-6	< 1.1	U	5.4	1.1	ug/Kg
Dibromochloromethane	124-48-1	< 0.98	U	5.4	0.98	ug/Kg
1,1,2-Trichloroethane	79-00-5	< 1.2	U	5.4	1.2	ug/Kg
Benzene	71-43-2	< 1.1	U	5.4	1.1	ug/Kg
t-1,3-Dichloropropene	10061-02-6	< 1.1	U	5.4	1.1	ug/Kg
Bromoform	75-25-2	< 1.2	U	5.4	1.2	ug/Kg
4-Methyl-2-Pentanone	108-10-1	< 4.3	U	5.4	4.3	ug/Kg
2-Hexanone	591-78-6	< 6.5	U	5.4	6.5	ug/Kg
Tetrachloroethene	127-18-4	< 1.3	U	5.4	1.3	ug/Kg
1,1,2,2-Tetrachloroethane	79-34-5	< 1.1	U	5.4	1.1	ug/Kg
T ie	108-88-3	< 1.2	U	5.4	1.2	ug/Kg
Chlorobenzene	108-90-7	< 1.2	U	5.4	1.2	ug/Kg
Ethyl Benzene	100-41-4	< 1.1	U	5.4	1.1	ug/Kg
Styrene	100-42-5	< 1.5	U	5.4	1.5	ug/Kg
m/p-Xylenes	136777-61-2	< 3.0	U	5.4	3.0	ug/Kg

Volatiles
SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID: P3097-13 Client ID: BS-100-4

Date Collected: 6/19/02 Date Received: 6/21/02
Date Analyzed: 6/28/02 Matrix: SOIL
File ID: VA062808.D Analytical Run ID: VA061202
Dilution: 1 Instrument ID: MSVOAA
Analytical Method: 8260 Associated Blank: VBA0628S1
Sample Wt/Vol: 5.0 Units: g Soil Extract Vol:
Soil Aliquot Vol: % Moisture: 8

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
o-Xylene	95-47-6	< 1.2	U	5.4	1.2	ug/Kg
SURROGATES						
1,2-Dichloroethane-d4	79-00-5	48.57	97 %	70 - 121		SPK: 50
Toluene-d8	2037-26-5	58.77	118 %	81 - 117		SPK: 50
4-Bromofluorobenzene	460-00-4	43.94	88 %	74 - 121		SPK: 50
Dibromofluoromethane		54.27	109 %	80 - 120		SPK: 50
INTERNAL STANDARDS						
Pentafluorobenzene	363-72-4	2776695	6.05			
1,4-Difluorobenzene	540-36-3	3201951	7.82			
obenzene-d5	3114-55-4	2700858	14.06			
1,4-Dichlorobenzene-d4	3855-82-1	1483918	19.60			
TENTITIVE IDENTIFIED COMPOUNDS						
Column Bleed	1000493	5.5	JB	20.61		ug/kg

Chemtech Consulting Group

Volatiles

SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID: P3097-14 Client ID: BS-104-8

Date Collected: 6/19/02 Date Received: 6/21/02
Date Analyzed: 6/28/02 Matrix: SOIL
File ID: VA062809.D Analytical Run ID: VA061202
Dilution: 1 Instrument ID: MSVOAA
Analytical Method: 8260 Associated Blank: VBA0628S1
Sample Wt/Vol: 5.0 Units: g Soil Extract Vol:
Soil Aliquot Vol: % Moisture: 9

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
TARGETS						
Chloromethane	74-87-3	< 1.9	U	5.5	1.9	ug/Kg
Bromomethane	74-83-9	< 1.1	U	5.5	1.1	ug/Kg
Vinyl chloride	75-01-4	< 1.1	U	5.5	1.1	ug/Kg
Chloroethane	75-00-3	< 1.4	U	5.5	1.4	ug/Kg
Methylene Chloride	75-09-2	< 1.4	U	5.5	1.4	ug/Kg
Acetone	67-64-1	< 3.8	U	5.5	3.8	ug/Kg
Carbon disulfide	75-15-0	< 1.4	U	5.5	1.4	ug/Kg
1,1-Dichloroethene	75-35-4	< 1.2	U	5.5	1.2	ug/Kg
[illegible]ichloroethane	75-34-3	< 0.99	U	5.5	0.99	ug/Kg
trans-1,2-Dichloroethene	156-60-5	< 1.2	U	5.5	1.2	ug/Kg
cis-1,2-Dichloroethene	156-59-2	< 0.99	U	5.5	0.99	ug/Kg
Chloroform	67-66-3	< 1.1	U	5.5	1.1	ug/Kg
1,2-Dichloroethane	107-06-2	< 1.2	U	5.5	1.2	ug/Kg
2-Butanone	78-93-3	< 5.9	U	5.5	5.9	ug/Kg
1,1,1-Trichloroethane	71-55-6	< 1.1	U	5.5	1.1	ug/Kg
Carbon Tetrachloride	56-23-5	< 2.3	U	5.5	2.3	ug/Kg
Bromodichloromethane	75-27-4	< 0.88	U	5.5	0.88	ug/Kg
1,2-Dichloropropane	78-87-5	< 0.88	U	5.5	0.88	ug/Kg
cis-1,3-Dichloropropene	10061-01-5	< 0.99	U	5.5	0.99	ug/Kg
Trichloroethene	79-01-6	< 1.1	U	5.5	1.1	ug/Kg
Dibromochloromethane	124-48-1	< 0.99	U	5.5	0.99	ug/Kg
1,1,2-Trichloroethane	79-00-5	< 1.2	U	5.5	1.2	ug/Kg
Benzene	71-43-2	< 1.1	U	5.5	1.1	ug/Kg
t-1,3-Dichloropropene	10061-02-6	< 1.1	U	5.5	1.1	ug/Kg
Bromoform	75-25-2	< 1.2	U	5.5	1.2	ug/Kg
4-Methyl-2-Pentanone	108-10-1	< 4.4	U	5.5	4.4	ug/Kg
2-Hexanone	591-78-6	< 6.6	U	5.5	6.6	ug/Kg
Tetrachloroethene	127-18-4	< 1.3	U	5.5	1.3	ug/Kg
1,1,2,2-Tetrachloroethane	79-34-5	< 1.1	U	5.5	1.1	ug/Kg
T[illegible]ne	108-88-3	< 1.2	U	5.5	1.2	ug/Kg
C[illegible]obenzene	108-90-7	< 1.2	U	5.5	1.2	ug/Kg
Ethyl Benzene	100-41-4	< 1.1	U	5.5	1.1	ug/Kg
Styrene	100-42-5	< 1.5	U	5.5	1.5	ug/Kg
m/p-Xylenes	136777-61-2	< 3.1	U	5.5	3.1	ug/Kg

7/1/02

Volatiles

SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID:	P3097-14	Client ID:	BS-104-8
Date Collected:	6/19/02	Date Received:	6/21/02
Date Analyzed:	6/28/02	Matrix:	SOIL
File ID:	VA062809.D	Analytical Run ID:	VA061202
Dilution:	1	Instrument ID:	MSVOAA
Analytical Method:	8260	Associated Blank:	VBA0628S1
Sample Wt/Vol:	5.0 Units: g	Soil Extract Vol:	
Soil Aliquot Vol:		% Moisture:	9

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
o-Xylene	95-47-6	< 1.2	U	5.5	1.2	ug/Kg
SURROGATES						
1,2-Dichloroethane-d4	79-00-5	47.42	95 %	70 - 121		SPK: 50
Toluene-d8	2037-26-5	55.9	112 %	81 - 117		SPK: 50
4-Bromofluorobenzene	460-00-4	40.27	81 %	74 - 121		SPK: 50
Dibromofluoromethane		55.03	110 %	80 - 120		SPK: 50
INTERNAL STANDARDS						
Pentafluorobenzene	363-72-4	2825862	6.05			
1,4-Difluorobenzene	540-36-3	3173766	7.82			
Chlorobenzene-d5	3114-55-4	2494425	14.08			
1,4-Dichlorobenzene-d4	3855-82-1	1408454	19.59			
TENTITIVE IDENTIFIED COMPOUNDS						
Column Bleed	14629664	22	J	20.60		ug/kg

Volatiles

SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID: P3097-15 Client ID: BS-108-12

Date Collected: 6/19/02 Date Received: 6/21/02
Date Analyzed: 6/28/02 Matrix: SOIL
File ID: VA062810.D Analytical Run ID: VA061202
Dilution: 1 Instrument ID: MSVOAA
Analytical Method: 8260 Associated Blank: VBA0628S1
Sample Wt/Vol: 5.0 Units: g Soil Extract Vol:
Soil Aliquot Vol: % Moisture: 8

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
TARGETS						
Chloromethane	74-87-3	< 1.8	U	5.4	1.8	ug/Kg
Bromomethane	74-83-9	< 1.1	U	5.4	1.1	ug/Kg
Vinyl chloride	75-01-4	< 1.1	U	5.4	1.1	ug/Kg
Chloroethane	75-00-3	< 1.4	U	5.4	1.4	ug/Kg
Methylene Chloride	75-09-2	< 1.4	U	5.4	1.4	ug/Kg
Acetone	67-64-1	< 3.8	U	5.4	3.8	ug/Kg
Carbon disulfide	75-15-0	< 1.4	U	5.4	1.4	ug/Kg
1,1-Dichloroethene	75-35-4	< 1.2	U	5.4	1.2	ug/Kg
[illegible]ichloroethane	75-34-3	< 0.98	U	5.4	0.98	ug/Kg
trans-1,2-Dichloroethene	156-60-5	< 1.2	U	5.4	1.2	ug/Kg
cis-1,2-Dichloroethene	156-59-2	< 0.98	U	5.4	0.98	ug/Kg
Chloroform	67-66-3	< 1.1	U	5.4	1.1	ug/Kg
1,2-Dichloroethane	107-06-2	< 1.2	U	5.4	1.2	ug/Kg
2-Butanone	78-93-3	< 5.9	U	5.4	5.9	ug/Kg
1,1,1-Trichloroethane	71-55-6	< 1.1	U	5.4	1.1	ug/Kg
Carbon Tetrachloride	56-23-5	< 2.3	U	5.4	2.3	ug/Kg
Bromodichloromethane	75-27-4	< 0.87	U	5.4	0.87	ug/Kg
1,2-Dichloropropane	78-87-5	< 0.87	U	5.4	0.87	ug/Kg
cis-1,3-Dichloropropene	10061-01-5	< 0.98	U	5.4	0.98	ug/Kg
Trichloroethene	79-01-6	1.8	J	5.4	1.1	ug/Kg
Dibromochloromethane	124-48-1	< 0.98	U	5.4	0.98	ug/Kg
1,1,2-Trichloroethane	79-00-5	< 1.2	U	5.4	1.2	ug/Kg
Benzene	71-43-2	< 1.1	U	5.4	1.1	ug/Kg
t-1,3-Dichloropropene	10061-02-6	< 1.1	U	5.4	1.1	ug/Kg
Bromoform	75-25-2	< 1.2	U	5.4	1.2	ug/Kg
4-Methyl-2-Pentanone	108-10-1	< 4.3	U	5.4	4.3	ug/Kg
2-Hexanone	591-78-6	< 6.5	U	5.4	6.5	ug/Kg
Tetrachloroethene	127-18-4	< 1.3	U	5.4	1.3	ug/Kg
1,1,2,2-Tetrachloroethane	79-34-5	< 1.1	U	5.4	1.1	ug/Kg
T[illegible]e	108-88-3	< 1.2	U	5.4	1.2	ug/Kg
Chlorobenzene	108-90-7	< 1.2	U	5.4	1.2	ug/Kg
Ethyl Benzene	100-41-4	< 1.1	U	5.4	1.1	ug/Kg
Styrene	100-42-5	< 1.5	U	5.4	1.5	ug/Kg
m/p-Xylenes	136777-61-2	< 3.0	U	5.4	3.0	ug/Kg

07/01

Volatiles

SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID:	P3097-15	Client ID:	BS-108-12
Date Collected:	6/19/02	Date Received:	6/21/02
Date Analyzed:	6/28/02	Matrix:	SOIL
File ID:	VA062810.D	Analytical Run ID:	VA061202
Dilution:	1	Instrument ID:	MSVOAA
Analytical Method:	8260	Associated Blank:	VBA0628S1
Sample Wt/Vol:	5.0 Units: g	Soil Extract Vol:	
Soil Aliquot Vol:		% Moisture:	8

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
o-Xylene	95-47-6	< 1.2	U	5.4	1.2	ug/Kg
SURROGATES						
1,2-Dichloroethane-d4	79-00-5	48.76	98 %	70 - 121		SPK: 50
Toluene-d8	2037-26-5	56.25	113 %	81 - 117		SPK: 50
4-Bromofluorobenzene	460-00-4	41.2	82 %	74 - 121		SPK: 50
Dibromofluoromethane		55.32	111 %	80 - 120		SPK: 50
INTERNAL STANDARDS						
Pentafluorobenzene	363-72-4	2693587	6.02			
1,4-Difluorobenzene	540-36-3	3062609	7.85			
Chlorobenzene-d5	3114-55-4	2409374	14.09			
1,4-Dichlorobenzene-d4	3855-82-1	1358116	19.62			
TENTITIVE IDENTIFIED COMPOUNDS						
Column Bleed	14629664	18	J	20.66		ug/kg

Chemtech Consulting Group

Volatiles
SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID: P3097-16 Client ID: BS-110-4

Date Collected: 6/19/02 Date Received: 6/21/02
Date Analyzed: 6/28/02 Matrix: SOIL
File ID: VA062811.D Analytical Run ID: VA061202
Dilution: 1 Instrument ID: MSVOAA
Analytical Method: 8260 Associated Blank: VBA0628S1
Sample Wt/Vol: 5.0 Units: g Soil Extract Vol:
Soil Aliquot Vol: % Moisture: 4

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
TARGETS						
Chloromethane	74-87-3	< 1.8	U	5.2	1.8	ug/Kg
Bromomethane	74-83-9	< 1.0	U	5.2	1.0	ug/Kg
Vinyl chloride	75-01-4	< 1.0	U	5.2	1.0	ug/Kg
Chloroethane	75-00-3	< 1.4	U	5.2	1.4	ug/Kg
Methylene Chloride	75-09-2	< 1.4	U	5.2	1.4	ug/Kg
Acetone	67-64-1	< 3.6	U	5.2	3.6	ug/Kg
Carbon disulfide	75-15-0	< 1.4	U	5.2	1.4	ug/Kg
1,1-Dichloroethene	75-35-4	< 1.1	U	5.2	1.1	ug/Kg
ichloroethane	75-34-3	< 0.94	U	5.2	0.94	ug/Kg
trans-1,2-Dichloroethene	156-60-5	< 1.1	U	5.2	1.1	ug/Kg
cis-1,2-Dichloroethene	156-59-2	< 0.94	U	5.2	0.94	ug/Kg
Chloroform	67-66-3	< 1.0	U	5.2	1.0	ug/Kg
1,2-Dichloroethane	107-06-2	< 1.1	U	5.2	1.1	ug/Kg
2-Butanone	78-93-3	< 5.6	U	5.2	5.6	ug/Kg
1,1,1-Trichloroethane	71-55-6	< 1.0	U	5.2	1.0	ug/Kg
Carbon Tetrachloride	56-23-5	< 2.2	U	5.2	2.2	ug/Kg
Bromodichloromethane	75-27-4	< 0.83	U	5.2	0.83	ug/Kg
1,2-Dichloropropane	78-87-5	< 0.83	U	5.2	0.83	ug/Kg
cis-1,3-Dichloropropene	10061-01-5	< 0.94	U	5.2	0.94	ug/Kg
Trichloroethene	79-01-6	< 1.0	U	5.2	1.0	ug/Kg
Dibromochloromethane	124-48-1	< 0.94	U	5.2	0.94	ug/Kg
1,1,2-Trichloroethane	79-00-5	< 1.1	U	5.2	1.1	ug/Kg
Benzene	71-43-2	< 1.0	U	5.2	1.0	ug/Kg
t-1,3-Dichloropropene	10061-02-6	< 1.0	U	5.2	1.0	ug/Kg
Bromoform	75-25-2	< 1.1	U	5.2	1.1	ug/Kg
4-Methyl-2-Pentanone	108-10-1	< 4.2	U	5.2	4.2	ug/Kg
2-Hexanone	591-78-6	< 6.2	U	5.2	6.2	ug/Kg
Tetrachloroethene	127-18-4	< 1.2	U	5.2	1.2	ug/Kg
1,1,2,2-Tetrachloroethane	79-34-5	< 1.0	U	5.2	1.0	ug/Kg
T e	108-88-3	< 1.1	U	5.2	1.1	ug/Kg
Chlorobenzene	108-90-7	< 1.1	U	5.2	1.1	ug/Kg
Ethyl Benzene	100-41-4	< 1.0	U	5.2	1.0	ug/Kg
Styrene	100-42-5	< 1.5	U	5.2	1.5	ug/Kg
m/p-Xylenes	136777-61-2	< 2.9	U	5.2	2.9	ug/Kg

Chemtech Consulting Group

Volatiles

SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID:	P3097-16	Client ID:	BS-110-4
Date Collected:	6/19/02	Date Received:	6/21/02
Date Analyzed:	6/28/02	Matrix:	SOIL
File ID:	VA062811.D	Analytical Run ID:	VA061202
Dilution:	1	Instrument ID:	MSVOAA
Analytical Method:	8260	Associated Blank:	VBA0628S1
Sample Wt/Vol:	5.0 Units: g	Soil Extract Vol:	
Soil Aliquot Vol:		% Moisture:	4

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
o-Xylene	95-47-6	< 1.1	U	5.2	1.1	ug/Kg
SURROGATES						
1,2-Dichloroethane-d4	79-00-5	51.71	103 %	70 - 121		SPK: 50
Toluene-d8	2037-26-5	58.9	115 %	81 - 117		SPK: 50
4-Bromofluorobenzene	460-00-4	43.13	86 %	74 - 121		SPK: 50
Dibromofluoromethane		57.33	115 %	80 - 120		SPK: 50
INTERNAL STANDARDS						
Pentafluorobenzene	363-72-4	2734137	6.05			
1,4-Difluorobenzene	540-36-3	3078567	7.85			
Chlorobenzene-d5	3114-55-4	2432940	14.09			
1,4-Dichlorobenzene-d4	3855-82-1	1392726	19.62			
TENTITIVE IDENTIFIED COMPOUNDS						
Column Bleed	14629664	18	J	20.63		ug/Kg

Volatiles

SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID: P3097-17 Client ID: BS-114-8

Date Collected: 6/19/02 Date Received: 6/21/02
Date Analyzed: 6/28/02 Matrix: SOIL
File ID: VA062812.D Analytical Run ID: VA061202
Dilution: 1 Instrument ID: MSVOAA
Analytical Method: 8260 Associated Blank: VBA0628S1
Sample Wt/Vol: 5.0 Units: g Soil Extract Vol:
Soil Aliquot Vol: % Moisture: 11

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
TARGETS						
Chloromethane	74-87-3	< 1.9	U	5.6	1.9	ug/Kg
Bromomethane	74-83-9	< 1.1	U	5.6	1.1	ug/Kg
Vinyl chloride	75-01-4	< 1.1	U	5.6	1.1	ug/Kg
Chloroethane	75-00-3	< 1.5	U	5.6	1.5	ug/Kg
Methylene Chloride	75-09-2	< 1.5	U	5.6	1.5	ug/Kg
Acetone	67-64-1	< 3.9	U	5.6	3.9	ug/Kg
Carbon disulfide	75-15-0	< 1.5	U	5.6	1.5	ug/Kg
1,1-Dichloroethene	75-35-4	< 1.2	U	5.6	1.2	ug/Kg
ichloroethane	75-34-3	< 1.0	U	5.6	1.0	ug/Kg
trans-1,2-Dichloroethene	156-60-5	< 1.2	U	5.6	1.2	ug/Kg
cis-1,2-Dichloroethene	156-59-2	< 1.0	U	5.6	1.0	ug/Kg
Chloroform	67-66-3	< 1.1	U	5.6	1.1	ug/Kg
1,2-Dichloroethane	107-06-2	< 1.2	U	5.6	1.2	ug/Kg
2-Butanone	78-93-3	< 6.1	U	5.6	6.1	ug/Kg
1,1,1-Trichloroethane	71-55-6	< 1.1	U	5.6	1.1	ug/Kg
Carbon Tetrachloride	56-23-5	< 2.4	U	5.6	2.4	ug/Kg
Bromodichloromethane	75-27-4	< 0.90	U	5.6	0.90	ug/Kg
1,2-Dichloropropane	78-87-5	< 0.90	U	5.6	0.90	ug/Kg
cis-1,3-Dichloropropene	10061-01-5	< 1.0	U	5.6	1.0	ug/Kg
Trichloroethene	79-01-6	< 1.1	U	5.6	1.1	ug/Kg
Dibromochloromethane	124-48-1	< 1.0	U	5.6	1.0	ug/Kg
1,1,2-Trichloroethane	79-00-5	< 1.2	U	5.6	1.2	ug/Kg
Benzene	71-43-2	< 1.1	U	5.6	1.1	ug/Kg
t-1,3-Dichloropropene	10061-02-6	< 1.1	U	5.6	1.1	ug/Kg
Bromoform	75-25-2	< 1.2	U	5.6	1.2	ug/Kg
4-Methyl-2-Pentanone	108-10-1	< 4.5	U	5.6	4.5	ug/Kg
2-Hexanone	591-78-6	< 6.7	U	5.6	6.7	ug/Kg
Tetrachloroethene	127-18-4	< 1.3	U	5.6	1.3	ug/Kg
1,1,2,2-Tetrachloroethane	79-34-5	< 1.1	U	5.6	1.1	ug/Kg
T e	108-88-3	< 1.2	U	5.6	1.2	ug/Kg
Chlorobenzene	108-90-7	< 1.2	U	5.6	1.2	ug/Kg
Ethyl Benzene	100-41-4	< 1.1	U	5.6	1.1	ug/Kg
Styrene	100-42-5	< 1.6	U	5.6	1.6	ug/Kg
m/p-Xylenes	136777-61-2	< 3.1	U	5.6	3.1	ug/Kg

07/01

Volatiles

SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID:	P3097-17	Client ID:	BS-114-8
Date Collected:	6/19/02	Date Received:	6/21/02
Date Analyzed:	6/28/02	Matrix:	SOIL
File ID:	VA062812.D	Analytical Run ID:	VA061202
Dilution:	1	Instrument ID:	MSVOAA
Analytical Method:	8260	Associated Blank:	VBA0628S1
Sample Wt/Vol:	5.0 Units: g	Soil Extract Vol:	
Soil Aliquot Vol:		% Moisture:	11

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
o-Xylene	95-47-6	< 1.2	U	5.6	1.2	ug/Kg
SURROGATES						
1,2-Dichloroethane-d4	79-00-5	48.51	97 %	70 - 121		SPK: 50
Toluene-d8	2037-26-5	55.66	111 %	81 - 117		SPK: 50
4-Bromofluorobenzene	460-00-4	38.52	77 %	74 - 121		SPK: 50
Dibromofluoromethane		55.38	111 %	80 - 120		SPK: 50
INTERNAL STANDARDS						
Pentafluorobenzene	363-72-4	2555666	6.07			
1,4-Difluorobenzene	540-36-3	2876146	7.87			
obenzene-d5	3114-55-4	2290052	14.12			
1,4-Dichlorobenzene-d4	3855-82-1	1119325	19.62			

Chemtech Consulting Group

Volatiles

SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID:	P3097-18RE	Client ID:	BS-118-12RE
Date Collected:	6/19/02	Date Received:	6/21/02
Date Analyzed:	6/28/02	Matrix:	SOIL
File ID:	VA062813.D	Analytical Run ID:	VA061202
Dilution:	1	Instrument ID:	MSVOAA
Analytical Method:	8260	Associated Blank:	VBA0628S1
Sample Wt/Vol:	5.0 Units: g	Soil Extract Vol:	
Soil Aliquot Vol:		% Moisture:	14

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
TARGETS						
Chloromethane	74-87-3	< 2.0	U	5.8	2.0	ug/Kg
Bromomethane	74-83-9	< 1.2	U	5.8	1.2	ug/Kg
Vinyl chloride	75-01-4	< 1.2	U	5.8	1.2	ug/Kg
Chloroethane	75-00-3	< 1.5	U	5.8	1.5	ug/Kg
Methylene Chloride	75-09-2	< 1.5	U	5.8	1.5	ug/Kg
Acetone	67-64-1	< 4.1	U	5.8	4.1	ug/Kg
Carbon disulfide	75-15-0	< 1.5	U	5.8	1.5	ug/Kg
1,1-Dichloroethene	75-35-4	< 1.3	U	5.8	1.3	ug/Kg
ichloroethane	75-34-3	< 1.0	U	5.8	1.0	ug/Kg
trans-1,2-Dichloroethene	156-60-5	< 1.3	U	5.8	1.3	ug/Kg
cis-1,2-Dichloroethene	156-59-2	< 1.0	U	5.8	1.0	ug/Kg
Chloroform	67-66-3	< 1.2	U	5.8	1.2	ug/Kg
1,2-Dichloroethane	107-06-2	< 1.3	U	5.8	1.3	ug/Kg
2-Butanone	78-93-3	< 6.3	U	5.8	6.3	ug/Kg
1,1,1-Trichloroethane	71-55-6	< 1.2	U	5.8	1.2	ug/Kg
Carbon Tetrachloride	56-23-5	< 2.4	U	5.8	2.4	ug/Kg
Bromodichloromethane	75-27-4	< 0.93	U	5.8	0.93	ug/Kg
1,2-Dichloropropane	78-87-5	< 0.93	U	5.8	0.93	ug/Kg
cis-1,3-Dichloropropene	10061-01-5	< 1.0	U	5.8	1.0	ug/Kg
Trichloroethene	79-01-6	< 1.2	U	5.8	1.2	ug/Kg
Dibromochloromethane	124-48-1	< 1.0	U	5.8	1.0	ug/Kg
1,1,2-Trichloroethane	79-00-5	< 1.3	U	5.8	1.3	ug/Kg
Benzene	71-43-2	< 1.2	U	5.8	1.2	ug/Kg
t-1,3-Dichloropropene	10061-02-6	< 1.2	U	5.8	1.2	ug/Kg
Bromoform	75-25-2	< 1.3	U	5.8	1.3	ug/Kg
4-Methyl-2-Pentanone	108-10-1	< 4.7	U	5.8	4.7	ug/Kg
2-Hexanone	591-78-6	< 7.0	U	5.8	7.0	ug/Kg
Tetrachloroethene	127-18-4	< 1.4	U	5.8	1.4	ug/Kg
1,1,2,2-Tetrachloroethane	79-34-5	< 1.2	U	5.8	1.2	ug/Kg
T e	108-88-3	< 1.3	U	5.8	1.3	ug/Kg
Chlorobenzene	108-90-7	< 1.3	U	5.8	1.3	ug/Kg
Ethyl Benzene	100-41-4	< 1.2	U	5.8	1.2	ug/Kg
Styrene	100-42-5	< 1.6	U	5.8	1.6	ug/Kg
m/p-Xylenes	136777-61-2	< 3.3	U	5.8	3.3	ug/Kg

07/01

Volatiles

SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID:	P3097-18RE	Client ID:	BS-118-12RE
Date Collected:	6/19/02	Date Received:	6/21/02
Date Analyzed:	6/28/02	Matrix:	SOIL
File ID:	VA062813.D	Analytical Run ID:	VA061202
Dilution:	1	Instrument ID:	MSVOAA
Analytical Method:	8260	Associated Blank:	VBA0628S1
Sample Wt/Vol:	5.0 Units: g	Soil Extract Vol:	
Soil Aliquot Vol:		% Moisture:	14

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
o-Xylene	95-47-6	< 1.5	U	5.8	1.5	ug/Kg
SURROGATES						
1,2-Dichloroethane-d4	79-00-5	51.15	102 %	70 - 121		SPK: 50
Toluene-d8	2037-26-5	55.08	110 %	81 - 117		SPK: 50
4-Bromofluorobenzene	460-00-4	42.05	84 %	74 - 121		SPK: 50
Dibromofluoromethane		12.2	24 %	80 - 120		SPK: 50
INTERNAL STANDARDS						
Pentafluorobenzene	363-72-4	2408601	6.07			
1,4-Difluorobenzene	540-36-3	2768527	7.87			
Chlorobenzene-d5	3114-55-4	2221236	14.12			
1,4-Dichlorobenzene-d4	3855-82-1	1315404	19.62			
TENTITIVE IDENTIFIED COMPOUNDS						
Column Bleed	1000493	6.0	JB	20.63		ug/kg

Chemtech Consulting Group

Volatiles
SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID: P3097-19 Client ID: BS-120-4

Date Collected: 6/19/02 Date Received: 6/21/02
Date Analyzed: 6/28/02 Matrix: SOIL
File ID: VA062814.D Analytical Run ID: VA061202
Dilution: 1 Instrument ID: MSVOAA
Analytical Method: 8260 Associated Blank: VBA0628S1
Sample Wt/Vol: 5.0 Units: g Soil Extract Vol:
Soil Aliquot Vol: % Moisture: 5

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
TARGETS						
Chloromethane	74-87-3	< 1.8	U	5.3	1.8	ug/Kg
Bromomethane	74-83-9	< 1.1	U	5.3	1.1	ug/Kg
Vinyl chloride	75-01-4	< 1.1	U	5.3	1.1	ug/Kg
Chloroethane	75-00-3	< 1.4	U	5.3	1.4	ug/Kg
Methylene Chloride	75-09-2	< 1.4	U	5.3	1.4	ug/Kg
Acetone	67-64-1	< 3.7	U	5.3	3.7	ug/Kg
Carbon disulfide	75-15-0	< 1.4	U	5.3	1.4	ug/Kg
1,1-Dichloroethene	75-35-4	< 1.2	U	5.3	1.2	ug/Kg
ichloroethane	75-34-3	< 0.95	U	5.3	0.95	ug/Kg
trans-1,2-Dichloroethene	156-60-5	< 1.2	U	5.3	1.2	ug/Kg
cis-1,2-Dichloroethene	156-59-2	< 0.95	U	5.3	0.95	ug/Kg
Chloroform	67-66-3	< 1.1	U	5.3	1.1	ug/Kg
1,2-Dichloroethane	107-06-2	< 1.2	U	5.3	1.2	ug/Kg
2-Butanone	78-93-3	< 5.7	U	5.3	5.7	ug/Kg
1,1,1-Trichloroethane	71-55-6	< 1.1	U	5.3	1.1	ug/Kg
Carbon Tetrachloride	56-23-5	< 2.2	U	5.3	2.2	ug/Kg
Bromodichloromethane	75-27-4	< 0.84	U	5.3	0.84	ug/Kg
1,2-Dichloropropane	78-87-5	< 0.84	U	5.3	0.84	ug/Kg
cis-1,3-Dichloropropene	10061-01-5	< 0.95	U	5.3	0.95	ug/Kg
Trichloroethene	79-01-6	< 1.1	U	5.3	1.1	ug/Kg
Dibromochloromethane	124-48-1	< 0.95	U	5.3	0.95	ug/Kg
1,1,2-Trichloroethane	79-00-5	< 1.2	U	5.3	1.2	ug/Kg
Benzene	71-43-2	< 1.1	U	5.3	1.1	ug/Kg
t-1,3-Dichloropropene	10061-02-6	< 1.1	U	5.3	1.1	ug/Kg
Bromoform	75-25-2	< 1.2	U	5.3	1.2	ug/Kg
4-Methyl-2-Pentanone	108-10-1	< 4.2	U	5.3	4.2	ug/Kg
2-Hexanone	591-78-6	< 6.3	U	5.3	6.3	ug/Kg
Tetrachloroethene	127-18-4	< 1.3	U	5.3	1.3	ug/Kg
1,1,2,2-Tetrachloroethane	79-34-5	< 1.1	U	5.3	1.1	ug/Kg
T e	108-88-3	< 1.2	U	5.3	1.2	ug/Kg
Chlorobenzene	108-90-7	< 1.2	U	5.3	1.2	ug/Kg
Ethyl Benzene	100-41-4	< 1.1	U	5.3	1.1	ug/Kg
Styrene	100-42-5	< 1.5	U	5.3	1.5	ug/Kg
m/p-Xylenes	136777-61-2	< 2.9	U	5.3	2.9	ug/Kg

Chemtech Consulting Group

Volatiles
SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID:	P3097-19	Client ID:	BS-120-4
Date Collected:	6/19/02	Date Received:	6/21/02
Date Analyzed:	6/28/02	Matrix:	SOIL
File ID:	VA062814.D	Analytical Run ID:	VA061202
Dilution:	1	Instrument ID:	MSVOAA
Analytical Method:	8260	Associated Blank:	VBA0628S1
Sample Wt/Vol:	5.0 Units: g	Soil Extract Vol:	
Soil Aliquot Vol:		% Moisture:	5

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
o-Xylene	95-47-6	< 1.2	U	5.5	1.2	ug/Kg
SURROGATES						
1,2-Dichloroethane-d4	79-00-5	49.16	98 %	70 - 121		SPK: 50
Toluene-d8	2037-26-5	54.15	108 %	81 - 117		SPK: 50
4-Bromofluorobenzene	460-00-4	40	80 %	74 - 121		SPK: 50
Dibromofluoromethane		53.79	108 %	80 - 120		SPK: 50
INTERNAL STANDARDS						
Pentafluorobenzene	363-72-4	2455403	6.07			
1,4-Difluorobenzene	540-36-3	2787644	7.87			
obenzene-d5	3114-55-4	2191209	14.12			
1,4-Dichlorobenzene-d4	3855-82-1	1208756	19.65			
TENTITIVE IDENTIFIED COMPOUNDS						
Column Bleed	1000493	11	JB	20.63		ug/kg

Volatiles

SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID:	P3097-20	Client ID:	BS-124-8
Date Collected:	6/19/02	Date Received:	6/21/02
Date Analyzed:	6/27/02	Matrix:	SOIL
File ID:	VA062716.D	Analytical Run ID:	VA061202
Dilution:	1	Instrument ID:	MSVOAA
Analytical Method:	8260	Associated Blank:	VBA0627S1
Sample Wt/Vol:	5.0 Units: g	Soil Extract Vol:	
Soil Aliquot Vol:		% Moisture:	7

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
TARGETS						
Chloromethane	74-87-3	< 1.8	U	5.4	1.8	ug/Kg
Bromomethane	74-83-9	< 1.1	U	5.4	1.1	ug/Kg
Vinyl chloride	75-01-4	< 1.1	U	5.4	1.1	ug/Kg
Chloroethane	75-00-3	< 1.4	U	5.4	1.4	ug/Kg
Methylene Chloride	75-09-2	< 1.4	U	5.4	1.4	ug/Kg
Acetone	67-64-1	< 3.8	U	5.4	3.8	ug/Kg
Carbon disulfide	75-15-0	< 1.4	U	5.4	1.4	ug/Kg
1,1-Dichloroethene	75-35-4	< 1.2	U	5.4	1.2	ug/Kg
ichloroethane	75-34-3	< 0.97	U	5.4	0.97	ug/Kg
trans-1,2-Dichloroethene	156-60-5	< 1.2	U	5.4	1.2	ug/Kg
cis-1,2-Dichloroethene	156-59-2	< 0.97	U	5.4	0.97	ug/Kg
Chloroform	67-66-3	< 1.1	U	5.4	1.1	ug/Kg
1,2-Dichloroethane	107-06-2	< 1.2	U	5.4	1.2	ug/Kg
2-Butanone	78-93-3	< 5.8	U	5.4	5.8	ug/Kg
1,1,1-Trichloroethane	71-55-6	< 1.1	U	5.4	1.1	ug/Kg
Carbon Tetrachloride	56-23-5	< 2.3	U	5.4	2.3	ug/Kg
Bromodichloromethane	75-27-4	< 0.86	U	5.4	0.86	ug/Kg
1,2-Dichloropropane	78-87-5	< 0.86	U	5.4	0.86	ug/Kg
cis-1,3-Dichloropropene	10061-01-5	< 0.97	U	5.4	0.97	ug/Kg
Trichloroethene	79-01-6	< 1.1	U	5.4	1.1	ug/Kg
Dibromochloromethane	124-48-1	< 0.97	U	5.4	0.97	ug/Kg
1,1,2-Trichloroethane	79-00-5	< 1.2	U	5.4	1.2	ug/Kg
Benzene	71-43-2	< 1.1	U	5.4	1.1	ug/Kg
t-1,3-Dichloropropene	10061-02-6	< 1.1	U	5.4	1.1	ug/Kg
Bromoform	75-25-2	< 1.2	U	5.4	1.2	ug/Kg
4-Methyl-2-Pentanone	108-10-1	< 4.3	U	5.4	4.3	ug/Kg
2-Hexanone	591-78-6	< 6.5	U	5.4	6.5	ug/Kg
Tetrachloroethene	127-18-4	< 1.3	U	5.4	1.3	ug/Kg
1,1,2,2-Tetrachloroethane	79-34-5	< 1.1	U	5.4	1.1	ug/Kg
To e	108-88-3	< 1.2	U	5.4	1.2	ug/Kg
Chlorobenzene	108-90-7	< 1.2	U	5.4	1.2	ug/Kg
Ethyl Benzene	100-41-4	< 1.1	U	5.4	1.1	ug/Kg
Styrene	100-42-5	< 1.5	U	5.4	1.5	ug/Kg
m/p-Xylenes	136777-61-2	< 3.0	U	5.4	3.0	ug/Kg

Volatiles

SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID: P3097-20 Client ID: BS-124-8

Date Collected: 6/19/02 Date Received: 6/21/02
Date Analyzed: 6/27/02 Matrix: SOIL
File ID: VA062716.D Analytical Run ID: VA061202
Dilution: 1 Instrument ID: MSVOAA
Analytical Method: 8260 Associated Blank: VBA0627S1
Sample Wt/Vol: 5.0 Units: g Soil Extract Vol:
Soil Aliquot Vol: % Moisture: 7

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
o-Xylene	95-47-6	< 1.2	U	5.4	1.2	ug/Kg
SURROGATES						
1,2-Dichloroethane-d4	79-00-5	41.23	82 %	70 - 121		SPK: 50
Toluene-d8	2037-26-5	51.73	103 %	81 - 117		SPK: 50
4-Bromofluorobenzene	460-00-4	38.07	76 %	74 - 121		SPK: 50
Dibromofluoromethane		47.58	95 %	80 - 120		SPK: 50
INTERNAL STANDARDS						
Pentafluorobenzene	363-72-4	3024248	6.18			
1,4-Difluorobenzene	540-36-3	3387429	7.96			
[illegible]obenzene-d5	3114-55-4	2864440	14.20			
1,4-Dichlorobenzene-d4	3855-82-1	1548216	19.71			

Volatiles

SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID: P3097-21 Client ID: BS-128-12

Date Collected: 6/19/02 Date Received: 6/21/02
Date Analyzed: 6/27/02 Matrix: SOIL
File ID: VA062720.D Analytical Run ID: VA061202
Dilution: 1 Instrument ID: MSVOAA
Analytical Method: 8260 Associated Blank: VBA0627S2
Sample Wt/Vol: 5.0 Units: g Soil Extract Vol:
Soil Aliquot Vol: % Moisture: 5

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
TARGETS						
Chloromethane	74-87-3	< 1.8	U	5.3	1.8	ug/Kg
Bromomethane	74-83-9	< 1.1	U	5.3	1.1	ug/Kg
Vinyl chloride	75-01-4	< 1.1	U	5.3	1.1	ug/Kg
Chloroethane	75-00-3	< 1.4	U	5.3	1.4	ug/Kg
Methylene Chloride	75-09-2	< 1.4	U	5.3	1.4	ug/Kg
Acetone	67-64-1	< 3.7	U	5.3	3.7	ug/Kg
Carbon disulfide	75-15-0	< 1.4	U	5.3	1.4	ug/Kg
1,1-Dichloroethene	75-35-4	< 1.2	U	5.3	1.2	ug/Kg
[illegible]ichloroethane	75-34-3	< 0.95	U	5.3	0.95	ug/Kg
[illegible]-1,2-Dichloroethene	156-60-5	< 1.2	U	5.3	1.2	ug/Kg
cis-1,2-Dichloroethene	156-59-2	< 0.95	U	5.3	0.95	ug/Kg
Chloroform	67-66-3	< 1.1	U	5.3	1.1	ug/Kg
1,2-Dichloroethane	107-06-2	< 1.2	U	5.3	1.2	ug/Kg
2-Butanone	78-93-3	< 5.7	U	5.3	5.7	ug/Kg
1,1,1-Trichloroethane	71-55-6	< 1.1	U	5.3	1.1	ug/Kg
Carbon Tetrachloride	56-23-5	< 2.2	U	5.3	2.2	ug/Kg
Bromodichloromethane	75-27-4	< 0.84	U	5.3	0.84	ug/Kg
1,2-Dichloropropane	78-87-5	< 0.84	U	5.3	0.84	ug/Kg
cis-1,3-Dichloropropene	10061-01-5	< 0.95	U	5.3	0.95	ug/Kg
Trichloroethene	79-01-6	< 1.1	U	5.3	1.1	ug/Kg
Dibromochloromethane	124-48-1	< 0.95	U	5.3	0.95	ug/Kg
1,1,2-Trichloroethane	79-00-5	< 1.2	U	5.3	1.2	ug/Kg
Benzene	71-43-2	< 1.1	U	5.3	1.1	ug/Kg
t-1,3-Dichloropropene	10061-02-6	< 1.1	U	5.3	1.1	ug/Kg
Bromoform	75-25-2	< 1.2	U	5.3	1.2	ug/Kg
4-Methyl-2-Pentanone	108-10-1	< 4.2	U	5.3	4.2	ug/Kg
2-Hexanone	591-78-6	< 6.3	U	5.3	6.3	ug/Kg
Tetrachloroethene	127-18-4	< 1.3	U	5.3	1.3	ug/Kg
1,1,2,2-Tetrachloroethane	79-34-5	< 1.1	U	5.3	1.1	ug/Kg
To[illegible]ne	108-88-3	< 1.2	U	5.3	1.2	ug/Kg
C[illegible]obenzene	108-90-7	< 1.2	U	5.3	1.2	ug/Kg
Ethyl Benzene	100-41-4	< 1.1	U	5.3	1.1	ug/Kg
Styrene	100-42-5	< 1.5	U	5.3	1.5	ug/Kg
m/p-Xylenes	136777-61-2	< 2.9	U	5.3	2.9	ug/Kg

6/27/02

Volatiles

SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID: P3097-21 Client ID: BS-128-12

Date Collected:	6/19/02	Date Received:	6/21/02
Date Analyzed:	6/27/02	Matrix:	SOIL
File ID:	VA062720.D	Analytical Run ID:	VA061202
Dilution:	1	Instrument ID:	MSVOAA
Analytical Method:	8260	Associated Blank:	VBA0627S2
Sample Wt/Wol:	5.0 Units: g	Soil Extract Vol:	
Soil Aliquot Vol:		% Moisture:	5

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
o-Xylene	95-47-6	< 1.2	U	5.5	1.2	ug/Kg
SURROGATES						
1,2-Dichloroethane-d4	79-00-5	41.95	84 %	70 - 121		SPK: 50
Toluene-d8	2037-26-5	49.63	99 %	81 - 117		SPK: 50
4-Bromofluorobenzene	460-00-4	38.38	77 %	74 - 121		SPK: 50
Dibromofluoromethane		46.82	94 %	80 - 120		SPK: 50
INTERNAL STANDARDS						
Pentafluorobenzene	363-72-4	2893957	6.16			
1,4-Difluorobenzene	540-36-3	3327374	7.96			
[illegible]obenzene-d5	3114-55-4	2765841	14.20			
[illegible]Dichlorobenzene-d4	3855-82-1	1576465	19.68			

Chemtech Consulting Group

Volatiles

SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID: P3097-22 Client ID: BS-128-12DUP

Date Collected: 6/19/02 Date Received: 6/21/02
Date Analyzed: 6/28/02 Matrix: SOIL
File ID: VA062815.D Analytical Run ID: VA061202
Dilution: 1 Instrument ID: MSVOAA
Analytical Method: 8260 Associated Blank: VBA0628S1
Sample Wt/Vol: 5.0 Units: g Soil Extract Vol:
Soil Aliquot Vol: % Moisture: 10

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
TARGETS						
Chloromethane	74-87-3	< 1.9	U	5.6	1.9	ug/Kg
Bromomethane	74-83-9	< 1.1	U	5.6	1.1	ug/Kg
Vinyl chloride	75-01-4	< 1.1	U	5.6	1.1	ug/Kg
Chloroethane	75-00-3	< 1.4	U	5.6	1.4	ug/Kg
Methylene Chloride	75-09-2	< 1.4	U	5.6	1.4	ug/Kg
Acetone	67-64-1	< 3.9	U	5.6	3.9	ug/Kg
Carbon disulfide	75-15-0	< 1.4	U	5.6	1.4	ug/Kg
1,1-Dichloroethene	75-35-4	< 1.2	U	5.6	1.2	ug/Kg
ichloroethane	75-34-3	< 1.0	U	5.6	1.0	ug/Kg
trans-1,2-Dichloroethene	156-60-5	< 1.2	U	5.6	1.2	ug/Kg
cis-1,2-Dichloroethene	156-59-2	< 1.0	U	5.6	1.0	ug/Kg
Chloroform	67-66-3	< 1.1	U	5.6	1.1	ug/Kg
1,2-Dichloroethane	107-06-2	< 1.2	U	5.6	1.2	ug/Kg
2-Butanone	78-93-3	< 6.0	U	5.6	6.0	ug/Kg
1,1,1-Trichloroethane	71-55-6	< 1.1	U	5.6	1.1	ug/Kg
Carbon Tetrachloride	56-23-5	< 2.3	U	5.6	2.3	ug/Kg
Bromodichloromethane	75-27-4	< 0.89	U	5.6	0.89	ug/Kg
1,2-Dichloropropane	78-87-5	< 0.89	U	5.6	0.89	ug/Kg
cis-1,3-Dichloropropene	10061-01-5	< 1.0	U	5.6	1.0	ug/Kg
Trichloroethene	79-01-6	< 1.1	U	5.6	1.1	ug/Kg
Dibromochloromethane	124-48-1	< 1.0	U	5.6	1.0	ug/Kg
1,1,2-Trichloroethane	79-00-5	< 1.2	U	5.6	1.2	ug/Kg
Benzene	71-43-2	< 1.1	U	5.6	1.1	ug/Kg
t-1,3-Dichloropropene	10061-02-6	< 1.1	U	5.6	1.1	ug/Kg
Bromoform	75-25-2	< 1.2	U	5.6	1.2	ug/Kg
4-Methyl-2-Pentanone	108-10-1	< 4.4	U	5.6	4.4	ug/Kg
2-Hexanone	591-78-6	< 6.7	U	5.6	6.7	ug/Kg
Tetrachloroethene	127-18-4	< 1.3	U	5.6	1.3	ug/Kg
1,1,2,2-Tetrachloroethane	79-34-5	< 1.1	U	5.6	1.1	ug/Kg
T e	108-88-3	< 1.2	U	5.6	1.2	ug/Kg
Chlorobenzene	108-90-7	< 1.2	U	5.6	1.2	ug/Kg
Ethyl Benzene	100-41-4	< 1.1	U	5.6	1.1	ug/Kg
Styrene	100-42-5	< 1.6	U	5.6	1.6	ug/Kg
m/p-Xylenes	136777-61-2	< 3.1	U	5.6	3.1	ug/Kg

07/01

Volatiles

SW-846

SDG No.: P3097

Client: MAC Consultants, Inc.

Sample ID:	P3097-22	Client ID:	BS-128-12DUP
Date Collected:	6/19/02	Date Received:	6/21/02
Date Analyzed:	6/28/02	Matrix:	SOIL
File ID:	VA062815.D	Analytical Run ID:	VA061202
Dilution:	1	Instrument ID:	MSVOAA
Analytical Method:	8260	Associated Blank:	VBA0628S1
Sample Wt/Vol:	5.0 Units: g	Soil Extract Vol:	
Soil Aliquot Vol:		% Moisture:	10

Parameter	CAS Number	Concentration	C	RDL	MDL	Units
o-Xylene	95-47-6	< 1.2	U	5.6	1.2	ug/Kg
SURROGATES						
1,2-Dichloroethane-d4	79-00-5	49.24	98 %	70 - 121		SPK: 50
Toluene-d8	2037-26-5	54.3	109 %	81 - 117		SPK: 50
4-Bromofluorobenzene	460-00-4	37.28	75 %	74 - 121		SPK: 50
Dibromofluoromethane		53.97	108 %	80 - 120		SPK: 50
INTERNAL STANDARDS						
Pentafluorobenzene	363-72-4	2512828	6.10			
1,4-Difluorobenzene	540-36-3	2883659	7.87			
obenzene-d5	3114-55-4	2228323	14.12			
1,4-Dichlorobenzene-d4	3855-82-1	1135028	19.65			
TENTITIVE IDENTIFIED COMPOUNDS						
Column Bleed	1000493	8.5	JB	20.66		ug/kg

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ENVIRONMENTAL
ASSESSMENT &
REMEDIATIONS

October 29, 2014

Robert Corcoran, P.E.
New York State Department of Environmental Conservation
Div. of Environmental Remediation
625 Broadway, 12th floor
Albany, NY 12233-7015

RE: Site No. 152004, Fairchild Old Sump Site, Broad Hollow Road, East Farmingdale, NY – June-July 2014 Remedial Investigation Summary Report

Dear Mr. Corcoran:

This letter summarizes the recent remedial investigation activities conducted by Environmental Assessment & Remediations (EAR) at the above referenced site. The investigation activities were conducted in May through July 2014 in response to directives provided in the New York State Department of Environmental Conservation (NYSDEC) Standby Contractor Authorization Form dated 5/15/2014 (Callout ID: 122618). A site location map is provided as Figure 1.

EAR staff met a representative from NYSDEC onsite on May 29, 2014, to review site conditions and assess proposed boring locations. All boring/well installation locations were predetermined by NYSDEC. EAR staff returned to the site on June 13 to meet with a NYSDEC representative and identify and mark the proposed boring/well installation locations.

Monitoring Well Installation

On June 16-18, EAR installed 4 groundwater monitoring wells (MW-1, MW-2, MW-3, MW-4) at locations pre-selected by NYSDEC. The monitoring well locations are illustrated in Figure 2.

Prior to installation of the wells, continuous soil sampling was conducted from grade to 32 to 52 feet below grade surface (BGS) in an effort to identify the sediment layer delineating the base of the former discharge basin/sump.

The monitoring wells were installed using direct-push drilling technology. The well risers were constructed of 0.75-inch diameter schedule 40 PVC. The screens consist of 10-feet of pre-packed screens (geoprobe part#17466). Each screen section is compromised of two 5-foot sections of 0.75-inch (ID) schedule 40 PVC 0.01-inch slot screen. Screen sections are pre-packed

with 20/40 mesh silica pack. Stainless steel wire mesh with a pore size of 0.011-inch makes up the 1.4-inch diameter outer component of the pre-pack. A 5-foot bentonite seal was installed at each well. Total well depths and screened interval depths were determined by NYSDEC based on field observations. At the direction of the NYSDEC, no manholes or protective casings were installed. Risers were allowed to extend to approximately 3 feet above grade and were capped with locking well caps and padlocks. Drilling logs detailing lithology and well construction are provided as Appendix A. Field notes are provided as Appendix B.

Monitoring wells were surveyed by an EAR survey team July 31 – August 6, in order to provide northing and easting coordinates (Long Island State Plane NAD 83) and riser elevation data to the nearest 0.01 foot above mean sea level. Well coordinates and riser elevation data are provided in Table 1.

On August 5, risers at MW-2 and MW-4 were found removed and/or destroyed, likely the result of vandalism. Riser elevation for MW-4 was calculated using a measurement from grade to the top of the riser collected on July 28.

Monitoring Well Development

On July 10-11, EAR was onsite to develop the monitoring wells. As directed by NYSDEC, well MW-1A (installed by a previous contractor) was developed in addition to MW-1, MW-2, MW-3, and MW-4.

The wells were developed via pumping using an inertial pump. A water quality meter (YSI 556) and turbidity meter (Hach 2100Q) were used to monitor water quality parameters. Pumping at each well continued until pH, temperature, and conductivity stabilized and turbidity values were below 5 NTU's. At wells MW-1A, MW-2, and MW-4 target turbidity levels of 5 NTU's or less were not achieved even after pumping over 10 well volumes from each well. As all monitored water quality parameters (including turbidity) were stable, development activities at these wells were stopped as directed by NYSDEC.

Water quality and turbidity readings recorded during the well development activities are provided as Table 2. Field notes are provided as Appendix B.

PCB Area Soil Sampling

Soil sampling in the polychlorinated biphenyl (PCB) area was conducted June 19-25 and June 27-July 9, using direct push drilling techniques at 43 locations pre-selected by NYSDEC.

Samples were collected in discrete, 4-foot intervals using a sampling tube lined with a clear, disposable, PVC liner. The macro-core sampling tube, equipped with an expendable piston tip was used to execute the Geoprobe® Standard Stop-Pin System. The closed sample tube lined with a clear, disposable PVC liner was driven to the top of the desired sample depth and pulled

back 6-inches to release the expendable piston. The open sample tube was then advanced to another 4 feet BGS to collect the desired sample.

As directed by the NYSDEC, sample collection at these locations began at 4-feet below grade and continued to 32-feet below grade. Each sample was logged for lithology and screened for total volatile organic compounds (VOC's) using a Photo-Ionization Detector (PID) by an onsite geologist, and stored in labeled, sealed, plastic bags. Prior to use, the PID was calibrated using a 100 ppm isobutylene standard and ambient air.

Samples to be retained for lab analysis were collected from 4 to 20 feet BGS and from 28 to 32 feet BGS as directed by NYSDEC. Samples retained for lab analysis were placed into the appropriate sample containers provided by the laboratory and immediately placed in a cooler with ice to maintain a temperature of 4 degrees Celsius. A total of 213 soil samples were submitted to an NYSDEC standby contracted laboratory (Test America, Inc.) for analysis of PCB's via EPA Method 8082A. Four randomly selected sample intervals (P-06 (28-32), P-08 (28-32), P-27 (28-32), and P-33 (28-32)) were also submitted for analysis of VOC's, semivolatile organic compounds (SVOC's), metals, and pesticides/herbicides. Samples collected for PCB analysis were submitted for an expedited, three-day turnaround time such that determinations could be made as to the exclusion or addition of nearby proposed sampling locations. Samples collected for analysis of VOC's, SVOC's, metals, and pesticides/herbicides were submitted for a standard, 10-day turnaround time. Category B deliverables were requested for all samples.

Analytical results for soil samples collected in the PCB area are compared to the 6 NYCRR 375-6[1] soil cleanup objective values in Tables 3-7. Lab analytical reports are provided as Appendix C. Field notes are provided as Appendix B.

Beneficial Use Determination (BUD) Pile

Soil sampling in the BUD pile was conducted on June 26, 2014 using direct push drilling techniques, at three locations pre-selected by NYSDEC.

Samples were collected in discrete, 4-foot intervals using a sampling tube lined with a clear, disposable, PVC liner. The macro-core sampling tube, equipped with an expendable piston tip was used to execute the Geoprobe® Standard Stop-Pin System. The closed sample tube lined with a clear, disposable PVC liner was driven to the top of the desired sample depth and pulled back 6-inches to release the expendable piston. The open sample tube was then advanced to another 4 feet below grade surface (BGS) to collect the desired sample.

Sampling began at BUD-01, where soil samples were collected continuously from approximately 4 feet BGS to approximately 22 feet BGS in an effort to identify the base of the pile and establish proposed sample collection intervals for the remaining BUD boring locations. Lithology observations are provided in the BUD-01 drilling log located in Appendix A.

[1] Title 6 New York Codes, Rules, and Regulations (NYCRR), Subpart 375-6.8 (2006)

Samples at locations BUD-02 & BUD-03 were collected from 14-18 feet BGS and 18-22 feet BGS (estimated vertical center and base of the pile, respectively) as directed by NYSDEC. Each sample was logged for lithology and screened for total VOC's using a Photo-Ionization Detector (PID) by an onsite geologist, and stored in labeled, sealed, plastic bags. Prior to use, the PID was calibrated using a 100 ppm isobutylene standard and ambient air.

Samples selected for lab analysis were placed into the appropriate sample containers provided by the laboratory and immediately placed in a cooler with ice to maintain a temperature of 4 degrees Celsius. A total of 6 soil samples were submitted to an NYSDEC standby contracted laboratory (Test America, Inc.) for analysis of VOC's, SVOC's, PCB's, Metals, and Pesticides. All samples were submitted for standard 10-day turn around with Category B deliverables requested.

Analytical results for soil samples collected from the BUD pile are compared to the 6 NYCRR 375-6 soil cleanup objective values in Tables 8-12. Lab analytical reports are provided as Appendix C. Field notes are provided as Appendix B.

Chromium Deposition Area

Soil sampling in the Chromium Deposition area was conducted on June 18 and July 15 at 12 locations (CR-1 through CR-12) pre-selected by NYSDEC.

Soil sampling at CR-11 was conducted on June 18 in conjunction with the installation of MW-4. At this location, soil samples were collected using direct-push drilling technology as discussed above. Samples were collected in 4-foot intervals from grade to 32 feet BGS. Lithology observations are provided in the MW-4 drilling log located in Appendix A.

At each of the remaining Chromium Deposition area locations, two soil samples were collected as directed by NYSDEC: 1 sample from grade surface, and one sample from the shallow subsurface (0-1 foot BGS). Samples were collected using a stainless-steel hand auger. Sampling equipment was decontaminated between sample locations following EAR's standard operating protocol.

Each sample was logged for lithology and screened for total VOC's using a Photo-Ionization Detector (PID) by an onsite geologist. Prior to use, the PID was calibrated using a 100 ppm isobutylene standard and ambient air.

Samples collected for lab analysis were placed into the appropriate sample containers provided by the laboratory and immediately placed in a cooler with ice to maintain a temperature of 4 degrees Celsius. A total of 25 soil samples were submitted to an NYSDEC standby contracted laboratory (Test America, Inc.) for analysis of Metals via EPA Methods 6010C and 7471B. Three randomly selected sample intervals (CR-05 (0-1), CR-10 (0-1), and CR-11 (24-29)) were also submitted for analysis of VOC's, SVOC's, PCB's, and pesticides/herbicides. All samples were submitted for standard 10-day turn around with Category B deliverables requested.

Analytical results for soil samples collected in the Chromium Deposition area are compared to the 6 NYCRR 375-6 soil cleanup objective values in Tables 13-17. Lab analytical reports are provided as Appendix C. Field notes are provided as Appendix B.

General Site Evaluation Soil Sampling

Soil sampling in the General Site Evaluation area was conducted on June 16-17 and July 16-17 at 18 locations (G-1 through G-18) pre-selected by NYSDEC.

Soil sampling at G-12 and G-17 was conducted on June 16-17 in conjunction with the installation of MW-1 & MW-2. At these locations, soil samples were collected using direct-push drilling technology. Samples were collected in 4-foot intervals from grade to 32 feet BGS at G-12, and from grade to 52 feet BGS at G-17. Lithology observations are provided in the MW-1 & MW-2 drilling logs located in Appendix A.

At each of the remaining General Site Evaluation area locations, two soil samples were collected: 1 sample from grade surface, and one sample from the shallow subsurface (0-1 foot BGS). Samples were collected using a stainless-steel hand auger. Sampling equipment was decontaminated between sample locations following EAR's standard operating protocol.

Each sample was logged for lithology and screened for total VOC's using a Photo-Ionization Detector (PID) by an onsite geologist. Prior to use, the PID was calibrated using a 100 ppm isobutylene standard and ambient air.

Samples collected for lab analysis were placed into the appropriate sample containers provided by the laboratory and immediately placed in a cooler with ice to maintain a temperature of 4 degrees Celsius. A total of 38 soil samples were submitted to a NYSDEC standby contracted laboratory (Test America, Inc.) for analysis of VOC's, SVOC's, PCB's, metals, and pesticides/herbicides. All samples were submitted for standard 10-day turn around with Category B deliverables requested.

Analytical results for soil samples collected in the General Site Evaluation area are compared to the 6 NYCRR 375-6 soil cleanup objective values in Tables 18-22. Lab analytical reports are provided as Appendix C. Field notes are provided as Appendix B.

Groundwater Sampling

On July 28, 2014, EAR collected groundwater samples from 6[2] monitoring wells (MW-1, MW-1A, MW-2, MW-3, MW-4, BAW-06C). The monitoring well locations are illustrated in Figure 2.

[2] MW-1A and BAW-06C were pre-existing wells installed by a prior contractor and sampled as requested by the NYSDEC.

Groundwater samples were collected utilizing a peristaltic pump and HDPE tubing. A new length of HDPE tubing was utilized at each well. Prior to sample collection, depth-to-water and total well depths were gauged and recorded. A water quality meter (YSI 556) and turbidity meter (Hach 2100Q) were used to monitor water quality parameters. Each monitoring well was purged of at least one standing well volume then screened for pH, temperature, conductivity, and turbidity until stabilization was reached. Dissolved oxygen concentrations, and oxidation reduction potential (ORP) were recorded as well.

Samples collected for lab analysis were placed into the appropriate sample containers provided by the laboratory and immediately placed in a cooler with ice to maintain a temperature of 4 degrees Celsius. A total of 6 water samples were submitted to an NYSDEC standby contracted laboratory (Test America, Inc.) for analysis of VOC's, SVOC's, PCB's, Metals, and Pesticides. All samples were submitted for standard 10-day turn around with Category B deliverables requested.

Analytical results are summarized in Tables 23-27, and are compared to the TOGS 1.1.1 Class GA water quality standards and guidance values[3]. Field screening results are provided in Table 28. Lab analytical reports are provided as Appendix C. Field notes are provided as Appendix B.

Groundwater Flow Direction

Regional USGS water table altitude maps[4] suggest an approximate regional groundwater flow bearing of south-southeast.

Water level readings were collected from available wells on July 10, 28, and 31. The water levels were gauged using an electronic interface tape, with water levels recorded from the top of the riser/casing. The water level readings and corresponding calculated groundwater elevations are provided in Table 1.

For each data set, a local groundwater flow direction and hydraulic gradient was calculated by fitting a plane to the groundwater elevations using the least-squares method. This evaluation yielded estimated flow bearings ranging from 125.4 degrees from north(southeast) to 214.9 degrees from north (southwest) with gradients ranging from 0.00871 ft/ft to 0.01971 ft/ft. Based on this data, it appears that local flow is variable, possibly the result of local water withdrawals/injections and/or heterogeneity of subsurface soils.

Quality Assurance/Quality Control

[3] NYSDEC Division of Water Technical & Operational Guidance Series 1.1.1 – Ambient Water Quality Standards and Guidance Values, Class GA (groundwater)

[4] Potentiometric-Surface Altitude in the Upper Glacial Aquifers beneath Long Island, New York, March-April 2006: U.S. Geological Survey, Scientific Investigations Map 3066

All NYSDEC ASP Category B deliverables are under review for completeness and compliance. Data usability summary reports (DUSR) will be generated and submitted to NYSDEC under separate cover. Lab reports are included as Appendix B. A total of 9 field blanks/trip blanks were collected during the course of the soil and groundwater sampling activities detailed above. Analytical results are summarized in a quality assurance/quality control (QA/QC) sample table provided as Appendix D.

Analytical Summary/Comparison to Soil Cleanup Objectives

PCB Area Soil Sampling (43 total locations)

- Total PCB concentrations exceeded unrestricted use soil cleanup objectives (SCO's) at 25 locations at depth intervals ranging from 4-8 feet BGS to 28-32 feet BGS.
- Total PCB concentrations exceeded commercial use SCO's at 4 locations (P-71, P-72, P-81, P-92) at depth intervals ranging from 12-16 feet BGS to 28-32 feet BGS.
- Unrestricted use SCO's were exceeded for chromium at 2 locations (P-06, P-08) at depth intervals of 28-32 feet BGS.
- Reported concentrations for analyzed VOC's, SVOC's, and pesticides did not exceed either the unrestricted or commercial use SCO's.

BUD Pile Soil Sampling (3 total locations)

- Unrestricted use SCO's were exceeded for 4 SVOC analytes: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, and chrysene. Exceedances were limited to the 14-18 foot intervals at BUD-01 & BUD-02.
- Commercial SCO's were exceeded for 2 SVOC analytes: benzo(a)pyrene and dibenzo(a,h)anthracene. Exceedances were limited to the 14-18 foot intervals at BUD-01 & BUD-02.
- Unrestricted use SCO's were exceeded for chromium, lead, and zinc at BUD-01(14-18).
- Reported concentrations for analyzed VOCs, PCB's, and pesticides did not exceed either the unrestricted or commercial use SCO's.

Chromium Deposition Area Soil Sampling (12 total locations)

- Unrestricted use SCO's for metals were exceeded for cadmium (Cr-11(24-29)), lead (Cr-6(surface) and Cr-2(surface)), mercury (Cr-11(24-29)), and silver (Cr-11(24-29)). Unrestricted use SCO's were exceeded for chromium at Cr-2(surf), Cr-6(surf), Cr-7(0-1), and Cr-11(surf) & Cr-11(24-29).
- Unrestricted use SCO's for acetone were exceeded at 1 location: Cr-11(24-29).
- Reported concentrations for analyzed SVOCs, PCB's, and pesticides did not exceed either the unrestricted or commercial use SCO's.

General Site Evaluation Soil Sampling (18 total locations)

- Unrestricted use SCO's for total PCB's were exceeded at 3 locations: G-9(surface), G-12(28-32), and G-17(8-12).
- Unrestricted use SCO's for acetone were exceeded at 1 location: G-12(28-32).

- Unrestricted use SCO's were exceeded for several SVOC's: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoanthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene. The exceedances occurred in surface and shallow-subsurface soils at up to 10 locations.
- Commercial use SCO's were exceeded for 4 SVOC's: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and dibenzo(a,h)anthracene. The exceedances occurred in surface and shallow subsurface soils at up to 9 locations.
- Unrestricted use SCO's were exceeded at multiple surface and shallow subsurface locations for copper, chromium, lead, mercury, silver, and zinc.
- Reported concentrations for pesticides did not exceed either the unrestricted or commercial use SCO's.

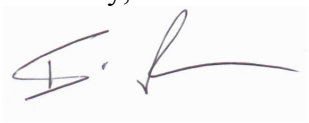
Groundwater Sampling (6 wells total)

- TOGS 1.1.1 groundwater standards were exceeded for tetrachloroethene at MW-3.
- TOGS 1.1.1 groundwater standards were exceeded for iron, manganese, and sodium at multiple wells.
- Reported concentrations for SVOC's, PCB's, or pesticides did not exceed TOGS standard/guidance values.

A site map with posted locations and analytical results for all commercial use SCO exceedances is provided as Figure 3.

Should you have any questions regarding the activities or data detailed in this report, please feel free to contact me at 631.241.8741.

Sincerely,



Ian Hofmann
Project Manager

Cc:
J. Lawrence (EAR)

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Fairchild Republic Aircraft; Old Sump
Route 110 (Broad Hollow Road)
East Farmingdale, NY
Site No. 152004

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

Well Coordinates & Groundwater Elevations

Well	Easting, Northing	Riser Elevation (ft AMSL)	7/10/2014		7/11/2014		7/28/2014		7/31/2014	
			DTW[1]	GWEL[2]	DTW	GWEL	DTW	GWEL	DTW	GWEL
MW-1	1143552.1 207188.2	66.94	16.13	50.81	-	-	16.53	50.41	16.94	50.00
MW-1A	1143534.1 207194.4	64.29	13.12	51.17	-	-	16.64	47.65	14.11	50.18
MW-2	1143785.1 207534.9	71.19	20.16	51.03	-	-	18.23	52.96	20.56	50.63
MW-3	1143698.8 207727.7	67.21	-	-	16.42	50.79	17.04	50.17	-	-
MW-4[3]	1143382.8 207700.5	67.55	-	-	16.18	51.37	16.87	50.68	-	-
BAW-06C (30)	1143623.3 208207.1	74.41	-	-	-	-	16.71	57.7	-	-
Flow Bearing (degrees from North):			125.4		-		214.9		132.3	
Gradient (ft/ft):			0.01971		-		0.00871		0.01030	

All readings taken from the top of riser
Easting and Northing coordinates are Long Island State Plane NAD 83 (ft)
[1] - depth to water (ft)
[2] - groundwater elevation (ft AMSL)
[3] - MW-4 was found destroyed prior to surveying activities. Riser elevation was calculated using a measurement of grade to top of riser collected 7/28/14.

Fairchild Republic Aircraft; Old Sump
Route 110 (Broad Hollow Road)
East Farmingdale, NY
Site No. 152004

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

2014 Remedial Investigation - Well Development
EAR Field Screening

Location	Screen Depth (ft BGS)	Date Collected	Depth to Water (ft)	Cumulative Total Purged (gallons)	Dissolved Oxygen *mg/L*	pH -	Temperature *°C*	ORP (Oxidation Reduction Potential) *mV*	Conductivity *us/cm*	Turbidity *NTU*
MW-1	40-50	7/10/2014	16.13	3.5	3.47	5.57	15.34	164.8	0.275	9.03
			-	7.0	3.24	5.94	15.36	144.5	0.274	3.49
			-	10.5	3.19	5.86	15.34	151.2	0.274	3.14
MW-1A	-	7/10/2014	13.12	4	0.90	6.65	16.03	-36.6	0.340	33.00
			-	11.5	0.93	6.62	15.97	-43.8	0.337	14.80
			-	18	0.93	6.66	15.99	-47.0	0.335	13.60
			-	25	0.88	6.65	15.92	-46.7	0.334	9.62
			-	32	0.85	6.62	16.03	-44.4	0.334	8.04
			-	38	0.88	6.65	15.95	-45.3	0.333	5.91
			-	45	0.87	6.65	16.07	-46.1	0.334	7.85
			-	52	0.86	6.62	16.01	-43.2	0.332	5.74
			-	58	0.00	6.66	16.18	-45.1	0.333	6.21
MW-2	19-29	7/10/2014	20.16	1	1.03	6.73	15.02	-49.8	0.792	>range
			-	4	1.01	6.57	14.93	-41.2	0.790	784.00
		7/11/2014	20.22	2	2.38	6.44	14.28	-29.0	0.784	1,246.00
			-	7	1.94	6.56	14.12	-33.7	0.781	43.00
			-	13	2.22	6.60	14.08	-35.3	0.775	50.00
			-	18	2.41	6.60	14.19	-39.2	0.772	44.10
			-	22	2.56	6.72	14.79	-40.1	0.773	27.90
			-	27	2.41	6.67	14.62	-36.9	0.772	25.30
			-	32	2.12	6.64	14.39	-37.3	0.768	29.70
			-	39	2.19	6.66	14.40	-40.1	0.770	37.90
MW-3	20-30	7/11/2014	16.42	4	1.75	6.53	13.85	48.5	0.324	42.20
			-	12	1.30	6.48	14.07	54.5	0.323	14.00
			-	16	1.38	6.57	14.13	47.8	0.333	4.35
MW-4	22-32	7/11/2014	16.18	3	1.80	6.70	16.30	2.7	0.309	1,244.00
			-	8	2.05	6.55	15.87	23.5	0.303	78.00
			-	13	2.01	6.36	15.53	37.0	0.300	77.60
			-	19	2.01	6.51	15.44	27.2	0.298	57.90
			-	23	2.01	6.43	15.52	34.9	0.297	42.00
			-	25	2.03	6.32	15.66	56.7	0.296	38.00

Fairchild Republic Aircraft; Old Sump
Route 110 (Broad Hollow Road)
East Farmingdale, NY
Site No. 152004

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

2014 Remedial Investigation Soil Analytical Results (ug/Kg)
TestAmerica, Inc.
Methods: SW8082A

Location	Depth (ft BGS)	Date Collected	Time Collected	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Aroclor 1262	Aroclor 1268	Polychlorinated biphenyls (total)
P-06	4-8	6/27/2014	1:12 PM	<73	<73	<73	<73	<73	<73	<73	<73	<73	<73
	8-12	6/27/2014	1:19 PM	<71	<71	<71	<71	<71	<71	<71	<71	<71	<71
	12-16	6/27/2014	1:26 PM	<73	<73	<73	<73	<73	<73	<73	<73	<73	<73
	16-20	6/27/2014	1:32 PM	<72	<72	<72	<72	<72	<72	<72	<72	<72	<72
	28-32	6/27/2014	2:08 PM	<72	<72	<72	<72	<72	<72	<72	<72	<72	<72
P-07	4-8	6/24/2014	11:43 AM	<72	<72	<72	<72	<72	<72	<72	<72	<72	<72
	8-12	6/25/2014	7:16 AM	<74	<74	<74	<74	230	<74	98	<74	<74	320
	12-16	6/25/2014	7:25 AM	<74	<74	<74	<74	<74	<74	130	<74	<74	130
	16-20	6/25/2014	7:38 AM	<77	<77	<77	<77	<77	<77	75 J	<77	<77	75 J
	28-32	6/25/2014	8:20 AM	<74	<74	<74	<74	340	<74	420	<74	<74	730
P-08	4-8	6/24/2014	9:21 AM	<72	<72	<72	<72	<72	<72	<72	<72	<72	<72
	8-12	6/24/2014	9:25 AM	<110	<110	<110	<110	<110	<110	<110	<110	<110	<110
	12-16	6/24/2014	9:32 AM	<74	<74	<74	<74	<74	<74	<74	<74	<74	<74
	16-20	6/24/2014	9:39 AM	<73	<73	<73	<73	<73	<73	<73	<73	<73	<73
	28-32	6/24/2014	10:13 AM	<75	<75	<75	<75	<75	<75	<75	<75	<75	<75
P-11	4-8	6/23/2014	9:45 AM	<73	<73	<73	<73	<73	<73	<73	<73	<73	<73
	8-12	6/23/2014	9:51 AM	<73	<73	<73	<73	<73	<73	<73	<73	<73	<73
	12-16	6/23/2014	9:55 AM	<73	<73	<73	<73	<73	<73	<73	<73	<73	<73
	16-20	6/23/2014	10:02 AM	<80	<80	<80	<80	660	<80	<80	<80	<80	660
	28-32	6/23/2014	10:34 AM	<75	<75	<75	<75	<75	<75	<75	<75	<75	<75
P-12	4-8	6/27/2014	9:45 AM	<72	<72	<72	<72	<72	<72	<72	<72	<72	<72
	8-12	6/27/2014	9:56 AM	<72	<72	<72	<72	<72	<72	38 J	<72	<72	38 J
	12-16	6/27/2014	10:00 AM	<72	<72	<72	<72	<72	<72	<72	<72	<72	<72
	16-20	6/27/2014	10:06 AM	<75	<75	<75	<75	<75	<75	<75	<75	<75	<75
	28-32	6/27/2014	10:32 AM	<73	<73	<73	<73	<73	<73	<73	<73	<73	<73
P-13	4-8	6/27/2014	10:52 AM	<79	<79	<79	<79	250	<79	280	<79	<79	520
	8-12	6/27/2014	10:56 AM	<82	<82	<82	<82	84	<82	<82	<82	<82	84
	12-16	6/27/2014	11:02 AM	<94	<94	<94	<94	150	<94	<94	<94	<94	150
	28-32	6/27/2014	11:38 AM	<75	<75	<75	<75	180	<75	<75	<75	<75	180
P-14	4-8	6/25/2014	10:16 AM	<71	<71	<71	<71	<71	<71	230	<71	<71	230
	8-12	6/25/2014	10:22 AM	<72	<72	<72	<72	<72	<72	160	<72	<72	160
	12-16	6/25/2014	10:30 AM	<77	<77	<77	<77	<77	<77	<77	<77	<77	<77
	16-20	6/25/2014	10:38 AM	<81	<81	<81	<81	360	<81	<81	<81	<81	360
	28-32	6/25/2014	11:12 AM	<83	<83	<83	<83	330	<83	<83	<83	<83	330
P-15	4-8	6/30/2014	11:56 AM	<73	<73	<73	<73	<73	<73	<73	<73	<73	<73
	8-12	6/30/2014	12:01 PM	<71	<71	<71	<71	<71	<71	<71	<71	<71	<71
	12-16	6/30/2014	12:07 PM	<72	<72	<72	<72	<72	<72	82	<72	<72	82
	16-20	6/30/2014	12:16 PM	<72	<72	<72	<72	<72	<72	<72	<72	<72	<72
	28-32	6/30/2014	12:55 PM	<85	<85	<85	<85	490	<85	<85	<85	<85	490
P-16	4-8	6/30/2014	10:29 AM	<72	<72	<72	<72	<72	<72	<72	<72	<72	<72
	8-12	6/30/2014	10:35 AM	<71	<71	<71	<71	<71	<71	<71	<71	<71	<71
	12-16	6/30/2014	10:41 AM	<71	<71	<71	<71	<71	<71	<71	<71	<71	<71
	16-20	6/30/2014	10:48 AM	<85	<85	<85	<85	<85	<85	<85	<85	<85	<85
	28-32	6/30/2014	11:17 AM	<82	<82	<82	<82	<82	<82	<82	<82	<82	<82
P-17	4-8	6/25/2014	12:04 PM	<69	<69	<69	<69	<69	<69	300	<69	<69	300
	8-12	6/25/2014	12:07 PM	<69	<69	<69	<69	<69	<69	130	<69	<69	130
	12-16	6/25/2014	12:12 PM	<69	<69	<69	<69	<69	<69	430	<69	<69	430
	16-20	6/25/2014	12:19 PM	<72	<72	<72	<72	<72	<72	81	<72	<72	81
	28-32	6/25/2014	12:46 PM	<75	<75	<75	<75	480	<75	<75	<75	<75	480
P-18	4-8	6/30/2014	7:33 AM	<73	<73	<73	<73	<73	<73	<73	<73	<73	<73
	8-12	6/30/2014	7:37 AM	<74	<74	<74	<74	<74	<74	<74	<74	<74	<74
	12-16	6/30/2014	7:43 AM	<73	<73	<73	<73	<73	<73	46 J	<73	<73	46 J
	16-20	6/30/2014	7:50 AM	<110	<110	<110	<110	940	<110	<110	<110	<110	940
	28-32	6/30/2014	8:20 AM	<79	<79	<79	<79	<79	<79	<79	<79	<79	<79
P-19	4-8	6/30/2014	8:56 AM	<72	<72	<72	<72	<72	<72	<72	<72	<72	<72
	8-12	6/30/2014	9:01 AM	<72	<72	<72	<72	<72	<72	<72	<72	<72	<72
	12-16	6/30/2014	9:07 AM	<72	<72	<72	<72	<72	<72	<72	<72	<72	<72
	16-20	6/30/2014	9:14 AM	<74	<74	<74	<74	<74	<74	<74	<74	<74	<74
	28-32	6/30/2014	9:48 AM	<76	<76	<76	<76	<76	<76	<76	<76	<76	<76
P-20	4-8	6/27/2014	8:39 AM	<74	<74	<74	<74	<74	<74	<74	<74	<74	<74
	8-12	6/27/2014	8:43 AM	<72	<72	<72	<72	<72	<72	<72	<72	<72	<72
	12-16	6/27/2014	8:49 AM	<71	<71	<71	<71	<71	<71	<71	<71	<71	<71
	16-20	6/27/2014	8:55 AM	<73	<73	<73	<73	<73	<73	<73	<73	<73	<73
	28-32	6/27/2014	9:25 AM	<76	<76	<76	<76	<76	<76	<76	<76	<76	<76
P-21	4-8	6/23/2014	7:57 AM	<72	<72	<72	<72	<72	<72	<72	<72	<72	<72
	8-12	6/23/2014	8:03 AM	<75	<75	<75	<75	210	<75	<75	<75	<75	210
	12-16	6/23/2014	8:10 AM	<72	<72	<72	<72	<72	<72	<72	<72	<72	<72
	16-20	6/23/2014	8:17 AM	<73	<73	<73	<73	85	<73	<73	<73	<73	85
	28-32	6/23/2014	8:50 AM	<75	<75	<75	<75	<75	<75	<75	<75	<75	<75
P-23	4-8	6/20/2014	9:50 AM	<75	<75	<75	<75	<75	<75	<75	<75	<75	<75
	8-12	6/20/2014	9:54 AM	<74	<74	<74	<74	<74	<74	<74	<74	<74	<74
	12-16	6/20/2014	10:00 AM	<74	<74	<74	<74	<74	<74	<74	<74	<74	<74
	16-20	6/20/2014	10:09 AM	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70
	28-32	6/20/2014	10:38 AM	<76	<76	<76	<76	<76	<76	<76	<76	<76	<76
P-24	4-8	6/23/2014	11:26 AM	<73	<73	<73	<73	<73	<73	<73	<73	<73	<73
	8-12	6/23/2014	11:30 AM	<76	<76	<76	<76	<76	<76	<76	<76	<76	<76
	12-16	6/23/2014	11:40 AM	<72	<72	<72	<72	<72	<72	<72	<72	<72	<72
	16-20	6/24/2014	8:05 AM	<73	<73	<73	<73	<73	<73	<73	<73	<73	<73
	28-32	6/24/2014	8:44 AM	<82	<82	<82	<82	<82	<82	<82	<82	<82	<82

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ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

2014 Remedial Investigation Soil Analytical Results (ug/Kg)
TestAmerica, Inc.
Methods: SW8082A

Location	Depth (ft BGS)	Date Collected	Time Collected	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Aroclor 1262	Aroclor 1268	Polychlorinated biphenyls (total)
P-27	4-8	6/20/2014	7:50 AM	<72	<72	<72	<72	<72	<72	<72	<72	<72	<72
	8-12	6/20/2014	7:55 AM	<72	<72	<72	<72	<72	<72	<72	<72	<72	<72
	12-16	6/20/2014	8:01 AM	<75	<75	<75	<75	<75	<75	<75	<75	<75	<75
	16-20	6/20/2014	8:09 AM	<74	<74	<74	<74	<74	<74	<74	<74	<74	<74
	28-32	6/20/2014	10:38 AM	<79	<79	<79	<79	<79	<79	<79	<79	<79	<79
P-28	4-8	6/19/2014	11:21 AM	<72	<72	<72	<72	<72	<72	<72	<72	<72	<72
	8-12	6/19/2014	11:28 AM	<72	<72	<72	<72	<72	<72	<72	<72	<72	<72
	12-16	6/19/2014	11:35 AM	<73	<73	<73	<73	<73	<73	<73	<73	<73	<73
	16-20	6/19/2014	11:45 AM	<74	<74	<74	<74	<74	<74	<74	<74	<74	<74
	28-32	6/19/2014	12:15 PM	<75	<75	<75	<75	<75	<75	<75	<75	<75	<75
P-29	4-8	6/19/2014	9:33 AM	<73	<73	<73	<73	<73	<73	<73	<73	<73	<73
	8-12	6/19/2014	9:40 AM	<74	<74	<74	<74	<74	<74	<74	<74	<74	<74
	12-16	6/19/2014	9:49 AM	<73	<73	<73	<73	<73	<73	<73	<73	<73	<73
	16-20	6/19/2014	9:52 AM	<77	<77	<77	<77	<77	<77	<77	<77	<77	<77
	28-32	6/19/2014	10:33 AM	<79	<79	<79	<79	<79	<79	<79	<79	<79	<79
P-30	4-8	6/26/2014	12:59 PM	<73	<73	<73	<73	<73	<73	<73	<73	<73	<73
	8-12	6/26/2014	1:04 PM	<73	<73	<73	<73	<73	<73	<73	<73	<73	<73
	12-16	6/26/2014	1:09 PM	<71	<71	<71	<71	<71	<71	<71	<71	<71	<71
	16-20	6/26/2014	1:15 PM	<74	<74	<74	<74	<74	<74	<74	<74	<74	<74
	28-32	6/26/2014	1:45 PM	<74	<74	<74	<74	<74	<74	<74	<74	<74	<74
P-31	4-8	6/19/2014	7:39 AM	<74	<74	<74	<74	<74	<74	<74	<74	<74	<74
	8-12	6/19/2014	7:45 AM	<74	<74	<74	<74	**87**	<74	<74	<74	<74	**87**
	12-16	6/19/2014	7:51 AM	<71	<71	<71	<71	**76**	<71	<71	<71	<71	**76**
	28-32	6/19/2014	8:39 AM	<75	<75	<75	<75	<75	<75	<75	<75	<75	<75
P-32	4-8	6/26/2014	11:26 AM	<71	<71	<71	<71	<71	<71	<71	<71	<71	<71
	8-12	6/26/2014	11:30 AM	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70
	12-16	6/26/2014	11:37 AM	<72	<72	<72	<72	<72	<72	<72	<72	<72	<72
	16-20	6/26/2014	11:44 AM	<75	<75	<75	<75	<75	<75	<75	<75	<75	<75
	28-32	6/26/2014	12:14 PM	<78	<78	<78	<78	<78	<78	<78	<78	<78	<78
P-33	4-8	6/25/2014	1:13 PM	<72	<72	<72	<72	<72	<72	**65 J**	<72	<72	**65 J**
	8-12	6/25/2014	1:16 PM	<71	<71	<71	<71	<71	<71	**130**	<71	<71	**130**
	12-16	6/25/2014	1:21 PM	<78	<78	<78	<78	**100**	<78	<78	<78	<78	**100**
	16-20	6/25/2014	1:30 PM	<74	<74	<74	<74	<74	<74	**130**	<74	<74	**130**
	28-32	6/25/2014	2:10 PM	<80	<80	<80	<80	<80	<80	<80	<80	<80	<80
P-50	4-8	7/1/2014	8:34 AM	<82	<82	<82	<82	**330**	<82	<82	<82	<82	**330**
	8-12	7/1/2014	8:39 AM	<88	<88	<88	<88	**550**	<88	<88	<88	<88	**550**
	12-16	7/1/2014	8:43 AM	<75	<75	<75	<75	**280**	<75	<75	<75	<75	**280**
	16-20	7/1/2014	8:52 AM	<73	<73	<73	<73	**64 J**	<73	<73	<73	<73	**64 J**
	28-32	7/1/2014	9:22 AM	<75	<75	<75	<75	<75	<75	<75	<75	<75	<75
P-51	4-8	7/1/2014	10:00 AM	<70	<70	<70	<70	<70	<70	**47 J**	<70	<70	**47 J**
	8-12	7/1/2014	10:07 AM	<71	<71	<71	<71	<71	<71	<71	<71	<71	<71
	12-16	7/1/2014	10:12 AM	<72	<72	<72	<72	<72	<72	**54 J**	<72	<72	**54 J**
	16-20	7/1/2014	10:21 AM	<71	<71	<71	<71	<71	<71	**45 J**	<71	<71	**45 J**
	28-32	7/1/2014	10:51 AM	<80	<80	<80	<80	**210**	<80	<80	<80	<80	**210**
P-52	4-8	7/1/2014	11:26 AM	<73	<73	<73	<73	<73	<73	**75**	<73	<73	**75**
	8-12	7/1/2014	11:29 AM	<71	<71	<71	<71	<71	<71	**53 J**	<71	<71	**53 J**
	12-16	7/1/2014	11:35 AM	<74	<74	<74	<74	<74	<74	<74	<74	<74	<74
	16-20	7/1/2014	11:41 AM	<79	<79	<79	<79	**520**	<79	<79	<79	<79	**520**
	28-32	7/1/2014	12:07 PM	<73	<73	<73	<73	**82**	<73	<73	<73	<73	**82**
P-54	4-8	7/1/2014	11:39 AM	<71	<71	<71	<71	<71	<71	**66 J**	<71	<71	**66 J**
	8-12	7/1/2014	1:45 PM	<72	<72	<72	<72	<72	<72	**55 J**	<72	<72	**55 J**
	12-16	7/1/2014	1:51 PM	<71	<71	<71	<71	<71	<71	**49 J**	<71	<71	**49 J**
	16-20	7/1/2014	1:57 PM	<73	<73	<73	<73	<73	<73	**48 J**	<73	<73	**48 J**
	28-32	7/1/2014	2:26 PM	<73	<73	<73	<73	**270**	<73	<73	<73	<73	**270**
P-60	4-8	7/3/2014	7:25 AM	<74	<74	<74	<74	<74	<74	<74	<74	<74	<74
	8-12	7/3/2014	7:29 AM	<73	<73	<73	<73	<73	**91**	<73	<73	<73	**91**
	12-16	7/3/2014	7:35 AM	<91	<91	<91	<91	<91	<91	<91	<91	<91	<91
	16-20	7/3/2014	7:42 AM	<77	<77	<77	<77	**160**	<77	<77	<77	<77	**160**
	28-32	7/3/2014	8:08 AM	<75	<75	<75	<75	<75	<75	<75	<75	<75	<75
P-61	4-8	7/3/2014	8:44 AM	<71	<71	<71	<71	<71	<71	**69 J**	<71	<71	**69 J**
	8-12	7/3/2014	8:52 AM	<73	<73	<73	<73	<73	<73	**49 J**	<73	<73	**49 J**
	12-16	7/3/2014	8:59 AM	<75	<75	<75	<75	<75	<75	<75	<75	<75	<75
	16-20	7/3/2014	9:07 AM	<73	<73	<73	<73	<73	<73	<73	<73	<73	<73
	28-32	7/3/2014	9:49 AM	<75	<75	<75	<75	**100**	<75	<75	<75	<75	**100**
P-62	4-8	7/3/2014	10:32 AM	<71	<71	<71	<71	<71	<71	**59 J**	<71	<71	**59 J**
	8-12	7/3/2014	10:36 AM	<73	<73	<73	<73	<73	<73	<73	<73	<73	<73
	12-16	7/3/2014	10:40 AM	<73	<73	<73	<73	<73	<73	**93**	<73	<73	**93**
	16-20	7/3/2014	10:45 AM	<74	<74	<74	<74	<74	<74	<74	<74	<74	<74
	28-32	7/3/2014	11:12 AM	<86	<86	<86	<86	<86	<86	<86	<86	<86	<86
P-70	4-8	7/3/2014	11:52 AM	<71	<71	<71	<71	<71	<71	<71	<71	<71	<71
	8-12	7/3/2014	11:56 AM	<69	<69	<69	<69	<69	<69	<69	<69	<69	<69
	12-16	7/3/2014	11:59 AM	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70
	16-20	7/3/2014	12:04 PM	<71	<71	<71	<71	<71	<71	<71	<71	<71	<71
	28-32	7/3/2014	12:28 PM	<77	<77	<77	<77	<77	<77	<77	<77	<77	<77
P-71	4-8	7/7/2014	7:27 AM	<77	<77	<77	<77	<77	<77	**200**	<77	<77	**200**
	8-12	7/7/2014	7:31 AM	<74	<74	<74	<74	<74	<74	**960**	<74	<74	**960**
	12-16	7/7/2014	7:36 AM	<75	<75	<75	<75	<75	<75	**1,000**	<75	<75	**1,000**
	16-20	7/7/2014	7:40 AM	<150	<150	<150	<150	**1,400**	<150	<150	<150	<150	**1,400**
	28-32	7/7/2014	8:11 AM	<75	<75	<75	<75	<75	<75	<75	<75	<75	<75

Fairchild Republic Aircraft; Old Sump
Route 110 (Broad Hollow Road)
East Farmingdale, NY
Site No. 152004

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

2014 Remedial Investigation Soil Analytical Results (ug/Kg)
TestAmerica, Inc.
Methods: SW8082A

Location	Depth (ft BGS)	Date Collected	Time Collected	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Aroclor 1262	Aroclor 1268	Polychlorinated biphenyls (total)
P-72	4-8	7/7/2014	8:46 AM	<77	<77	<77	<77	<77	<77	120	<77	<77	120
	8-12	7/7/2014	8:49 AM	<73	<73	<73	<73	<73	<73	310	<73	<73	310
	12-16	7/7/2014	8:53 AM	<80	<80	<80	<80	<80	<80	210	<80	<80	210
	16-20	7/7/2014	8:59 AM	<81	<81	<81	<81	<81	<81	230	<81	<81	230
	28-32	7/7/2014	9:30 AM	<88	<88	<88	<88	1,300	<88	<88	<88	<88	1,300
P-73	4-8	7/7/2014	10:05 AM	<73	<73	<73	<73	<73	<73	950	<73	<73	950
	8-12	7/7/2014	10:09 AM	<75	<75	<75	<75	<75	<75	360	<75	<75	360
	12-16	7/7/2014	10:14 AM	<78	<78	<78	<78	560	<78	<78	<78	<78	560
	16-20	7/7/2014	10:20 AM	<78	<78	<78	<78	<78	<78	190	<78	<78	190
	28-32	7/7/2014	10:51 AM	<97	<97	<97	<97	880	<97	<97	<97	<97	880
P-74	4-8	7/7/2014	11:34 AM	<70	<70	<70	<70	<70	<70	150	<70	<70	150
	8-12	7/7/2014	11:38 AM	<75	<75	<75	<75	130	<75	130	<75	<75	260
	12-16	7/7/2014	11:44 AM	<70	<70	<70	<70	<70	<70	87	<70	<70	87
	16-20	7/7/2014	11:50 AM	<73	<73	<73	<73	340	<73	<73	<73	<73	340
	28-32	7/7/2014	12:20 PM	<100	<100	<100	<100	400	<100	<100	<100	<100	400
P-75	4-8	7/7/2014	12:55 PM	<73	<73	<73	<73	<73	<73	66 J	<73	<73	66 J
	8-12	7/7/2014	1:01 PM	<74	<74	<74	<74	<74	<74	41 J	<74	<74	41 J
	12-16	7/7/2014	1:06 PM	<73	<73	<73	<73	<73	<73	67 J	<73	<73	67 J
	16-20	7/7/2014	1:13 PM	<75	<75	<75	<75	<75	<75	48 J	<75	<75	48 J
	28-32	7/7/2014	1:43 PM	<73	<73	<73	<73	<73	<73	<73	<73	<73	<73
P-80	4-8	7/8/2014	8:46 AM	<72	<72	<72	<72	<72	<72	950	<72	<72	950
	8-12	7/8/2014	8:50 AM	<70	<70	<70	<70	<70	740	<70	<70	<70	740
	12-16	7/8/2014	8:56 AM	<72	<72	<72	<72	<72	420	<72	<72	<72	420
	16-20	7/8/2014	9:03 AM	<72	<72	<72	<72	<72	230	<72	<72	<72	230
	28-32	7/8/2014	9:35 AM	<74	<74	<74	<74	<74	<74	<74	<74	<74	<74
P-81	4-8	7/8/2014	10:13 AM	<68	<68	<68	<68	<68	<68	480	<68	<68	480
	8-12	7/8/2014	10:17 AM	<71	<71	<71	<71	<71	<71	380	<71	<71	380
	12-16	7/8/2014	10:21 AM	<77	<77	<77	<77	<77	<77	1,000	<77	<77	1,000
	16-20	7/8/2014	10:28 AM	<79	<79	<79	<79	850	<79	130	<79	<79	980
	28-32	7/8/2014	10:57 AM	<80	<80	<80	<80	<80	<80	<80	<80	<80	<80
P-82	4-8	7/8/2014	11:49 AM	<73	<73	<73	<73	<73	<73	<73	<73	<73	<73
	8-12	7/8/2014	11:54 AM	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70
	12-16	7/8/2014	12:01 PM	<72	<72	<72	<72	<72	<72	<72	<72	<72	<72
	16-20	7/8/2014	12:07 PM	<74	<74	<74	<74	<74	<74	<74	<74	<74	<74
	28-32	7/8/2014	12:40 PM	<95	<95	<95	<95	570	<95	<95	<95	<95	570
P-90	4-8	7/8/2014	1:13 PM	<71	<71	<71	<71	<71	<71	<71	<71	<71	<71
	8-12	7/8/2014	1:18 PM	<71	<71	<71	<71	<71	<71	<71	<71	<71	<71
	12-16	7/8/2014	1:28 PM	<69	<69	<69	<69	<69	<69	<69	<69	<69	<69
	16-20	7/9/2014	7:27 AM	<73	<73	<73	<73	<73	<73	<73	<73	<73	<73
	28-32	7/9/2014	8:01 AM	<76	<76	<76	<76	<76	<76	<76	<76	<76	<76
P-91	4-8	7/9/2014	8:18 AM	<72	<72	<72	<72	<72	<72	57 J	<72	<72	57 J
	8-12	7/9/2014	8:22 AM	<72	<72	<72	<72	<72	770	<72	<72	<72	770
	12-16	7/9/2014	8:28 AM	<71	<71	<71	<71	<71	<71	<71	<71	<71	<71
	16-20	7/9/2014	8:32 AM	<76	<76	<76	<76	<76	<76	<76	<76	<76	<76
	28-32	7/9/2014	9:02 AM	<76	<76	<76	<76	<76	<76	<76	<76	<76	<76
P-92	4-8	7/9/2014	9:44 AM	<71	<71	<71	<71	<71	<71	100	<71	<71	100
	8-12	7/9/2014	9:49 AM	<74	<74	<74	<74	<74	790	<74	<74	<74	790
	12-16	7/9/2014	9:54 AM	<73	<73	<73	<73	<73	<73	110	<73	<73	110
	16-20	7/9/2014	10:01 AM	<570	<570	<570	<570	5,400	<570	<570	<570	<570	5,400
	28-32	7/9/2014	10:32 AM	<84	<84	<84	<84	<84	<84	<84	<84	<84	<84
P-93	4-8	7/9/2014	11:16 AM	<69	<69	<69	<69	<69	<69	250	<69	<69	250
	8-12	7/9/2014	11:21 AM	<71	<71	<71	<71	<71	88	<71	<71	<71	88
	12-16	7/9/2014	11:26 AM	<72	<72	<72	<72	<72	120	<72	<72	<72	120
	16-20	7/9/2014	11:32 AM	<74	<74	<74	<74	<74	<74	<74	<74	<74	<74
	28-32	7/9/2014	12:03 PM	<74	<74	<74	<74	<74	<74	<74	<74	<74	<74
Soil Cleanup Objectives[a]	Commercial			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1,000
	Unrestricted			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	100

Notes:
n/a - not applicable / not analyzed
J - Indicates an estimated value below laboratory reporting limits
[a] - 6 NYCRR 375-6.8 (a, b)
- value exceeds 6 NYCRR 375-6.8 (a,b) unrestricted use SCO
- value exceeds both 6 NYCRR 375-6.8 (a,b) commercial and unrestricted use SCO's

Fairchild Republic Aircraft; Old Sump
Route 110 (Broad Hollow Road)
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Site No. 152004

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

2014 Remedial Investigation Soil Analytical Results (ug/Kg)
TestAmerica, Inc.
Methods: SW8260C

Location	P-06	P-08	P-27	P-33	Soil Cleanup Objectives[a]	
Depth (ft BGS)	28-32	28-32	28-32	28-32	Commercial	Unrestricted
Date Collected	6/27/2014	6/24/2014	6/20/2014	6/25/2014		
Time Collected	2:08 PM	10:13 AM	10:38 AM	2:10 PM		
1,1 Dichloroethane	<1	<0.97	<1.1	<1.1	240,000	270
1,1 Dichloroethene	<1	<0.97	<1.1	<1.1	500,000	330
1,1,1 Trichloroethane	<1	<0.97	<1.1	<1.1	500,000	680
1,1,2 Trichloroethane	<1	<0.97	<1.1	<1.1	n/a	n/a
1,1,2,2 Tetrachloroethane	<1	<0.97	<1.1	<1.1	n/a	n/a
1,2 Dibromoethane	<1	<0.97	<1.1	<1.1	n/a	n/a
1,2 Dichlorobenzene	<1	<0.97	<1.1	<1.1	500,000	1,100
1,2 Dichloroethane	<1	<0.97	<1.1	<1.1	30,000	20
1,2 Dichloropropane	<1	<0.97	<1.1	<1.1	n/a	n/a
1,2,3 Trichlorobenzene	<1	<0.97	<1.1	<1.1	n/a	n/a
1,2,4 Trichlorobenzene	<1	<0.97	<1.1	<1.1	n/a	n/a
1,3 Dichlorobenzene	<1	<0.97	<1.1	<1.1	280,000	2,400
1,4 Dichlorobenzene	<1	<0.97	<1.1	<1.1	130,000	1,800
1,4-Dioxane	<20	<19	<21	<22	130,000	100
2-Hexanone	<5.1	<4.9	<5.3	<5.4	n/a	n/a
4-Methyl-2-Pentanone	<5.1	<4.9	<5.3	<5.4	n/a	n/a
Acetone	34	41	12	19	500,000	50
Benzene	<1	<0.97	<1.1	<1.1	44,000	60
Bromochloromethane	<1	<0.97	<1.1	<1.1	n/a	n/a
Bromodichloromethane	<1	<0.97	<1.1	<1.1	n/a	n/a
Bromoform	<1	<0.97	<1.1	<1.1	n/a	n/a
Bromomethane	<1	<0.97	<1.1	<1.1	n/a	n/a
c 1,3 Dichloropropene	<1	<0.97	<1.1	<1.1	n/a	n/a
Carbon Disulfide	0.28 J	1.6	0.2 J	0.49 J	n/a	n/a
Carbon Tetrachloride	<1	<0.97	<1.1	<1.1	22,000	760
Chlorobenzene	<1	<0.97	<1.1	<1.1	500,000	1,100
Chloroethane	<1	<0.97	<1.1	<1.1	n/a	n/a
Chloroform	<1	<0.97	<1.1	<1.1	350,000	370
Chloromethane	<1	<0.97	<1.1	<1.1	n/a	n/a
cis-1,2-Dichloroethene	<1	<0.97	<1.1	<1.1	500,000	250
Cyclohexane	<1	<0.97	<1.1	<1.1	n/a	n/a
Cyclohexane, methyl-	<1	0.84 J	<1.1	<1.1	n/a	n/a
Dibromochloromethane	<1	<0.97	<1.1	<1.1	n/a	n/a
Dibromochloropropane	<1	<0.97	<1.1	<1.1	n/a	n/a
Dichlorodifluoromethane	<1	<0.97	<1.1	<1.1	n/a	n/a
Ethylbenzene	<1	<0.97	<1.1	<1.1	390,000	1,000
Freon 113	<1	<0.97	<1.1	<1.1	n/a	n/a
Isopropylbenzene	<1	<0.97	<1.1	<1.1	n/a	n/a
m + p Xylene	<1	<0.97	<1.1	<1.1	n/a	n/a
Methyl acetate	<5.1	<4.9	<5.3	<5.4	n/a	n/a
Methyl Ethyl Ketone	4.1 J	5	<5.3	2.2 J	500,000	120
Methylene Chloride	<1	1.3	0.89 BJ	<1.1	500,000	50
o-Xylene	<1	<0.97	<1.1	<1.1	n/a	n/a
Styrene	<1	<0.97	<1.1	<1.1	n/a	n/a

Fairchild Republic Aircraft; Old Sump
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ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

2014 Remedial Investigation Soil Analytical Results (ug/Kg)
TestAmerica, Inc.
Methods: SW8260C

Location	P-06	P-08	P-27	P-33	Soil Cleanup Objectives[a]	
Depth (ft BGS)	28-32	28-32	28-32	28-32	Commercial	Unrestricted
Date Collected	6/27/2014	6/24/2014	6/20/2014	6/25/2014		
Time Collected	2:08 PM	10:13 AM	10:38 AM	2:10 PM		
t 1,3 Dichloropropene	<1	<0.97	<1.1	<1.1	n/a	n/a
t butylmethylether	<1	<0.97	<1.1	<1.1	500,000	930
Tetrachloroethene	<1	<0.97	0.71 J	<1.1	150,000	1,300
Toluene	<1	0.22 J	<1.1	0.16 J	500,000	700
trans-1,2-Dichloroethene	<1	<0.97	<1.1	<1.1	500,000	190
Trichloroethylene	0.4 J	<0.97	0.14 J	<1.1	200,000	470
Trichlorofluoromethane	<1	<0.97	<1.1	<1.1	n/a	n/a
Vinyl Chloride	<1	<0.97	<1.1	<1.1	13,000	20
1-Methylcyclodecene (TIC)	n/a	9.4 JN !	n/a	n/a	n/a	n/a
2,6-Dimethyl nonane (TIC)	n/a	11 JN !	n/a	n/a	n/a	n/a
3,6-Dimethyl octane (TIC)	n/a	9.9 JN !	n/a	n/a	n/a	n/a
7-Methyltridecane (TIC)	n/a	6.7 JN !	n/a	n/a	n/a	n/a
Butyl cyclohexane (TIC)	n/a	7.7 JN !	n/a	n/a	n/a	n/a
Cyclohexane, pentyl- (TIC)	n/a	12 JN !	n/a	n/a	n/a	n/a
Decahydro-2-Methyl Naphthalene (TIC)	n/a	9.2 JN !	n/a	n/a	n/a	n/a
trans-Decahydro-naphthalene (TIC)	n/a	8.3 JN !	n/a	n/a	n/a	n/a
Unknown volatile organic with 2nd highest conc. (TIC)	n/a	7.1 J !	n/a	n/a	n/a	n/a
Unknown volatile organic with highest conc. (TIC)	n/a	8.2 J !	n/a	n/a	n/a	n/a
Calculated						
Total VOC's	38.78	139.46	13.94	21.85	n/a	n/a
Total BTEX	<5	0.22	<5.5	0.16	n/a	n/a
Total Xylenes	<2	<1.94	<2.2	<2.2	500,000	260

Notes:
n/a - not applicable / not analyzed
B - Analyte was detected in associated lab blank
J - Indicates an estimated value below laboratory reporting limits
N - Indicates the presumptive evidence of a compound
! - Indicates parameter/value was reported as a Tentatively Identified Compound (TIC)
[a] - 6 NYCRR 375-6.8 (a, b)

Fairchild Republic Aircraft; Old Sump
Route 110 (Broad Hollow Road)
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Site No. 152004

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

2014 Remedial Investigation Soil Analytical Results (ug/Kg)
TestAmerica, Inc.
Methods: SW8270D

Location	P-06	P-08	P-27	P-33	Soil Cleanup Objectives[a]	
Depth (ft BGS)	28-32	28-32	28-32	28-32	Commercial	Unrestricted
Date Collected	6/27/2014	6/24/2014	6/20/2014	6/25/2014		
Time Collected	2:08 PM	10:13 AM	10:38 AM	2:10 PM		
1,1-Biphenyl	<360	<740	<390	<390	n/a	n/a
1,2,4,5-Tetrachlorobenzene	<360	<740	<390	<390	n/a	n/a
2,3,4,6-Tetrachlorophenol	<360	<740	<390	<390	n/a	n/a
2,4,5-Trichlorophenol	<360	<740	<390	<390	n/a	n/a
2,4,6-Trichlorophenol	<360	<740	<390	<390	n/a	n/a
2,4-Dichlorophenol	<360	<740	<390	<390	n/a	n/a
2,4-Dimethylphenol	<360	<740	<390	<390	n/a	n/a
2,4-Dinitrophenol	<720	<1500	<790	<800	n/a	n/a
2,4-Dinitrotoluene	<72	<150	<79	<80	n/a	n/a
2,6-Dinitrotoluene	<72	<150	<79	<80	n/a	n/a
2-Chloronaphthalene	<360	<740	<390	<390	n/a	n/a
2-Chlorophenol	<360	<740	<390	<390	n/a	n/a
2-Methyl-4,6-dinitrophenol	<720	<1500	<790	<800	n/a	n/a
2-Methylnaphthalene	<360	<740	<390	<390	n/a	n/a
2-Nitroaniline	<360	<740	<390	<390	n/a	n/a
2-Nitrophenol	<360	<740	<390	<390	n/a	n/a
3,3-Dichlorobenzidine	<360	<740	<390	<390	n/a	n/a
3-Nitroaniline	<360	<740	<390	<390	n/a	n/a
4-Bromophenyl-phenylether	<360	<740	<390	<390	n/a	n/a
4-Chloro-3-methylphenol	<360	<740	<390	<390	n/a	n/a
4-Chloroaniline	<360	<740	<390	<390	n/a	n/a
4-Chlorophenyl-phenylether	<360	<740	<390	<390	n/a	n/a
4-Nitroaniline	<720	<1500	<790	<800	n/a	n/a
4-Nitrophenol	<360	<740	<390	<390	n/a	n/a
Acenaphthene	<360	<740	<390	<390	**500,000**	**20,000**
Acenaphthylene	<360	<740	<390	<390	**500,000**	**100,000**
Acetophenone	<360	<740	<390	<390	n/a	n/a
Anthracene	**67 J**	<740	<390	<390	**500,000**	**100,000**
Atrazine	<360	<740	<390	<390	n/a	n/a
Benzaldehyde	<360	<740	<390	<390	n/a	n/a
Benzo(a)anthracene	**300**	**110**	<39	<39	**5,600**	**1,000**
Benzo(a)pyrene	**260**	**93**	<39	<39	**1,000**	**1,000**
Benzo(b)fluoranthene	**420**	**150**	<39	<39	**5,600**	**1,000**
Benzo(g,h,i)perylene	**86 J**	**81 J**	<390	<390	**500,000**	**100,000**
Benzo(k)fluoranthene	**160**	<74	<39	<39	**56,000**	**800**
bis(2-Chloroethoxy)methane	<360	<740	<390	<390	n/a	n/a
bis(2-Chloroethyl)ether	<36	<74	<39	<39	n/a	n/a
bis(2-Chloroisopropyl)ether	<360	<740	<390	<390	n/a	n/a
bis(2-Ethylhexyl)phthalate	<360	<740	<390	<390	n/a	n/a
Butylbenzylphthalate	<360	<740	<390	<390	n/a	n/a
Caprolactam	<360	<740	<390	<390	n/a	n/a
Carbazole	<360	<740	<390	<390	n/a	n/a
Chrysene	**330 J**	**170 J**	<390	<390	**56,000**	**1,000**

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Site No. 152004

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

2014 Remedial Investigation Soil Analytical Results (ug/Kg)
TestAmerica, Inc.
Methods: SW8270D

Location	P-06	P-08	P-27	P-33	Soil Cleanup Objectives[a]	
Depth (ft BGS)	28-32	28-32	28-32	28-32	Commercial	Unrestricted
Date Collected	6/27/2014	6/24/2014	6/20/2014	6/25/2014		
Time Collected	2:08 PM	10:13 AM	10:38 AM	2:10 PM		
Dibenzo(a,h)anthracene	**43**	**16 J**	<39	<39	**560**	**330**
Dibenzofuran	<360	<740	<390	<390	**350,000**	**7,000**
Diethylphthalate	<360	<740	<390	<390	n/a	n/a
Dimethylphthalate	<360	<740	<390	<390	n/a	n/a
Di-n-butylphthalate	<360	<740	<390	<390	n/a	n/a
Di-n-octylphthalate	<360	<740	<390	<390	n/a	n/a
Fluoranthene	**730**	**220 J**	<390	<390	**500,000**	**100,000**
Fluorene	<360	<740	<390	<390	**500,000**	**30,000**
Hexachlorobenzene	<36	<74	<39	<39	**6,000**	**330**
Hexachlorobutadiene	<72	<150	<79	<80	n/a	n/a
Hexachlorocyclopentadiene	<360	<740	<390	<390	n/a	n/a
Hexachloroethane	<36	<74	<39	<39	n/a	n/a
Indeno(1,2,3-cd)pyrene	**86**	**86**	<39	<39	**5,600**	**500**
Isophorone	<360	<740	<390	<390	n/a	n/a
Naphthalene	<360	<740	<390	<390	**500,000**	**12,000**
Nitrobenzene	<36	<74	<39	<39	n/a	n/a
N-Nitrosodi-N-Propylamine	<36	<74	<39	<39	n/a	n/a
N-Nitrosodiphenylamine	<360	<740	<390	<390	n/a	n/a
o-cresol	<360	<740	<390	<390	**500,000**	**330**
p-cresol	<360	<740	<390	<390	**500,000**	**330**
Pentachlorophenol	<720	<1500	<790	<800	**6,700**	**800**
Phenanthrene	**270 J**	**150 J**	<390	<390	**500,000**	**100,000**
Phenol (total)	<360	<740	<390	<390	**500,000**	**330**
Pyrene	**410**	**250 J**	<390	<390	**500,000**	**100,000**
2,6,10,14-Tetramethyl pentadecane (TIC)	n/a	**1200 JN !**	n/a	n/a	n/a	n/a
2,6,10,14-Tetramethylhexadecane (TIC)	n/a	**820 JN !**	n/a	n/a	n/a	n/a
Calculated Total SVOC's	**3,162**	**3,346**	<22936	<22979	n/a	n/a

Notes:
n/a - not applicable / not analyzed
B - Analyte was detected in associated lab blank
J - Indicates an estimated value below laboratory reporting limits
N - Indicates the presumptive evidence of a compound
! - Indicates parameter/value was reported as a Tentatively Identified Compound (TIC)
[a] - 6 NYCRR 375-6.8 (a, b)

Fairchild Republic Aircraft; Old Sump
Route 110 (Broad Hollow Road)
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ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

2014 Remedial Investigation Soil Analytical Results (mg/Kg)
TestAmerica, Inc.
Methods: SW6010C, SW7471B

Location	P-06	P-08	P-27	P-33	Soil Cleanup Objectives[a]	
Depth (ft BGS)	28-32	28-32	28-32	28-32	Commercial	Unrestricted
Date Collected	6/27/2014	6/24/2014	6/20/2014	6/25/2014		
Time Collected	2:08 PM	10:13 AM	10:38 AM	2:10 PM		
Aluminum	3,020	709	674	763	n/a	n/a
Antimony	<3.8	<4.5	<3.5	<4.1	n/a	n/a
Arsenic	1.1 J	<3.4	<2.6	<3.1	16	13
Barium	10.9 J	4.3 J	4 J	3.5 J	400	350
Beryllium	<0.38	<0.45	<0.35	<0.41	590	7.2
Cadmium	0.37 J	1.7	<0.7	<0.82	9.3	2.5
Calcium	612 J	135 J	<871	<1020	n/a	n/a
Chromium (total)	62.7	37.3	5.7	5	1,500[b]	30[b]
Cobalt	1.5 J	<11.3	<8.7	<10.2	n/a	n/a
Copper	7.1	2.1 J	<4.4	<5.1	270	50
Iron	5,430	1,310	1,840	1,720	n/a	n/a
Lead	7.7	3.8	0.75 J	<2	1,000	63
Magnesium	502 J	99.8 J	128 J	158 J	n/a	n/a
Manganese	73.1	16.6	9.2	11.9	10,000	1,600
Mercury	0.03	0.03	<0.019	<0.019	2.8	0.18
Nickel	3.1 J	<9	<7	<8.2	310	30
Potassium	173 J	41.7 J	68.9 J	81.4 J	n/a	n/a
Selenium	<3.8	<4.5	<3.5	<4.1	1,500	3.9
Silver	0.57 J	1 J	<1.7	<2	1,500	2
Sodium	<953	<1130	<871	<1020	n/a	n/a
Thallium	<3.8	<4.5	<3.5	<4.1	n/a	n/a
Vanadium	6.7 J	1.7 J	2.2 J	2.1 J	n/a	n/a
Zinc	26.6	18.2	8.1	7.8	10,000	109

Notes:
n/a - not applicable / not analyzed
J - Indicates an estimated value below laboratory reporting limits
[a] - 6 NYCRR 375-6.8 (a, b)
[b] - SCO's for trivalent chromium are presented
- value exceeds 6 NYCRR 375-6.8 (a,b) unrestricted use SCO

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ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

2014 Remedial Investigation Soil Analytical Results (ug/Kg)
TestAmerica, Inc.
Methods: SW8081B

Location	P-06	P-08	P-27	P-33	Soil Cleanup Objectives[a]	
Depth (ft BGS)	28-32	28-32	28-32	28-32	Commercial	Unrestricted
Date Collected	6/27/2014	6/24/2014	6/20/2014	6/25/2014		
Time Collected	2:08 PM	10:13 AM	10:38 AM	2:10 PM		
4,4,-DDT	<7.2	<7.5	<7.9	<8	47,000	3.3
4,4-DDD	<7.2	<7.5	<7.9	<8	92,000	3.3
4,4-DDE	<7.2	<7.5	<7.9	<8	62,000	3.3
a BHC	<7.2	<7.5	<7.9	<8	3,400	20
Aldrin	<7.2	<7.5	<7.9	<8	680	5
b BHC	<7.2	<7.5	<7.9	<8	3,000	36
Chlordane	<72	<75	<79	<80	n/a	n/a
delta-BHC	<7.2	<7.5	<7.9	<8	500,000	40
Dieldrin	<7.2	<7.5	<7.9	<8	1,400	5
Endosulfan I	<7.2	<7.5	<7.9	<8	200,000	2,400
Endosulfan II	<7.2	<7.5	<7.9	<8	200,000	2,400
Endosulfan Sulfate	<7.2	<7.5	<7.9	<8	200,000	2,400
Endrin	<7.2	<7.5	<7.9	<8	89,000	14
Endrin Aldehyde	<7.2	<7.5	<7.9	<8	n/a	n/a
Endrin ketone	<7.2	<7.5	<7.9	<8	n/a	n/a
Gamma-BHC(Lindane)	<7.2	<7.5	<7.9	<8	9,200	100
Heptachlor	<7.2	<7.5	<7.9	<8	15,000	42
Heptachlor Epoxide	<7.2	<7.5	<7.9	<8	n/a	n/a
Methoxychlor	<7.2	<7.5	<7.9	<8	n/a	n/a
Toxaphene	<72	<75	<79	<80	n/a	n/a

Notes:
n/a - not applicable / not analyzed
[a] - 6 NYCRR 375-6.8 (a, b)

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Site No. 152004

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

2014 Remedial Investigation Soil Analytical Results (ug/Kg)
TestAmerica, Inc.
Methods: SW8082A

Location	BUD-01		BUD-02		BUD-03		Soil Cleanup Objectives[a]	
Depth (ft BGS)	14-18	18-22	14-18	18-22	14-18	22-26	Commercial	Unrestricted
Date Collected	6/26/2014	6/26/2014	6/26/2014	6/26/2014	6/26/2014	6/26/2014		
Time Collected	8:09 AM	8:19 AM	9:13 AM	9:25 AM	9:45 AM	10:22 AM		
Aroclor 1016	<72	<69	<70	<70	<69	<71	n/a	n/a
Aroclor 1221	<72	<69	<70	<70	<69	<71	n/a	n/a
Aroclor 1232	<72	<69	<70	<70	<69	<71	n/a	n/a
Aroclor 1242	<72	<69	<70	<70	<69	<71	n/a	n/a
Aroclor 1248	<72	<69	<70	<70	<69	<71	n/a	n/a
Aroclor 1254	<72	<69	<70	<70	<69	<71	n/a	n/a
Aroclor 1260	<72	<69	<70	<70	<69	<71	n/a	n/a
Aroclor 1262	<72	<69	<70	<70	<69	<71	n/a	n/a
Aroclor 1268	<72	<69	<70	<70	<69	<71	n/a	n/a
Polychlorinated biphenyls (total)	<72	<69	<70	<70	<69	<71	**1,000**	**100**

Notes:
n/a - not applicable / not analyzed
[a] - 6 NYCRR 375-6.8 (a, b)

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ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

2014 Remedial Investigation Soil Analytical Results (ug/Kg)
TestAmerica, Inc.
Methods: SW8260C

Location	BUD-01		BUD-02		BUD-03		Soil Cleanup Objectives[a]	
Depth (ft BGS)	14-18	18-22	14-18	18-22	14-18	22-26	Commercial	Unrestricted
Date Collected	6/26/2014	6/26/2014	6/26/2014	6/26/2014	6/26/2014	6/26/2014		
Time Collected	8:09 AM	8:19 AM	9:13 AM	9:25 AM	9:45 AM	10:22 AM		
1,1 Dichloroethane	<1.1	<0.92	<0.98	<0.89	<0.92	<1	240,000	270
1,1 Dichloroethene	<1.1	<0.92	<0.98	<0.89	<0.92	<1	500,000	330
1,1,1 Trichloroethane	<1.1	<0.92	<0.98	<0.89	<0.92	<1	500,000	680
1,1,2 Trichloroethane	<1.1	<0.92	<0.98	<0.89	<0.92	<1	n/a	n/a
1,1,2,2 Tetrachloroethane	<1.1	<0.92	<0.98	<0.89	<0.92	<1	n/a	n/a
1,2 Dibromoethane	<1.1	<0.92	<0.98	<0.89	<0.92	<1	n/a	n/a
1,2 Dichlorobenzene	<1.1	<0.92	<0.98	<0.89	<0.92	<1	500,000	1,100
1,2 Dichloroethane	<1.1	<0.92	<0.98	<0.89	<0.92	<1	30,000	20
1,2 Dichloropropane	<1.1	<0.92	<0.98	<0.89	<0.92	<1	n/a	n/a
1,2,3 Trichlorobenzene	<1.1	<0.92	<0.98	<0.89	<0.92	<1	n/a	n/a
1,2,4 Trichlorobenzene	<1.1	<0.92	<0.98	<0.89	<0.92	<1	n/a	n/a
1,3 Dichlorobenzene	<1.1	<0.92	<0.98	<0.89	<0.92	<1	280,000	2,400
1,4 Dichlorobenzene	<1.1	<0.92	<0.98	<0.89	<0.92	<1	130,000	1,800
1,4-Dioxane	<21	<18	<20	<18	<18	<20	130,000	100
2-Hexanone	<5.3	<4.6	<4.9	<4.5	<4.6	<5	n/a	n/a
4-Methyl-2-Pentanone	<5.3	<4.6	<4.9	<4.5	<4.6	<5	n/a	n/a
Acetone	**48**	**11**	**27**	**35**	**16**	**26**	500,000	50
Benzene	**1.7**	<0.92	<0.98	**1.1**	<0.92	<1	44,000	60
Bromochloromethane	<1.1	<0.92	<0.98	<0.89	<0.92	<1	n/a	n/a
Bromodichloromethane	<1.1	<0.92	<0.98	<0.89	<0.92	<1	n/a	n/a
Bromoform	<1.1	<0.92	<0.98	<0.89	<0.92	<1	n/a	n/a
Bromomethane	<1.1	<0.92	<0.98	<0.89	<0.92	<1	n/a	n/a
c 1,3 Dichloropropene	<1.1	<0.92	<0.98	<0.89	<0.92	<1	n/a	n/a
Carbon Disulfide	**5.1**	<0.92	<0.98	**2.9**	**0.5 J**	**0.38 J**	n/a	n/a
Carbon Tetrachloride	<1.1	<0.92	<0.98	<0.89	<0.92	<1	22,000	760
Chlorobenzene	<1.1	<0.92	<0.98	<0.89	<0.92	<1	500,000	1,100
Chloroethane	<1.1	<0.92	<0.98	<0.89	<0.92	<1	n/a	n/a
Chloroform	<1.1	<0.92	<0.98	<0.89	<0.92	<1	350,000	370
Chloromethane	<1.1	<0.92	<0.98	<0.89	<0.92	<1	n/a	n/a
cis-1,2-Dichloroethene	**0.26 J**	<0.92	**0.18 J**	<0.89	<0.92	<1	500,000	250
Cyclohexane	**3.5**	<0.92	<0.98	**2**	<0.92	<1	n/a	n/a
Cyclohexane, methyl-	**8.4**	<0.92	**0.2 J**	**3**	**0.32 J**	<1	n/a	n/a
Dibromochloromethane	<1.1	<0.92	<0.98	<0.89	<0.92	<1	n/a	n/a
Dibromochloropropane	<1.1	<0.92	<0.98	<0.89	<0.92	<1	n/a	n/a
Dichlorodifluoromethane	<1.1	<0.92	<0.98	<0.89	<0.92	<1	n/a	n/a
Ethylbenzene	**3.1**	<0.92	<0.98	**3.6**	**0.87 J**	<1	390,000	1,000
Freon 113	<1.1	<0.92	<0.98	<0.89	<0.92	<1	n/a	n/a
Isopropylbenzene	**3.8**	<0.92	<0.98	**2.4**	**0.34 J**	<1	n/a	n/a
m + p Xylene	**3.3**	<0.92	<0.98	**8.2**	**2.3**	<1	n/a	n/a
Methyl acetate	<5.3	<4.6	<4.9	<4.5	<4.6	<5	n/a	n/a
Methyl Ethyl Ketone	**8.1**	**0.98 J**	**3.5 J**	**5.5**	**1.8 J**	**3.7 J**	500,000	120
Methylene Chloride	**0.89 BJ**	**1.3**	**1.2**	**1.2**	**1.2**	**1.3**	500,000	50
o-Xylene	**1.3**	<0.92	<0.98	**5.1**	**1.5**	**0.29 J**	n/a	n/a
Styrene	<1.1	<0.92	<0.98	<0.89	<0.92	<1	n/a	n/a
t 1,3 Dichloropropene	<1.1	<0.92	<0.98	<0.89	<0.92	<1	n/a	n/a
t butylmethylether	**2.7**	**0.13 J**	**1.1**	**2.3**	**0.27 J**	**1.7**	500,000	930
Tetrachloroethene	<1.1	<0.92	<0.98	<0.89	<0.92	<1	150,000	1,300
Toluene	**0.77 J**	<0.92	**0.14 J**	**3.3**	**0.49 J**	**0.15 J**	500,000	700
trans-1,2-Dichloroethene	<1.1	<0.92	**0.26 J**	<0.89	<0.92	<1	500,000	190
Trichloroethylene	**0.18 J**	<0.92	**1.4**	<0.89	<0.92	<1	200,000	470
Trichlorofluoromethane	<1.1	<0.92	<0.98	<0.89	<0.92	<1	n/a	n/a
Vinyl Chloride	<1.1	<0.92	<0.98	<0.89	<0.92	<1	13,000	20

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ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

2014 Remedial Investigation Soil Analytical Results (ug/Kg)
TestAmerica, Inc.
Methods: SW8260C

Location	BUD-01		BUD-02		BUD-03		Soil Cleanup Objectives[a]	
Depth (ft BGS)	14-18	18-22	14-18	18-22	14-18	22-26	Commercial	Unrestricted
Date Collected	6/26/2014	6/26/2014	6/26/2014	6/26/2014	6/26/2014	6/26/2014		
Time Collected	8:09 AM	8:19 AM	9:13 AM	9:25 AM	9:45 AM	10:22 AM		
1,2,3-trimethyl-benzene (TIC)	n/a	n/a	n/a	49 JN !	10 JN !	n/a	n/a	n/a
1,2,4 Trimethylbenzene (TIC)	60 JN !	n/a	n/a	n/a	n/a	n/a	190,000	3,600
1,2,4,5 Tetramethylbenzene (TIC)	33 JN !	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1,7-dimethyl napthalene (TIC)	n/a	n/a	n/a	n/a	5.3 JN !	n/a	n/a	n/a
1-ethenyl-3-ethylbenzene (TIC)	32 JN !	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1-ethenyl-4-ethylbenzene (TIC)	n/a	n/a	n/a	17 JN !	n/a	n/a	n/a	n/a
1-methyl-3(1-meth)-benzene (TIC)	n/a	n/a	n/a	n/a	4.7 JN !	n/a	n/a	n/a
1-Methylnaphthalene (TIC)	29 JN !	n/a	9 JN !	22 JN !	4.6 JN !	n/a	n/a	n/a
2,3 dihydro-1H-Indene (TIC)	n/a	n/a	n/a	18 JN !	n/a	n/a	n/a	n/a
2,3 Dihydro-1-methyl-1H-Indene (TIC)	70 JN !	n/a	n/a	45 JN !	9.6 JN !	n/a	n/a	n/a
2-ethyl-1,3-dimethyl-Benzene (TIC)	n/a	n/a	n/a	22 JN !	n/a	n/a	n/a	n/a
2-Methylnaphthalene (TIC)	47 JN !	n/a	10 JN !	42 JN !	9.1 JN !	n/a	n/a	n/a
5-Methyl-1,2,3,4-Tetrahydronapthalene (TIC)	n/a	n/a	n/a	38 JN !	7 JN !	n/a	n/a	n/a
6-Methyl-1,2,3,4-Tetrahydronapthalene (TIC)	51 JN !	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Benzene, 1-ethyl-2,4-dimethyl- (TIC)	43 JN !	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Naphthalene (TIC)	n/a	n/a	29 JN !	17 JN !	n/a	n/a	500,000	12,000
Naphthalene, 1,2,3,4-tetrahydro- (TIC)	44 JN !	n/a	n/a	33 JN !	6.4 JN !	n/a	n/a	n/a
Unknown volatile organic with highest conc. (TIC)	30 J !	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Calculated								
Total VOC's (including TIC's)	530.1	13.41	82.98	378.6	82.29	33.52	n/a	n/a
Total BTEX	10.17	<4.6	0.14 J	21.3	5.16	0.44 J	n/a	n/a
Total Xylenes	4.6	<1.84	<1.96	13.3	3.8	0.29 J	500,000	260

Notes:
n/a - not applicable / not analyzed
B - Analyte was detected in associated lab blank
J - Indicates an estimated value below laboratory reporting limits
N - Indicates the presumptive evidence of a compound
! - Indicates parameter/value was reported as a Tentatively Identified Compound (TIC)
[a] - 6 NYCRR 375-6.8 (a, b)

Fairchild Republic Aircraft; Old Sump
Route 110 (Broad Hollow Road)
East Farmingdale, NY
Site No. 152004

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

2014 Remedial Investigation Soil Analytical Results (ug/Kg)
TestAmerica, Inc.
Methods: SW8270D

Location	BUD-01		BUD-02		BUD-03		Soil Cleanup Objectives[a]	
Depth (ft BGS)	14-18	18-22	14-18	18-22	14-18	22-26	Commercial	Unrestricted
Date Collected	6/26/2014	6/26/2014	6/26/2014	6/26/2014	6/26/2014	6/26/2014		
Time Collected	8:09 AM	8:19 AM	9:13 AM	9:25 AM	9:45 AM	10:22 AM		
1,1-Biphenyl	100 J	<340	<690	<350	<340	<350	n/a	n/a
1,2,4,5-Tetrachlorobenzene	<350	<340	<690	<350	<340	<350	n/a	n/a
2,3,4,6-Tetrachlorophenol	<350	<340	<690	<350	<340	<350	n/a	n/a
2,4,5-Trichlorophenol	<350	<340	<690	<350	<340	<350	n/a	n/a
2,4,6-Trichlorophenol	<350	<340	<690	<350	<340	<350	n/a	n/a
2,4-Dichlorophenol	<350	<340	<690	<350	<340	<350	n/a	n/a
2,4-Dimethylphenol	<350	<340	<690	<350	<340	<350	n/a	n/a
2,4-Dinitrophenol	<720	<690	<1400	<700	<690	<710	n/a	n/a
2,4-Dinitrotoluene	<72	<69	<140	<70	<69	<71	n/a	n/a
2,6-Dinitrotoluene	<72	<69	<140	<70	<69	<71	n/a	n/a
2-Chloronaphthalene	<350	<340	<690	<350	<340	<350	n/a	n/a
2-Chlorophenol	<350	<340	<690	<350	<340	<350	n/a	n/a
2-Methyl-4,6-dinitrophenol	<720	<690	<1400	<700	<690	<710	n/a	n/a
2-Methylnaphthalene	430	<340	<690	140 J	<340	<350	n/a	n/a
2-Nitroaniline	<350	<340	<690	<350	<340	<350	n/a	n/a
2-Nitrophenol	<350	<340	<690	<350	<340	<350	n/a	n/a
3,3-Dichlorobenzidine	<350	<340	<690	<350	<340	<350	n/a	n/a
3-Nitroaniline	<350	<340	<690	<350	<340	<350	n/a	n/a
P27	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
4-Bromophenyl-phenylether	<350	<340	<690	<350	<340	<350	n/a	n/a
4-Chloro-3-methylphenol	<350	<340	<690	<350	<340	<350	n/a	n/a
4-Chloroaniline	<350	<340	<690	<350	<340	<350	n/a	n/a
4-Chlorophenyl-phenylether	<350	<340	<690	<350	<340	<350	n/a	n/a
4-Nitroaniline	<720	<690	<1400	<700	<690	<710	n/a	n/a
4-Nitrophenol	<350	<340	<690	<350	<340	<350	n/a	n/a
Acenaphthene	380	<340	270 J	61 J	<340	<350	500,000	20,000
Acenaphthylene	120 J	<340	<690	<350	<340	<350	500,000	100,000
Acetophenone	<350	<340	<690	<350	<340	<350	n/a	n/a
Anthracene	890	<340	2,400	150 J	<340	<350	500,000	100,000
Atrazine	<350	<340	<690	<350	<340	<350	n/a	n/a
Benzaldehyde	<350	<340	<690	<350	<340	<350	n/a	n/a
Benzo(a)anthracene	1,600	110	5,400	300	120	69	5,600	1,000
Benzo(a)pyrene	1,500	110	4,500	290	100	52	1,000	1,000
Benzo(b)fluoranthene	2,200	130	5,400	400	130	74	5,600	1,000
Benzo(g,h,i)perylene	420	98 J	1,500	87 J	65 J	44 J	500,000	100,000
Benzo(k)fluoranthene	890	49	2,300	170	50	29 J	56,000	800
bis(2-Chloroethoxy)methane	<350	<340	<690	<350	<340	<350	n/a	n/a
bis(2-Chloroethyl)ether	<35	<34	<69	<35	<34	<35	n/a	n/a
bis(2-Chloroisopropyl)ether	<350	<340	<690	<350	<340	<350	n/a	n/a
bis(2-Ethylhexyl)phthalate	<350	<340	<690	280 J	<340	<350	n/a	n/a
Butylbenzylphthalate	430	<340	<690	<350	<340	<350	n/a	n/a
Caprolactam	<350	<340	<690	<350	<340	<350	n/a	n/a
Carbazole	410	<340	420 J	68 J	<340	<350	n/a	n/a
Chrysene	1,600	110 J	4,900	320 J	120 J	63 J	56,000	1,000
Dibenzo(a,h)anthracene	160	39	580	36	29 J	25 J	560	330
Dibenzofuran	330 J	<340	210 J	59 J	<340	<350	350,000	7,000
Diethylphthalate	<350	<340	<690	<350	<340	<350	n/a	n/a
Dimethylphthalate	<350	<340	<690	<350	<340	<350	n/a	n/a
Di-n-butylphthalate	47 J	<340	<690	<350	<340	<350	n/a	n/a
Di-n-octylphthalate	<350	<340	<690	<350	<340	<350	n/a	n/a
Fluoranthene	4,700	160 J	12,000	670	140 J	100 J	500,000	100,000
Fluorene	700	<340	600 J	140 J	<340	<350	500,000	30,000
Hexachlorobenzene	<35	<34	<69	<35	<34	<35	6,000	330
Hexachlorobutadiene	<72	<69	<140	<70	<69	<71	n/a	n/a
Hexachlorocyclopentadiene	<350	<340	<690	<350	<340	<350	n/a	n/a
Hexachloroethane	<35	<34	<69	<35	<34	<35	n/a	n/a
Indeno(1,2,3-cd)pyrene	500	110	1,900	110	83	57	5,600	500
Isophorone	150 J	<340	<690	<350	<340	<350	n/a	n/a
Naphthalene	110 J	<340	93 J	<350	<340	<350	500,000	12,000
Nitrobenzene	<35	<34	<69	<35	<34	<35	n/a	n/a
N-Nitrosodi-N-Propylamine	<35	<34	<69	<35	<34	<35	n/a	n/a
N-Nitrosodiphenylamine	<350	<340	<690	<350	<340	<350	n/a	n/a
o-cresol	<350	<340	<690	<350	<340	<350	500,000	330

Fairchild Republic Aircraft; Old Sump
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East Farmingdale, NY
Site No. 152004

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

2014 Remedial Investigation Soil Analytical Results (ug/Kg)
TestAmerica, Inc.
Methods: SW8270D

Location	BUD-01		BUD-02		BUD-03		Soil Cleanup Objectives[a]	
Depth (ft BGS)	14-18	18-22	14-18	18-22	14-18	22-26	Commercial	Unrestricted
Date Collected	6/26/2014	6/26/2014	6/26/2014	6/26/2014	6/26/2014	6/26/2014		
Time Collected	8:09 AM	8:19 AM	9:13 AM	9:25 AM	9:45 AM	10:22 AM		
p-cresol	<350	<340	<690	<350	<340	<350	500,000	330
Pentachlorophenol	<720	<690	<1400	<700	<690	<710	6,700	800
Phenanthrene	4,000	96 J	7,400	670	78 J	47 J	500,000	100,000
Phenol (total)	<350	<340	<690	<350	<340	<350	500,000	330
Pyrene	2,400	230 J	7,100	390	200 J	130 J	500,000	100,000
10,18-bisnorabieta-5,7,9(10),11,13-penta (TIC)	n/a	n/a	n/a	1200 JN !	n/a	n/a	n/a	n/a
11H-benzo[B]fluorine (TIC)	n/a	n/a	730 JN !	n/a	n/a	n/a	n/a	n/a
1-methylfluorene (TIC)	1400 JN !	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2,6,11-Trimethyldodecane (TIC)	n/a	n/a	n/a	1300 JN !	n/a	n/a	n/a	n/a
2,6,8-trimethyl-decane (TIC)	1900 JN !	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2,7-dimethyl napthalene (TIC)	n/a	n/a	n/a	480 JN !	n/a	n/a	n/a	n/a
3-methyl-4-(methoxycarbonyl)hexa-2,4-die (TIC)	1100 JN !	n/a	n/a	n/a	n/a	n/a	n/a	n/a
4H-cyclopenta[def]phenanthrene (TIC)	n/a	n/a	2000 JN !	n/a	n/a	n/a	n/a	n/a
5-propyltridecane (TIC)	4600 JN !	n/a	n/a	n/a	n/a	n/a	n/a	n/a
9H-fluorene, 3-methyl- (TIC)	n/a	n/a	n/a	630 JN !	n/a	n/a	n/a	n/a
Benzo[E]pyrene (TIC)	1100 JN !	n/a	1000 JN !	n/a	n/a	n/a	n/a	n/a
Dodecane (TIC)	n/a	n/a	n/a	430 JN !	n/a	n/a	n/a	n/a
Fluoranthene, 2-methyl- (TIC)	n/a	n/a	640 JN !	n/a	n/a	n/a	n/a	n/a
Heptadecane, 2,6,10,14-tetramethyl- (TIC)	1500 JN !	n/a	n/a	520 JN !	n/a	n/a	n/a	n/a
Heptadecane, 2,6-dimethyl- (TIC)	n/a	n/a	n/a	2700 JN !	n/a	n/a	n/a	n/a
Methylanthracene, 2- (TIC)	1300 JN !	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Napthalene, 1,6-dimethyl- (TIC)	1100 JN !	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Naphthalene, 2,3-dimethyl- (TIC)	1100 JN !	n/a	n/a	n/a	n/a	n/a	n/a	n/a
N-hexadecane (TIC)	n/a	n/a	n/a	580 JN !	n/a	n/a	n/a	n/a
Phenanthrene, 2,5-dimethyl- (TIC)	1200 JN !	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Tridecane (TIC)	1100 JN !	n/a	n/a	770 JN !	n/a	n/a	n/a	n/a
Undecane (TIC)	2400 JN !	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Uknown semivolatile with 2nd highest conc. (TIC)	1500 J !	n/a	n/a	540 J !	n/a	n/a	n/a	n/a
Uknown semivolatile with 3rd highest conc. (TIC)	1400 J !	n/a	n/a	520 J !	n/a	n/a	n/a	n/a
Uknown semivolatile with 4th highest conc. (TIC)	1200 J !	n/a	n/a	480 J !	n/a	n/a	n/a	n/a
Uknown semivolatile with 5th highest conc. (TIC)	1200 J !	n/a	n/a	460 J !	n/a	n/a	n/a	n/a
Uknown semivolatile with 6th highest conc. (TIC)	1100 J !	n/a	n/a	450 J !	n/a	n/a	n/a	n/a
Uknown semivolatile with 7th highest conc. (TIC)	1000 J !	n/a	n/a	450 J !	n/a	n/a	n/a	n/a
Unknown semivolatile with highest conc. (TIC)	2100 J !	n/a	n/a	610 J !	340 J !	n/a	n/a	n/a
Z-2-tridecen-1-OL (TIC)	n/a	n/a	n/a	1100 JN !	n/a	n/a	n/a	n/a
Calculated Total SVOC's (including TIC's)	54,567	1,242	61,343	18,361	1,455	690	n/a	n/a

Notes:
n/a - not applicable / not analyzed
B - Analyte was detected in associated lab blank
J - Indicates an estimated value below laboratory reporting limits
N - Indicates the presumptive evidence of a compound
! - Indicates parameter/value was reported as a Tentatively Identified Compound (TIC)
[a] - 6 NYCRR 375-6.8 (a, b)
- value exceeds 6 NYCRR 375-6.8 (a,b) unrestricted use SCO
- value exceeds both 6 NYCRR 375-6.8 (a,b) commercial and unrestricted use SCO's

Fairchild Republic Aircraft; Old Sump
Route 110 (Broad Hollow Road)
East Farmingdale, NY
Site No. 152004

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

2014 Remedial Investigation Soil Analytical Results (mg/Kg)
TestAmerica, Inc.
Methods: SW6010C, SW7471B

Location	BUD-01		BUD-02		BUD-03		Soil Cleanup Objectives[a]	
Depth (ft BGS)	14-18	18-22	14-18	18-22	14-18	22-26	Commercial	Unrestricted
Date Collected	6/26/2014	6/26/2014	6/26/2014	6/26/2014	6/26/2014	6/26/2014		
Time Collected	8:09 AM	8:19 AM	9:13 AM	9:25 AM	9:45 AM	10:22 AM		
Aluminum	5,050	2,710	2,450	2,260	1,890	2,880	n/a	n/a
Antimony	<3.1	<3.7	<3.5	<3.1	<3.3	<2.9	n/a	n/a
Arsenic	4.3	2.1 J	1.5 J	1.1 J	0.76 J	1 J	16	13
Barium	88.3	16.2 J	15.7 J	16.4 J	9.9 J	9.8 J	400	350
Beryllium	0.21 J	<0.37	<0.35	<0.31	<0.33	<0.29	590	7.2
Cadmium	<0.63	<0.74	<0.7	<0.62	<0.66	<0.59	9.3	2.5
Calcium	27,800	608 J	5,840	2,390	4,020	890	n/a	n/a
Chromium (total)	33.3	6.8	7.1	13.4	4.9	9.2	1,500[b]	30[b]
Cobalt	2.7 J	2.6 J	1.4 J	1.5 J	1.1 J	1.7 J	n/a	n/a
Copper	33.6	5.3	4.5	6.2	3.1 J	3.2 J	270	50
Iron	10,200	15,500	6,640	4,790	4,100	6,030	n/a	n/a
Lead	78.4	5.4	14.5	10	7.5	4.3	1,000	63
Magnesium	3,360	499 J	2,340	1,090	599 J	518 J	n/a	n/a
Manganese	143	354	93.2	64.2	74	88.1	10,000	1,600
Mercury	<0.018	0.11	0.03	0.02	0.08	<0.017	2.8	0.18
Nickel	14.5	4.1 J	2.8 J	3.9 J	2.3 J	2.9 J	310	30
Potassium	570 J	184 J	175 J	217 J	187 J	186 J	n/a	n/a
Selenium	<3.1	<3.7	<3.5	<3.1	<3.3	<2.9	1,500	3.9
Silver	<1.6	<1.8	<1.8	<1.5	<1.6	<1.5	1,500	2
Sodium	142 J	<924	<880	<773	<824	<736	n/a	n/a
Thallium	<3.1	<3.7	<3.5	<3.1	<3.3	<2.9	n/a	n/a
Vanadium	45.5	7.2 J	5.7 J	8.9	4.2 J	5.7 J	n/a	n/a
Zinc	128	14.3	20.6	17.7	10.9	11.2	10,000	109

Notes:
n/a - not applicable / not analyzed
J - Indicates an estimated value below laboratory reporting limits
[a] - 6 NYCRR 375-6.8 (a, b)
[b] - SCO's for trivalent chromium are presented
- value exceeds 6 NYCRR 375-6.8 (a,b) unrestricted use SCO

Fairchild Republic Aircraft; Old Sump
Route 110 (Broad Hollow Road)
East Farmingdale, NY
Site No. 152004

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

2014 Remedial Investigation Soil Analytical Results (ug/Kg)
TestAmerica, Inc.
Methods: SW8081B

Location	BUD-01		BUD-02		BUD-03		Soil Cleanup Objectives[a]	
Depth (ft BGS)	14-18	18-22	14-18	18-22	14-18	22-26	Commercial	Unrestricted
Date Collected	6/26/2014	6/26/2014	6/26/2014	6/26/2014	6/26/2014	6/26/2014		
Time Collected	8:09 AM	8:19 AM	9:13 AM	9:25 AM	9:45 AM	10:22 AM		
4,4,-DDT	<7.2	<6.9	<7	<7	<6.9	<7.1	47,000	3.3
4,4-DDD	<7.2	<6.9	<7	<7	<6.9	<7.1	92,000	3.3
4,4-DDE	<7.2	<6.9	<7	<7	<6.9	<7.1	62,000	3.3
a BHC	<7.2	<6.9	<7	<7	<6.9	<7.1	3,400	20
Aldrin	<7.2	<6.9	<7	<7	<6.9	<7.1	680	5
b BHC	<7.2	<6.9	<7	<7	<6.9	<7.1	3,000	36
Chlordane	<72	<69	<70	<70	<69	<71	n/a	n/a
delta-BHC	<7.2	<6.9	<7	<7	<6.9	<7.1	500,000	40
Dieldrin	<7.2	<6.9	<7	<7	<6.9	<7.1	1,400	5
Endosulfan I	<7.2	<6.9	<7	<7	<6.9	<7.1	200,000	2,400
Endosulfan II	<7.2	<6.9	<7	<7	<6.9	<7.1	200,000	2,400
Endosulfan Sulfate	<7.2	<6.9	<7	<7	<6.9	<7.1	200,000	2,400
Endrin	<7.2	<6.9	<7	<7	<6.9	<7.1	89,000	14
Endrin Aldehyde	<7.2	<6.9	<7	<7	<6.9	<7.1	n/a	n/a
Endrin ketone	<7.2	<6.9	<7	<7	<6.9	<7.1	n/a	n/a
Gamma-BHC(Lindane)	<7.2	<6.9	<7	<7	<6.9	<7.1	9,200	100
Heptachlor	<7.2	<6.9	<7	<7	<6.9	<7.1	15,000	42
Heptachlor Epoxide	<7.2	<6.9	<7	<7	<6.9	<7.1	n/a	n/a
Methoxychlor	<7.2	<6.9	<7	<7	<6.9	<7.1	n/a	n/a
Toxaphene	<72	<69	<70	<70	<69	<71	n/a	n/a

Notes:
n/a - not applicable / not analyzed
[a] - 6 NYCRR 375-6.8 (a, b)

Fairchild Republic Aircraft; Old Sump
Route 110 (Broad Hollow Road)
East Farmingdale, NY
Site No. 152004

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

2014 Remedial Investigation Soil Analytical Results (ug/Kg)
TestAmerica, Inc.
Methods: SW8082A

Location	CR-5	CR-10	CR-11	Soil Cleanup Objectives[a]	
Depth (ft BGS)	0-1	0-1	24-29	Commercial	Unrestricted
Date Collected	7/15/2014	7/15/2014	6/18/2014		
Time Collected	9:56 AM	8:35 AM	8:46 AM		
Aroclor 1016	<70	<71	<77	n/a	n/a
Aroclor 1221	<70	<71	<77	n/a	n/a
Aroclor 1232	<70	<71	<77	n/a	n/a
Aroclor 1242	<70	<71	<77	n/a	n/a
Aroclor 1248	<70	<71	<77	n/a	n/a
Aroclor 1254	<70	<71	<77	n/a	n/a
Aroclor 1260	<70	<71	<77	n/a	n/a
Aroclor 1262	<70	<71	<77	n/a	n/a
Aroclor 1268	<70	<71	<77	n/a	n/a
Polychlorinated biphenyls (total)	<70	<71	<77	**1,000**	**100**

Notes:
n/a - not applicable / not analyzed
[a] - 6 NYCRR 375-6.8 (a, b)

Fairchild Republic Aircraft; Old Sump
Route 110 (Broad Hollow Road)
East Farmingdale, NY
Site No. 152004

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

2014 Remedial Investigation Soil Analytical Results (ug/Kg)
TestAmerica, Inc.
Methods: SW8260C

Location	CR-5	CR-10	CR-11	Soil Cleanup Objectives[a]	
Depth (ft BGS)	0-1	0-1	24-29	Commercial	Unrestricted
Date Collected	7/15/2014	7/15/2014	6/18/2014		
Time Collected	9:56 AM	8:35 AM	8:46 AM		
1,1 Dichloroethane	<1.1	<1	<1.1	240,000	270
1,1 Dichloroethene	<1.1	<1	<1.1	500,000	330
1,1,1 Trichloroethane	<1.1	<1	<1.1	500,000	680
1,1,2 Trichloroethane	<1.1	<1	<1.1	n/a	n/a
1,1,2,2 Tetrachloroethane	<1.1	<1	<1.1	n/a	n/a
1,2 Dibromoethane	<1.1	<1	<1.1	n/a	n/a
1,2 Dichlorobenzene	<1.1	<1	0.24 J	500,000	1,100
1,2 Dichloroethane	<1.1	<1	<1.1	30,000	20
1,2 Dichloropropane	<1.1	<1	<1.1	n/a	n/a
1,2,3 Trichlorobenzene	<1.1	<1	<1.1	n/a	n/a
1,2,4 Trichlorobenzene	<1.1	<1	<1.1	n/a	n/a
1,3 Dichlorobenzene	<1.1	<1	<1.1	280,000	2,400
1,4 Dichlorobenzene	<1.1	<1	<1.1	130,000	1,800
1,4-Dioxane	<22	<20	<21	130,000	100
2-Hexanone	<5.6	<5	<5.3	n/a	n/a
4-Methyl-2-Pentanone	<5.6	<5	<5.3	n/a	n/a
Acetone	15	10	68	500,000	50
Benzene	<1.1	<1	<1.1	44,000	60
Bromochloromethane	<1.1	<1	<1.1	n/a	n/a
Bromodichloromethane	<1.1	<1	<1.1	n/a	n/a
Bromoform	<1.1	<1	<1.1	n/a	n/a
Bromomethane	<1.1	<1	<1.1	n/a	n/a
c 1,3 Dichloropropene	<1.1	<1	<1.1	n/a	n/a
Carbon Disulfide	<1.1	<1	1.5	n/a	n/a
Carbon Tetrachloride	<1.1	<1	<1.1	22,000	760
Chlorobenzene	<1.1	<1	<1.1	500,000	1,100
Chloroethane	<1.1	<1	<1.1	n/a	n/a
Chloroform	<1.1	<1	<1.1	350,000	370
Chloromethane	<1.1	<1	<1.1	n/a	n/a
cis-1,2-Dichloroethene	<1.1	<1	<1.1	500,000	250
Cyclohexane	<1.1	<1	<1.1	n/a	n/a
Cyclohexane, methyl-	<1.1	<1	0.16 J	n/a	n/a
Dibromochloromethane	<1.1	<1	<1.1	n/a	n/a
Dibromochloropropane	<1.1	<1	<1.1	n/a	n/a
Dichlorodifluoromethane	<1.1	<1	<1.1	n/a	n/a
Ethylbenzene	<1.1	<1	<1.1	390,000	1,000
Freon 113	<1.1	<1	<1.1	n/a	n/a
Isopropylbenzene	<1.1	<1	<1.1	n/a	n/a
m + p Xylene	<1.1	<1	<1.1	n/a	n/a
Methyl acetate	<5.6	<5	<5.3	n/a	n/a
Methyl Ethyl Ketone	<5.6	<5	10	500,000	120
Methylene Chloride	<1.1	<1	0.65 BJ	500,000	50
o-Xylene	<1.1	<1	<1.1	n/a	n/a

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Site No. 152004

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

2014 Remedial Investigation Soil Analytical Results (ug/Kg)
TestAmerica, Inc.
Methods: SW8260C

Location	CR-5	CR-10	CR-11	Soil Cleanup Objectives[a]	
Depth (ft BGS)	0-1	0-1	24-29	Commercial	Unrestricted
Date Collected	7/15/2014	7/15/2014	6/18/2014		
Time Collected	9:56 AM	8:35 AM	8:46 AM		
Styrene	<1.1	<1	<1.1	n/a	n/a
t 1,3 Dichloropropene	<1.1	<1	<1.1	n/a	n/a
t butylmethylether	<1.1	<1	<1.1	500,000	930
Tetrachloroethene	<1.1	<1	<1.1	150,000	1,300
Toluene	<1.1	<1	<1.1	500,000	700
trans-1,2-Dichloroethene	<1.1	<1	<1.1	500,000	190
Trichloroethylene	<1.1	<1	<1.1	200,000	470
Trichlorofluoromethane	<1.1	<1	<1.1	n/a	n/a
Vinyl Chloride	<1.1	<1	<1.1	13,000	20
1R-,alpha.-Pinene (TIC)	7.9 JN !	n/a	n/a	n/a	n/a
Bicyclo[3.1.1]heptane, 6,6-dimethyl-2-methylene-, (1S)- (TIC)	6 JN !	n/a	n/a	n/a	n/a
D-Limonene (TIC)	11 JN !	n/a	n/a	n/a	n/a
Unknown volatile organic with highest conc. (TIC)	n/a	n/a	8.6 J !	n/a	n/a
Calculated					
Total VOC's (including TIC's)	39.9	10	89.15	n/a	n/a
Total BTEX	<5.5	<5	<5.5	n/a	n/a
Total Xylenes	<2.2	<2	<2.2	500,000	260

Notes:
n/a - not applicable / not analyzed
B - Analyte was detected in associated lab blank
J - Indicates an estimated value below laboratory reporting limits
N - Indicates the presumptive evidence of a compound
! - Indicates parameter/value was reported as a Tentatively Identified Compound (TIC)
[a] - 6 NYCRR 375-6.8 (a, b)
- value exceeds 6 NYCRR 375-6.8 (a,b) unrestricted use SCO

Fairchild Republic Aircraft; Old Sump
Route 110 (Broad Hollow Road)
East Farmingdale, NY
Site No. 152004

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

2014 Remedial Investigation Soil Analytical Results (ug/Kg)
TestAmerica, Inc.
Methods: SW8270D

Location	CR-5	CR-10	CR-11	Soil Cleanup Objectives[a]	
Depth (ft BGS)	0-1	0-1	24-29	Commercial	Unrestricted
Date Collected	7/15/2014	7/15/2014	6/18/2014		
Time Collected	9:56 AM	8:35 AM	8:46 AM		
1,1-Biphenyl	<350	<350	<380	n/a	n/a
1,2,4,5-Tetrachlorobenzene	<350	<350	<380	n/a	n/a
2,3,4,6-Tetrachlorophenol	<350	<350	<380	n/a	n/a
2,4,5-Trichlorophenol	<350	<350	<380	n/a	n/a
2,4,6-Trichlorophenol	<350	<350	<380	n/a	n/a
2,4-Dichlorophenol	<350	<350	<380	n/a	n/a
2,4-Dimethylphenol	<350	<350	<380	n/a	n/a
2,4-Dinitrophenol	<700	<710	<770	n/a	n/a
2,4-Dinitrotoluene	<70	<71	<77	n/a	n/a
2,6-Dinitrotoluene	<70	<71	<77	n/a	n/a
2-Chloronaphthalene	<350	<350	<380	n/a	n/a
2-Chlorophenol	<350	<350	<380	n/a	n/a
2-Methyl-4,6-dinitrophenol	<700	<710	<770	n/a	n/a
2-Methylnaphthalene	<350	<350	<380	n/a	n/a
2-Nitroaniline	<350	<350	<380	n/a	n/a
2-Nitrophenol	<350	<350	<380	n/a	n/a
3,3-Dichlorobenzidine	<350	<350	<380	n/a	n/a
3-Nitroaniline	<350	<350	<380	n/a	n/a
4-Bromophenyl-phenylether	<350	<350	<380	n/a	n/a
4-Chloro-3-methylphenol	<350	<350	<380	n/a	n/a
4-Chloroaniline	<350	<350	<380	n/a	n/a
4-Chlorophenyl-phenylether	<350	<350	<380	n/a	n/a
4-Nitroaniline	<700	<710	<770	n/a	n/a
4-Nitrophenol	<350	<350	<380	n/a	n/a
Acenaphthene	<350	<350	<380	500,000	20,000
Acenaphthylene	<350	<350	<380	500,000	100,000
Acetophenone	<350	<350	<380	n/a	n/a
Anthracene	<350	<350	71 J	500,000	100,000
Atrazine	<350	<350	<380	n/a	n/a
Benzaldehyde	<350	<350	<380	n/a	n/a
Benzo(a)anthracene	130	110	300	5,600	1,000
Benzo(a)pyrene	140	120	280	1,000	1,000
Benzo(b)fluoranthene	180	150	440	5,600	1,000
Benzo(g,h,i)perylene	140 J	61 J	98 J	500,000	100,000
Benzo(k)fluoranthene	74	66	160	56,000	800
bis(2-Chloroethoxy)methane	<350	<350	<380	n/a	n/a
bis(2-Chloroethyl)ether	<35	<35	<38	n/a	n/a
bis(2-Chloroisopropyl)ether	<350	<350	<380	n/a	n/a
bis(2-Ethylhexyl)phthalate	<350	<350	420	n/a	n/a
Butylbenzylphthalate	<350	<350	62 J	n/a	n/a
Caprolactam	<350	<350	<380	n/a	n/a
Carbazole	<350	<350	<380	n/a	n/a
Chrysene	160 J	130 J	330 J	56,000	1,000
Dibenzo(a,h)anthracene	49	40	45	560	330
Dibenzofuran	<350	<350	<380	350,000	7,000
Diethylphthalate	<350	<350	<380	n/a	n/a

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Route 110 (Broad Hollow Road)
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ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

2014 Remedial Investigation Soil Analytical Results (ug/Kg)
TestAmerica, Inc.
Methods: SW8270D

Location	CR-5	CR-10	CR-11	Soil Cleanup Objectives[a]	
Depth (ft BGS)	0-1	0-1	24-29	Commercial	Unrestricted
Date Collected	7/15/2014	7/15/2014	6/18/2014		
Time Collected	9:56 AM	8:35 AM	8:46 AM		
Dimethylphthalate	<350	<350	<380	n/a	n/a
Di-n-butylphthalate	<350	<350	54 J	n/a	n/a
Di-n-octylphthalate	<350	<350	<380	n/a	n/a
Fluoranthene	240 J	190 J	640	500,000	100,000
Fluorene	<350	<350	<380	500,000	30,000
Hexachlorobenzene	<35	<35	<38	6,000	330
Hexachlorobutadiene	<70	<71	<77	n/a	n/a
Hexachlorocyclopentadiene	<350	<350	<380	n/a	n/a
Hexachloroethane	<35	<35	<38	n/a	n/a
Indeno(1,2,3-cd)pyrene	170	95	130	5,600	500
Isophorone	<350	<350	<380	n/a	n/a
Naphthalene	<350	<350	<380	500,000	12,000
Nitrobenzene	<35	<35	<38	n/a	n/a
N-Nitrosodi-N-Propylamine	<35	<35	<38	n/a	n/a
N-Nitrosodiphenylamine	<350	<350	<380	n/a	n/a
o-cresol	<350	<350	<380	500,000	330
p-cresol	<350	<350	<380	500,000	330
Pentachlorophenol	<700	<710	<770	6,700	800
Phenanthrene	76 J	70 J	270 J	500,000	100,000
Phenol (total)	<350	<350	<380	500,000	330
Pyrene	170 J	140 J	360 J	500,000	100,000
17-Pentatriacontene 30.930 (TIC)	n/a	n/a	410 JN !	n/a	n/a
28-nor-17 beta (H)-hopane (TIC)	n/a	n/a	1100 JN !	n/a	n/a
Hexadecane, 1-chloro- (TIC)	n/a	n/a	410 JN !	n/a	n/a
Unknown semivolatile with 2nd highest conc. (TIC)	n/a	1200 J !	560 J !	n/a	n/a
Unknown semivolatile with 3rd highest conc. (TIC)	n/a	n/a	550 J !	n/a	n/a
Unknown semivolatile with 4th highest conc. (TIC)	n/a	n/a	470 J !	n/a	n/a
Unknown semivolatile with 5th highest conc. (TIC)	n/a	n/a	420 J !	n/a	n/a
Unknown semivolatile with highest conc. (TIC)	n/a	2900 J !	1400 J !	n/a	n/a
Calculated Total SVOC's	1,529	5,272	8,980	n/a	n/a

Notes:
n/a - not applicable / not analyzed
B - Analyte was detected in associated lab blank
J - Indicates an estimated value below laboratory reporting limits
N - Indicates the presumptive evidence of a compound
! - Indicates parameter/value was reported as a Tentatively Identified Compound (TIC)
[a] - 6 NYCRR 375-6.8 (a, b)

Fairchild Republic Aircraft; Old Sump
Route 110 (Broad Hollow Road)
East Farmingdale, NY
Site No. 152004

2014 Remedial Investigation Soil Analytical Results (mg/Kg)
TestAmerica, Inc.
Methods: SW6010C, SW7471B

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

Location	Depth (ft BGS)	Date Collected	Time Collected	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium (total)	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Vanadium	Zinc
CR-1	0-1	7/15/2014	11:30 AM	5,000	<4.4	3.3	42.6 J	<0.44	<0.88	6,380	12.3	2.4 J	20	8,100	45	2,100	121	0.11	6.4 J	263 J	<4.4	<2.2	<1100	<4.4	11.4	62
	surf	7/15/2014	11:29 AM	3,180	<4.3	1.9 J	18.4 J	<0.43	<0.86	3,820	18.7	1.7 J	8.4	5,770	25.6	2,200	82	0.07	4 J	191 J	<4.3	<2.1	<1070	<4.3	7.7 J	52.7
CR-2	0-1	7/15/2014	11:25 AM	2,790	<3.8	1.7 J	14 J	<0.38	<0.76	1,210	11	1.6 J	5.8	6,090	14.9	898 J	90.7	0.04	3 J	152 J	<3.8	<1.9	<953	<3.8	7.1 J	32.6
	surf	7/15/2014	11:24 AM	4,910	<4.6	4.9	68.5	<0.46	<0.91	6,010	41.9	2.3 J	23.3	16,100	71.3	1,440	152	0.11	8.4 J	353 J	<4.6	<2.3	<1140	<4.6	25.2	107
CR-3	0-1	7/15/2014	11:21 AM	4,030	<3.6	1.2 J	15 J	<0.36	<0.71	361 J	7.3	2.2 J	3.8 J	6,350	5.4	890	95.4	0.02	4.6 J	459 J	<3.6	<1.8	<888	<3.6	8.2 J	15.4
	surf	7/15/2014	11:20 AM	4,030	<3.6	1.5 J	16.1 J	<0.36	<0.72	1,010	7.7	2.1 J	5.6	7,840	8.6	691 J	101	0.01 J	4 J	244 J	<3.6	<1.8	<896	<3.6	8.2 J	27.3
CR-4	0-1	7/15/2014	10:03 AM	2,810	<3.7	<2.8	9.2 J	<0.37	<0.74	259 J	4.3	1.5 J	2.8 J	5,890	3.5	460 J	92.7	0.01 J	2.9 J	153 J	<3.7	<1.8	<920	<3.7	5.1 J	10.1
	surf	7/15/2014	10:01 AM	3,770	<3.5	2 J	27.5 J	<0.35	<0.7	552 J	10.4	2.1 J	10	7,060	26.4	727 J	98.2	0.04	4.9 J	240 J	<3.5	<1.8	<876	<3.5	8.9	42.4
CR-5	0-1	7/15/2014	9:56 AM	3,010	<3.4	1.3 J	9.8 J	<0.34	<0.69	270 J	7.3	3.5 J	3.8 J	5,800	4.7	515 J	102	0.01 J	4.4 J	149 J	<3.4	<1.7	<860	<3.4	5.6 J	12
	surf	7/15/2014	9:55 AM	2,830	<3.3	1.6 J	10.6 J	<0.33	<0.66	264 J	28	1.6 J	4.6	6,860	6.1	470 J	88.7	0.05	2.9 J	159 J	<3.3	<1.6	<821	<3.3	6.2 J	16.5
CR-6	0-1	7/15/2014	9:53 AM	4,270	<3.6	1.7 J	10.9 J	<0.36	<0.72	532 J	13.5	2.1 J	3.8 J	7,070	5	753 J	89.5	0.01 J	4.5 J	199 J	<3.6	<1.8	<897	<3.6	8 J	13.4
	surf	7/15/2014	9:52 AM	3,370	<3.5	1.9 J	27.3 J	<0.35	0.39 J	405 J	55	1.9 J	9.2	6,320	752	614 J	140	0.04	4 J	232 J	<3.5	0.8 J	<878	<3.5	7.7 J	37.9
CR-7	0-1	7/15/2014	9:49 AM	2,500	<3.6	0.85 J	7.9 J	<0.36	0.62 J	159 J	80.6	1.3 J	7.2	5,240	6	401 J	84.1	0.02	2.9 J	132 J	<3.6	1.2 J	<896	<3.6	5.1 J	27.1
	surf	7/15/2014	9:48 AM	2,940	<3.1	1.2 J	11.1 J	<0.31	<0.61	248 J	24.1	1.6 J	4.6	5,110	6.1	547 J	82.8	0.01 J	2.9 J	169 J	<3.1	<1.5	<765	<3.1	5.8 J	17.3
CR-8	0-1	7/15/2014	8:47 AM	2,700	<3.1	1 J	8.7 J	<0.31	<0.63	285 J	16.9	1.4 J	4.1	5,830	4.6	481 J	80.8	0.02	2.8 J	142 J	<3.1	<1.6	<782	<3.1	5.1 J	13.2
	surf	7/15/2014	8:46 AM	1,660	<3.1	<2.3	6.7 J	<0.31	<0.62	149 J	17.7	0.86 J	2.9 J	3,290	4	293 J	50.8	0.02	1.6 J	101 J	<3.1	<1.5	<770	<3.1	3.4 J	11.4
CR-9	0-1	7/15/2014	8:41 AM	2,050	<2.9	1.4 J	8.4 J	<0.29	<0.58	938	9.2	1.4 J	3 J	6,570	4.8	410 J	90	0.02	3 J	122 J	<2.9	<1.4	<723	<2.9	4.5 J	12
	surf	7/15/2014	8:39 AM	4,740	<3.5	2 J	40.3	<0.35	<0.71	756 J	12.5	1.8 J	6	6,840	20.3	608 J	95	0.02	4.1 J	270 J	<3.5	<1.8	<885	<3.5	9	34.9
CR-10	0-1	7/15/2014	8:35 AM	2,200	<3.8	<2.8	7.4 J	<0.38	<0.75	127 J	6.2	1.1 J	2.3 J	4,230	3.5	374 J	63.7	<0.017	2.5 J	128 J	<3.8	<1.9	<943	<3.8	4.1 J	8.7
	surf	7/15/2014	8:34 AM	2,450	<3.6	0.8 J	9.4 J	<0.36	<0.73	261 J	6.8	1.3 J	6.5	4,710	7.1	454 J	77.9	0.01 J	2.7 J	136 J	<3.6	<1.8	<911	<3.6	5.3 J	20.8
CR-11	0-1	6/18/2014	7:38 AM	2,290	<3.3	1 J	8.7 J	<0.33	<0.65	443 J	18.6	1.4 J	3.7 J	4,340	5.8	401 J	69.7	0.02 J	2.6 J	131 J	<3.3	<1.6	<815	<3.3	4.8 J	17.5
	24-29	6/18/2014	8:46 AM	5,510	<3.5	3.1	19.6 J	<0.35	3.6	778 J	205	3.8 J	12	10,100	16.5	800 J	138	0.34	6.4 J	271 J	<3.5	10.5	<874	<3.5	11	68.3
	surf	6/18/2014	7:37 AM	2,700	<3.6	1.4 J	15.4 J	<0.36	<0.72	1,350	30	1.7 J	6.2	5,340	48.3	562 J	90.5	0.02	3.2 J	223 J	<3.6	<1.8	<905	<3.6	5.7 J	30.1
CR-12	0-1	7/15/2014	8:29 AM	5,330	<3.9	2.1 J	27.6 J	<0.39	<0.78	5,280	21.3	2.4 J	10.8	8,950	18.2	3,330	159	0.04	9.2	294 J	<3.9	<2	<977	<3.9	12.1	38.2
	surf	7/15/2014	8:25 AM	5,080	<4.4	1.9 J	22.7 J	<0.44	<0.87	1,300	25.3	2.4 J	11.8	8,460	26.4	954 J	120	0.04	5.6 J	338 J	<4.4	<2.2	<1090	<4.4	11.3	72.3
Soil Cleanup Objectives[a]	Commercial			n/a	n/a	16	400	590	9.3	n/a	1,500[b]	n/a	270	n/a	1,000	n/a	10,000	2.8	310	n/a	1,500	1,500	n/a	n/a	n/a	10,000
	Unrestricted			n/a	n/a	13	350	7.2	2.5	n/a	30[b]	n/a	50	n/a	63	n/a	1,600	0.18	30	n/a	3.9	2	n/a	n/a	n/a	109

Notes:
n/a - not applicable / not analyzed
J - Indicates an estimated value below laboratory reporting limits
[a] - 6 NYCRR 375-6.8 (a, b)
[b] - SCO's for trivalent chromium are presented
- value exceeds 6 NYCRR 375-6.8 (a,b) unrestricted use SCO

Fairchild Republic Aircraft; Old Sump
Route 110 (Broad Hollow Road)
East Farmingdale, NY
Site No. 152004

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

2014 Remedial Investigation Soil Analytical Results (ug/Kg)
TestAmerica, Inc.
Methods: SW8081B

Location	CR-5	CR-10	CR-11	Soil Cleanup Objectives[a]	
Depth (ft BGS)	0-1	0-1	24-29	Commercial	Unrestricted
Date Collected	7/15/2014	7/15/2014	6/18/2014		
Time Collected	9:56 AM	8:35 AM	8:46 AM		
4,4,-DDT	<1.8	<1.7	<7.7	**47,000**	**3.3**
4,4-DDD	<1.8	<1.7	<7.7	**92,000**	**3.3**
4,4-DDE	<1.8	<1.7	<7.7	**62,000**	**3.3**
a BHC	<1.8	<1.7	<7.7	**3,400**	**20**
Aldrin	<1.8	<1.7	<7.7	**680**	**5**
b BHC	<3.4	<3.3	<7.7	**3,000**	**36**
Chlordane	<69	<67	<77	n/a	n/a
delta-BHC	<1.8	<1.7	<7.7	**500,000**	**40**
Dieldrin	<1.8	<1.7	<7.7	**1,400**	**5**
Endosulfan I	<1.8	<1.7	<7.7	**200,000**	**2,400**
Endosulfan II	<1.8	<1.7	<7.7	**200,000**	**2,400**
Endosulfan Sulfate	<1.8	<1.7	<7.7	**200,000**	**2,400**
Endrin	<1.8	<1.7	<7.7	**89,000**	**14**
Endrin Aldehyde	<1.8	<1.7	<7.7	n/a	n/a
Endrin ketone	<1.8	<1.7	<7.7	n/a	n/a
Gamma-BHC(Lindane)	<1.8	<1.7	<7.7	**9,200**	**100**
Heptachlor	<1.8	<1.7	<7.7	**15,000**	**42**
Heptachlor Epoxide	<1.8	<1.7	<7.7	n/a	n/a
Methoxychlor	<3.4	<3.3	<7.7	n/a	n/a
Toxaphene	<69	<67	<77	n/a	n/a

Notes:
n/a - not applicable / not analyzed
[a] - 6 NYCRR 375-6.8 (a, b)

Fairchild Republic Aircraft; Old Sump
Route 110 (Broad Hollow Road)
East Farmingdale, NY
Site No. 152004

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

2014 Remedial Investigation Soil Analytical Results (ug/Kg)
TestAmerica, Inc.
Methods: SW8082A

Location	Depth (ft BGS)	Date Collected	Time Collected	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Aroclor 1262	Aroclor 1268	Polychlorinated biphenyls (total)
G-01	0-1	7/16/2014	10:42 AM	<75	<75	<75	<75	<75	<75	<75	<75	<75	<75
	surf	7/16/2014	10:41 AM	<76	<76	<76	<76	<76	<76	<76	<76	<76	<76
G-02	0-1	7/16/2014	10:47 AM	<74	<74	<74	<74	<74	<74	<74	<74	<74	<74
	surf	7/16/2014	10:46 AM	<75	<75	<75	<75	<75	<75	<75	<75	<75	<75
G-03	0-1	7/16/2014	10:52 AM	<72	<72	<72	<72	<72	<72	<72	<72	<72	<72
	surf	7/16/2014	10:51 AM	<72	<72	<72	<72	<72	<72	<72	<72	<72	<72
G-04	0-1	7/16/2014	10:58 AM	<74	<74	<74	<74	<74	<74	<74	<74	<74	<74
	surf	7/16/2014	10:57 AM	<78	<78	<78	<78	<78	<78	<78	<78	<78	<78
G-05	0-1	7/16/2014	12:21 PM	<73	<73	<73	<73	<73	<73	<73	<73	<73	<73
	surf	7/16/2014	12:20 PM	<78	<78	<78	<78	<78	<78	<78	<78	<78	<78
G-06	0-1	7/16/2014	12:33 PM	<72	<72	<72	<72	<72	<72	<72	<72	<72	<72
	surf	7/16/2014	12:32 PM	<73	<73	<73	<73	<73	<73	<73	<73	<73	<73
G-07	0-1	7/17/2014	10:59 AM	<75	<75	<75	<75	<75	<75	<75	<75	<75	<75
	surf	7/17/2014	10:58 AM	<74	<74	<74	<74	<74	<74	<74	<74	<74	<74
G-08	0-1	7/17/2014	10:55 AM	<74	<74	<74	<74	<74	<74	<74	<74	<74	<74
	surf	7/17/2014	10:54 AM	<75	<75	<75	<75	<75	<75	<75	<75	<75	<75
G-09	0-1	7/17/2014	10:50 AM	<73	<73	<73	<73	<73	<73	<73	<73	<73	<73
	surf	7/17/2014	10:48 AM	<75	<75	<75	<75	<75	<75	<75	**200**	<75	**200**
G-10	0-1	7/17/2014	9:33 AM	<72	<72	<72	<72	<72	<72	<72	<72	<72	<72
	surf	7/17/2014	9:32 AM	<72	<72	<72	<72	<72	<72	<72	<72	<72	<72
G-11	0-1	7/17/2014	9:28 AM	<74	<74	<74	<74	<74	<74	<74	<74	<74	<74
	surf	7/17/2014	9:27 AM	<77	<77	<77	<77	<77	<77	<77	<77	<77	<77
G-12	0-1	6/17/2014	8:58 AM	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70
	28-32	6/17/2014	10:29 AM	<80	<80	<80	<80	**190**	<80	<80	<80	<80	**190**
	surf	6/17/2014	8:58 AM	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70
G-13	0-1	7/16/2014	9:13 AM	<81	<81	<81	<81	<81	<81	<81	<81	<81	<81
	surf	7/16/2014	9:11 AM	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
G-14	0-1	7/16/2014	9:05 AM	<74	<74	<74	<74	<74	<74	<74	<74	<74	<74
	surf	7/16/2014	9:04 AM	<78	<78	<78	<78	<78	<78	<78	<78	<78	<78
G-15	0-1	7/17/2014	9:21 AM	<72	<72	<72	<72	<72	<72	<72	<72	<72	<72
	surf	7/17/2014	9:20 AM	<73	<73	<73	<73	<73	<73	<73	<73	<73	<73
G-16	0-1	7/17/2014	9:17 AM	<69	<69	<69	<69	<69	<69	<69	<69	<69	<69
	surf	7/17/2014	9:16 AM	<70	<70	<70	<70	<70	<70	<70	<70	<70	<70
G-17	0-1	6/16/2014	8:50 AM	<74	<74	<74	<74	<74	<74	<74	<74	<74	<74
	8-12	6/16/2014	9:11 AM	<79	<79	<79	<79	<79	**180**	<79	<79	<79	**180**
	surf	6/16/2014	8:45 AM	<75	<75	<75	<75	<75	<75	<75	<75	<75	<75
G-18	0-1	7/16/2014	8:57 AM	<72	<72	<72	<72	<72	<72	<72	<72	<72	<72
	surf	7/16/2014	8:56 AM	<83	<83	<83	<83	<83	<83	<83	<83	<83	<83
Soil Cleanup Objectives[a]	Commercial			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**1,000**
	Unrestricted			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**100**

Notes:
n/a - not applicable / not analyzed
[a] - 6 NYCRR 375-6.8 (a, b)
- value exceeds 6 NYCRR 375-6.8 (a,b) unrestricted use SCO

Fairchild Republic Aircraft; Old Sump
Route 110 (Broad Hollow Road)
East Farmingdale, NY
Site No. 152004

2014 Remedial Investigation Soil Analytical Results (ug/Kg)
TestAmerica, Inc.
Methods: SW8260C

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

Location	G-01		G-02		G-03		G-04		G-05		G-06		G-07		G-08		G-09		G-10		G-11		G-12			G-13		G-14		G-15		G-16		G-17			G-18		Soil Cleanup Objectives[a]	
Depth (ft BGS)	0-1	Surf	0-1	Surf	0-1	Surf	0-1	Surf	0-1	Surf	0-1	Surf	0-1	Surf	0-1	Surf	0-1	Surf	0-1	Surf	0-1	Surf	0-1	28-32	Surf	0-1	Surf	0-1	Surf	0-1	Surf	0-1	Surf	0-1	8-12	Surf	0-1	Surf	Commercial	Unrestricted
Date Collected	7/16/14	7/16/14	7/16/14	7/16/14	7/16/14	7/16/14	7/16/14	7/16/14	7/16/14	7/16/14	7/16/14	7/16/14	7/17/14	7/17/14	7/17/14	7/17/14	7/17/14	7/17/14	7/17/14	7/17/14	7/17/14	7/17/14	6/17/14	6/17/14	6/17/14	7/16/14	7/16/14	7/16/14	7/16/14	7/17/14	7/17/14	6/16/14	6/16/14	6/16/14	6/16/14	7/16/14	7/16/14		
Time Collected	10:42 AM	10:41 AM	10:47 AM	10:46 AM	10:52 AM	10:51 AM	10:58 AM	10:57 AM	12:21 PM	12:20 PM	12:33 PM	12:32 PM	10:59 AM	10:58 AM	10:55 AM	10:54 AM	10:50 AM	10:48 AM	9:33 AM	9:32 AM	9:28 AM	9:27 AM	8:58 AM	10:29 AM	8:58 AM	9:13 AM	9:11 AM	9:05 AM	9:04 AM	9:21 AM	9:20 AM	9:17 AM	9:16 AM	8:50 AM	9:11 AM	8:45 AM	8:57 AM	8:56 AM		
1,1 Dichloroethane	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	<1	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	<1.1	<1	<0.96	<1.2	<1.2	240,000	270
1,1 Dichloroethene	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	**0.21 J**	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	<1.1	<1	<0.96	<1.2	<1.2	500,000	330
1,1,1 Trichloroethane	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	<1	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	<1.1	<1	<0.96	<1.2	<1.2	500,000	680
1,1,2 Trichloroethane	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	<1	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	<1.1	<1	<0.96	<1.2	<1.2	n/a	n/a
1,1,2,2 Tetrachloroethane	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	<1	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	<1.1	<1	<0.96	<1.2	<1.2	n/a	n/a
1,2 Dibromoethane	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	<1	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	<1.1	<1	<0.96	<1.2	<1.2	n/a	n/a
1,2 Dichlorobenzene	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	<1	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	<1.1	<1	<0.96	<1.2	<1.2	500,000	1,100
1,2 Dichloroethane	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	<1	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	<1.1	<1	<0.96	<1.2	<1.2	30,000	20
1,2 Dichloropropane	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	<1	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	<1.1	<1	<0.96	<1.2	<1.2	n/a	n/a
1,2,3 Trichlorobenzene	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	<1	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	<1.1	<1	<0.96	<1.2	<1.2	n/a	n/a
1,2,4 Trichlorobenzene	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	<1	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	<1.1	<1	<0.96	<1.2	<1.2	n/a	n/a
1,3 Dichlorobenzene	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	<1	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	<1.1	<1	<0.96	<1.2	<1.2	280,000	2,400
1,4 Dichlorobenzene	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	<1	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	<1.1	<1	<0.96	<1.2	<1.2	130,000	1,800
1,4-Dioxane	<21	<21	<21	<26	<23	<22	<25	<22	<21	<24	<23	<25	<24	<24	<22	<22	<22	<23	<21	<22	<23	<25	<22	<21	<22	<26	<31	<25	<25	<21	<24	<20	<20	<22	<21	<19	<23	<24	130,000	100
2-Hexanone	<5.2	<5.4	<5.3	<6.5	<5.8	<5.4	<6.2	<5.5	<5.2	<5.9	<5.6	<6.3	<6	<6	<5.5	<5.4	<5.4	<5.7	<5.3	<5.6	<5.7	<6.2	<5.4	<5.1	<5.6	<6.5	<7.8	<6.2	<6.2	<5.3	<5.9	<5.1	<5.1	<5.4	<5.2	<4.8	<5.9	<5.9	n/a	n/a
4-Methyl-2-Pentanone	<5.2	<5.4	<5.3	<6.5	<5.8	<5.4	<6.2	<5.5	<5.2	<5.9	<5.6	<6.3	<6	<6	<5.5	<5.4	<5.4	<5.7	<5.3	<5.6	<5.7	<6.2	<5.4	<5.1	<5.6	<6.5	<7.8	<6.2	<6.2	<5.3	<5.9	<5.1	<5.1	<5.4	<5.2	<4.8	<5.9	<5.9	n/a	n/a
Acetone	**11**	<5.4	**11**	**17**	**12**	<5.4	**15**	**10**	**11**	**14**	<5.6	<6.3	<6	<6	<5.5	<5.4	<5.4	<5.7	<5.3	<5.6	<5.7	<6.2	<5.4	**59**	<5.6	<6.5	<7.8	<6.2	<6.2	<5.3	<5.9	<5.1	<5.1	**9.2**	**47**	<4.8	<5.9	<5.9	500,000	50
Benzene	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	<1	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	<1.1	<1	<0.96	<1.2	<1.2	44,000	60
Bromochloromethane	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	<1	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	<1.1	<1	<0.96	<1.2	<1.2	n/a	n/a
Bromodichloromethane	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	<1	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	<1.1	<1	<0.96	<1.2	<1.2	n/a	n/a
Bromoform	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	<1	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	<1.1	<1	<0.96	<1.2	<1.2	n/a	n/a
Bromomethane	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	<1	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	<1.1	<1	<0.96	<1.2	<1.2	n/a	n/a
c 1,3 Dichloropropene	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	<1	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	<1.1	<1	<0.96	<1.2	<1.2	n/a	n/a
Carbon Disulfide	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	**0.65 J**	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	**0.33 J**	<1	<0.96	<1.2	<1.2	n/a	n/a
Carbon Tetrachloride	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	<1	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	<1.1	<1	<0.96	<1.2	<1.2	22,000	760
Chlorobenzene	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	**0.74 J**	<1.1	**0.31 J**	<1.1	<1	<1.1	<1.3	<1.6	<1.2	<1.2	**0.52 J**	**0.85 J**	**0.35 J**	**0.39 J**	<1.1	<1	<0.96	<1.2	<1.2	500,000	1,100
Chloroethane	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	<1	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	<1.1	<1	<0.96	<1.2	<1.2	n/a	n/a
Chloroform	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	<1	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	<1.1	<1	<0.96	<1.2	<1.2	350,000	370
Chloromethane	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	<1	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	<1.1	<1	<0.96	<1.2	<1.2	n/a	n/a
cis-1,2-Dichloroethene	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	<1	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	**0.13 J**	<1	<0.96	<1.2	<1.2	500,000	250
Cyclohexane	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	**0.72 J**	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	<1.1	<1	<0.96	<1.2	<1.2	n/a	n/a
Cyclohexane, methyl-	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	**2.2**	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	<1.1	<1	<0.96	<1.2	<1.2	n/a	n/a
Dibromochloromethane	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	<1	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	<1.1	<1	<0.96	<1.2	<1.2	n/a	n/a
Dibromochloropropane	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	<1	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	<1.1	<1	<0.96	<1.2	<1.2	n/a	n/a
Dichlorodifluoromethane	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	<1	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	<1.1	<1	<0.96	<1.2	<1.2	n/a	n/a
Ethylbenzene	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	**0.24 J**	<1.1	<1.2	<1.1	<1	<1.1	<1.3	<1.6	<1.2	<1.2	**0.2 J**	**0.23 J**	<1	<1	<1.1	<1	<0.96	<1.2	<1.2	390,000	1,000
Freon 113	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	<1	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	<1.1	<1	<0.96	<1.2	<1.2	n/a	n/a
Isopropylbenzene	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	<1	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	<1.1	<1	<0.96	<1.2	<1.2	n/a	n/a
m + p Xylene	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	<1	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	<1.1	<1	<0.96	<1.2	<1.2	n/a	n/a
Methyl acetate	<5.2	<5.4	<5.3	<6.5	<5.8	<5.4	<6.2	<5.5	<5.2	<5.9	<5.6	<6.3	<6	<6	<5.5	<5.4	<5.4	<5.7	<5.3	<5.6	<5.7	<6.2	<5.4	<5.1	<5.6	<6.5	<7.8	<6.2	<6.2	<5.3	<5.9	<5.1	<5.1	<5.4	<5.2	<4.8	<5.9	<5.9	n/a	n/a
Methyl Ethyl Ketone	<5.2	<5.4	<5.3	<6.5	<5.8	<5.4	<6.2	<5.5	<5.2	<5.9	<5.6	<6.3	<6	<6	<5.5	<5.4	<5.4	<5.7	<5.3	<5.6	<5.7	<6.2	<5.4	**14**	<5.6	<6.5	<7.8	<6.2	<6.2	<5.3	<5.9	<5.1	<5.1	<5.4	**8.1**	<4.8	<5.9	<5.9	500,000	120
Methylene Chloride	<1	**0.69 BJ**	<1.1	**0.84 BJ**	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	**2.7**	**0.63 BJ**	**1.1**	**4.9**	**1.2**	<1.1	**1.6**	**2.2**	**2.5**	<1.1	<1	<1.1	**0.96 BJ**	<1.6	**0.85 BJ**	**1 BJ**	**1.5**	**2**	**2.5**	**2**	<1.1	<1	<0.96	<1.2	<1.2	500,000	50
o-Xylene	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	**0.3 J**	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	<1.1	<1	<0.96	<1.2	<1.2	n/a	n/a
Styrene	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	<1	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	<1.1	<1	<0.96	<1.2	<1.2	n/a	n/a
t 1,3 Dichloropropene	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	<1	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	<1.1	<1	<0.96	<1.2	<1.2	n/a	n/a
t butylmethylether	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	<1	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	<1.1	<1	<0.96	<1.2	<1.2	500,000	930
Tetrachloroethene	<1	<1.1	<1.1	<1.3	**0.16 J**	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	**0.17 J**	<1.2	<1.1	<1.1	**0.37 J**	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	<1	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	<1.1	**0.25 J**	<0.96	<1.2	<1.2	150,000	1,300
Toluene	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	**0.29 J**	<1.1	**0.21 J**	<1.1	<1	<1.1	<1.3	<1.6	<1.2	<1.2	**0.32 J**	**0.38 J**	<1	<1	<1.1	<1	<0.96	<1.2	<1.2	500,000	700
trans-1,2-Dichloroethene	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	<1	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	<1.1	<1	<0.96	<1.2	<1.2	500,000	190
Trichloroethylene	<1	<1.1	**0.17 J**	<1.3	<1.2	<1.1	<1.2	<1.1	**0.28 J**	<1.2	<1.1	<1.3	**0.28 J**	<1.2	<1.1	<1.1	**0.3 J**	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	<1	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	**0.5 J**	<0.96	<1.2	<1.2	200,000	470
Trichlorofluoromethane	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	<1	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	<1.1	<1	<0.96	<1.2	<1.2	n/a	n/a
Vinyl Chloride	<1	<1.1	<1.1	<1.3	<1.2	<1.1	<1.2	<1.1	<1	<1.2	<1.1	<1.3	<1.2	<1.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2	<1.1	<1	<1.1	<1.3	<1.6	<1.2	<1.2	<1.1	<1.2	<1	<1	<1.1	<1	<0.96	<1.2	<1.2	13,000	20
1,2,3,4,5-Pentameth-1,3-cyclopentadiene (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**19 JN !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1-Eethenyl-3-ethylbenzene (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**14 JN !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1-Hexyl-cyclohexene (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**16 JN !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2,6,11-Trimethyldodecane (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**13 JN !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2-Butyl-1,1,3-Trimethylcyclohexane (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**17 JN !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2-Methylene-4,8,8-bicyclo[5.2.0]nonane (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**12 JN !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2-Methylnaphthalene (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**13 JN !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
5-Methyl-2-(1-methylethyl-cyclohexanone (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**15 JN !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Alpha-pinene (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**8.6 JN !**	**88 JN !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**23 JN !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Benzene, (2-methyl-2-propenyl)- (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**12 JN !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
beta-Pinene (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**31 JN !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**51 JN !**	n/a	n/a	n/a	n/a	n/a	n/a
cis,Trans,cis-1,2,3-trimethylcyclohexane (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**14 JN !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Decahydro-2-Methyl Naphthalene (TIC)	n/a	n/a	n/a

Fairchild Republic Aircraft; Old Sump
Route 110 (Broad Hollow Road)
East Farmingdale, NY
Site No. 152004

2014 Remedial Investigation Soil Analytical Results (ug/Kg)
TestAmerica, Inc.
Methods: SW8270D

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

Location	G-01		G-02		G-03		G-04		G-05		G-06		G-07		G-08		G-09		G-10		G-11		G-12			G-13		G-14		G-15		G-16		G-17			G-18		Soil Cleanup Objectives[a]	
Depth (ft BGS)	0-1	Surf	0-1	Surf	0-1	Surf	0-1	Surf	0-1	Surf	0-1	Surf	0-1	Surf	0-1	Surf	0-1	Surf	0-1	Surf	0-1	Surf	0-1	28-32	Surf	0-1	Surf	0-1	Surf	0-1	Surf	0-1	Surf	0-1	8-12	Surf	0-1	Surf		
Date Collected	7/16/14	7/16/14	7/16/14	7/16/14	7/16/14	7/16/14	7/16/14	7/16/14	7/16/14	7/16/14	7/16/14	7/16/14	7/17/14	7/17/14	7/17/14	7/17/14	7/17/14	7/17/14	7/17/14	7/17/14	7/17/14	7/17/14	6/17/14	6/17/14	6/17/14	7/16/14	7/16/14	7/16/14	7/16/14	7/17/14	7/17/14	7/17/14	7/17/14	6/16/14	6/16/14	6/16/14	7/16/14	7/16/14	Commercial	Unrestricted
Time Collected	10:42 AM	10:41 AM	10:47 AM	10:46 AM	10:52 AM	10:51 AM	10:58 AM	10:57 AM	12:21 PM	12:20 PM	12:33 PM	12:32 PM	10:59 AM	10:58 AM	10:55 AM	10:54 AM	10:50 AM	10:48 AM	9:33 AM	9:32 AM	9:28 AM	9:27 AM	8:58 AM	10:29 AM	8:58 AM	9:13 AM	9:11 AM	9:05 AM	9:04 AM	9:21 AM	9:20 AM	9:17 AM	9:16 AM	8:50 AM	9:11 AM	8:45 AM	8:57 AM	8:56 AM		
1,1-Biphenyl	<1800	<370	<360	<370	<350	<350	<370	<390	<360	<380	<360	<360	<370	<370	<360	<370	<360	<370	<350	<350	<360	<380	<340	<2000	<350	<400	<990	<1800	<390	<350	<360	<340	<350	<370	<390	<370	<350	<410	n/a	n/a
1,2,4,5-Tetrachlorobenzene	<1800	<370	<360	<370	<350	<350	<370	<390	<360	<380	<360	<360	<370	<370	<360	<370	<360	<370	<350	<350	<360	<380	<340	<2000	<350	<400	<990	<1800	<390	<350	<360	<340	<350	<370	<390	<370	<350	<410	n/a	n/a
2,3,4,6-Tetrachlorophenol	<1800	<370	<360	<370	<350	<350	<370	<390	<360	<380	<360	<360	<370	<370	<360	<370	<360	<370	<350	<350	<360	<380	<340	<2000	<350	<400	<990	<1800	<390	<350	<360	<340	<350	<370	<390	<370	<350	<410	n/a	n/a
2,4,5-Trichlorophenol	<1800	<370	<360	<370	<350	<350	<370	<390	<360	<380	<360	<360	<370	<370	<360	<370	<360	<370	<350	<350	<360	<380	<340	<2000	<350	<400	<990	<1800	<390	<350	<360	<340	<350	<370	<390	<370	<350	<410	n/a	n/a
2,4,6-Trichlorophenol	<1800	<370	<360	<370	<350	<350	<370	<390	<360	<380	<360	<360	<370	<370	<360	<370	<360	<370	<350	<350	<360	<380	<340	<2000	<350	<400	<990	<1800	<390	<350	<360	<340	<350	<370	<390	<370	<350	<410	n/a	n/a
2,4-Dichlorophenol	<1800	<370	<360	<370	<350	<350	<370	<390	<360	<380	<360	<360	<370	<370	<360	<370	<360	<370	<350	<350	<360	<380	<340	<2000	<350	<400	<990	<1800	<390	<350	<360	<340	<350	<370	<390	<370	<350	<410	n/a	n/a
2,4-Dimethylphenol	<1800	<370	<360	<370	<350	<350	<370	<390	<360	<380	<360	<360	<370	<370	<360	<370	<360	<370	<350	<350	<360	<380	<340	<2000	<350	<400	<990	<1800	<390	<350	<360	<340	<350	<370	<390	<370	<350	<410	n/a	n/a
2,4-Dinitrophenol	<3700	<760	<740	<750	<720	<720	<740	<780	<730	<780	<720	<730	<750	<740	<740	<750	<730	<750	<720	<720	<740	<770	<700	<4000	<700	<810	<2000	<3700	<790	<720	<730	<690	<700	<740	<780	<750	<720	<830	n/a	n/a
2,4-Dinitrotoluene	<370	<76	<74	<75	<72	<72	<74	<78	<73	<78	<72	<73	<75	<74	<74	<75	<73	<75	<72	<72	<74	<77	<70	<400	<70	<81	<200	<370	<79	<72	<73	<69	<70	<74	<78	<75	<72	<83	n/a	n/a
2,6-Dinitrotoluene	<370	<76	<74	<75	<72	<72	<74	<78	<73	<78	<72	<73	<75	<74	<74	<75	<73	<75	<72	<72	<74	<77	<70	<400	<70	<81	<200	<370	<79	<72	<73	<69	<70	<74	<78	<75	<72	<83	n/a	n/a
2-Chloronaphthalene	<1800	<370	<360	<370	<350	<350	<370	<390	<360	<380	<360	<360	<370	<370	<360	<370	<360	<370	<350	<350	<360	<380	<340	<2000	<350	<400	<990	<1800	<390	<350	<360	<340	<350	<370	<390	<370	<350	<410	n/a	n/a
2-Chlorophenol	<1800	<370	<360	<370	<350	<350	<370	<390	<360	<380	<360	<360	<370	<370	<360	<370	<360	<370	<350	<350	<360	<380	<340	<2000	<350	<400	<990	<1800	<390	<350	<360	<340	<350	<370	<390	<370	<350	<410	n/a	n/a
2-Methyl-4,6-dinitrophenol	<3700	<760	<740	<750	<720	<720	<740	<780	<730	<780	<720	<730	<750	<740	<740	<750	<730	<750	<720	<720	<740	<770	<700	<4000	<700	<810	<2000	<3700	<790	<720	<730	<690	<700	<740	<780	<750	<720	<830	n/a	n/a
2-Methylnaphthalene	<1800	<370	70 J	49 J	69 J	<350	<370	<390	<360	<380	<360	<360	<370	<370	<360	<370	<360	<370	<350	<350	<360	<380	<340	250 J	<350	<400	<990	<1800	<390	<350	<360	<340	<350	<370	<390	<370	<350	<410	n/a	n/a
2-Nitroaniline	<1800	<370	<360	<370	<350	<350	<370	<390	<360	<380	<360	<360	<370	<370	<360	<370	<360	<370	<350	<350	<360	<380	<340	<2000	<350	<400	<990	<1800	<390	<350	<360	<340	<350	<370	<390	<370	<350	<410	n/a	n/a
2-Nitrophenol	<1800	<370	<360	<370	<350	<350	<370	<390	<360	<380	<360	<360	<370	<370	<360	<370	<360	<370	<350	<350	<360	<380	<340	<2000	<350	<400	<990	<1800	<390	<350	<360	<340	<350	<370	<390	<370	<350	<410	n/a	n/a
3,3-Dichlorobenzidine	<1800	<370	<360	<370	<350	<350	<370	<390	<360	<380	<360	<360	<370	<370	<360	<370	<360	<370	<350	<350	<360	<380	<340	<2000	<350	<400	<990	<1800	<390	<350	<360	<340	<350	<370	<390	<370	<350	<410	n/a	n/a
3-Nitroaniline	<1800	<370	<360	<370	<350	<350	<370	<390	<360	<380	<360	<360	<370	<370	<360	<370	<360	<370	<350	<350	<360	<380	<340	<2000	<350	<400	<990	<1800	<390	<350	<360	<340	<350	<370	<390	<370	<350	<410	n/a	n/a
4-Bromophenyl-phenylether	<1800	<370	<360	<370	<350	<350	<370	<390	<360	<380	<360	<360	<370	<370	<360	<370	<360	<370	<350	<350	<360	<380	<340	<2000	<350	<400	<990	<1800	<390	<350	<360	<340	<350	<370	<390	<370	<350	<410	n/a	n/a
4-Chloro-3-methylphenol	<1800	<370	<360	<370	<350	<350	<370	<390	<360	<380	<360	<360	<370	<370	<360	<370	<360	<370	<350	<350	<360	<380	<340	<2000	<350	<400	<990	<1800	<390	<350	<360	<340	<350	<370	<390	<370	<350	<410	n/a	n/a
4-Chloroaniline	<1800	<370	<360	<370	<350	<350	<370	<390	<360	<380	<360	<360	<370	<370	<360	<370	<360	<370	<350	<350	<360	<380	<340	<2000	<350	<400	<990	<1800	<390	<350	<360	<340	<350	<370	<390	<370	<350	<410	n/a	n/a
4-Chlorophenyl-phenylether	<1800	<370	<360	<370	<350	<350	<370	<390	<360	<380	<360	<360	<370	<370	<360	<370	<360	<370	<350	<350	<360	<380	<340	<2000	<350	<400	<990	<1800	<390	<350	<360	<340	<350	<370	<390	<370	<350	<410	n/a	n/a
4-Nitroaniline	<3700	<760	<740	<750	<720	<720	<740	<780	<730	<780	<720	<730	<750	<740	<740	<750	<730	<750	<720	<720	<740	<770	<700	<4000	<700	<810	<2000	<3700	<790	<720	<730	<690	<700	<740	<780	<750	<720	<830	n/a	n/a
4-Nitrophenol	<1800	<370	<360	<370	<350	<350	<370	<390	<360	<380	<360	<360	<370	<370	<360	<370	<360	<370	<350	<350	<360	<380	<340	<2000	<350	<400	<990	<1800	<390	<350	<360	<340	<350	<370	<390	<370	<350	<410	n/a	n/a
Acenaphthene	<1800	<370	280 J	100 J	90 J	<350	<370	<390	<360	<380	<360	<360	<370	96 J	<360	<370	<360	<370	<350	<350	<360	<380	100 J	2,700	<350	<400	<990	<1800	210 J	<350	<360	<340	<350	62 J	100 J	63 J	<350	<410	500,000	20,000
Acenaphthylene	<1800	<370	52 J	60 J	96 J	48 J	<370	68 J	<360	<380	<360	<360	<370	<370	<360	<370	<360	<370	<350	<350	<360	<380	110 J	250 J	46 J	<400	<990	<1800	320 J	<350	<360	<340	<350	82 J	<390	87 J	<350	<410	500,000	100,000
Acetophenone	<1800	<370	<360	<370	<350	<350	<370	<390	<360	<380	<360	<360	<370	<370	<360	<370	<360	<370	<350	<350	<360	<380	<340	<2000	<350	<400	<990	<1800	<390	<350	<360	<340	<350	<370	<390	<370	<350	<410	n/a	n/a
Anthracene	300 J	110 J	990	300 J	570	120 J	<370	82 J	82 J	<380	<360	45 J	130 J	280 J	<360	56 J	120 J	130 J	<350	<350	85 J	56 J	610	3,800	130 J	120 J	300 J	790 J	750	<350	<360	<340	<350	260 J	170 J	250 J	77 J	150 J	500,000	100,000
Atrazine	<1800	<370	<360	<370	<350	<350	<370	<390	<360	<380	<360	<360	<370	<370	<360	<370	<360	<370	<350	<350	<360	<380	<340	<2000	<350	<400	<990	<1800	<390	<350	<360	<340	<350	<370	<390	<370	<350	<410	n/a	n/a
Benzaldehyde	<1800	<370	<360	<370	<350	<350	<370	<390	<360	<380	<360	<360	<370	<370	<360	<370	<360	<370	<350	<350	<360	<380	<340	<2000	<350	<400	<990	<1800	<390	<350	<360	<340	<350	<370	<390	<370	<350	<410	n/a	n/a
Benzo(a)anthracene	1,200	650	4,300	1,500	1,600	520	240	420	310	310	190	280	990	1,700	300	460	510	880	<35	<35	510	400	4,200	8,500	1,300	730	1,400	3,400	2,900	80	240	36	95	1,700	620	1,800	570	950	5,600	1,000
Benzo(a)pyrene	1,300	800	3,900	1,800	1,400	580	290	500	330	420	240	330	960	1,700	340	510	520	840	57	60	530	450	4,000	7,900	1,500	820	1,600	3,100	3,000	99	260	60	150	1,900	950	2,000	640	1,100	1,000	1,000
Benzo(b)fluoranthene	1,600	1,100	5,600	2,500	1,700	770	360	670	450	570	340	440	1,400	2,300	440	710	690	1,300	63	73	720	630	6,600	11,000	2,600	1,100	2,200	3,800	4,100	120	360	60	210	2,300	1,400	2,600	840	1,500	5,600	1,000
Benzo(g,h,i)perylene	1400 J	550	2,500	1,200	1,100	410	230 J	340 J	230 J	390	210 J	290 J	900	1,500	300 J	470	350 J	560	34 J	35 J	450	400	830	2,100	400	530	990	3,300	2,200	63 J	210 J	46 J	150 J	550	230 J	600	630	1,100	500,000	100,000
Benzo(k)fluoranthene	630	460	2,100	990	690	330	160	220	200	240	150	170	530	1,100	190	270	250	430	26 J	30 J	250	220	2,500	3,900	870	450	880	1,500	1,400	38	160	28 J	93	810	470	940	340	510	56,000	800
bis(2-Chloroethoxy)methane	<1800	<370	<360	<370	<350	<350	<370	<390	<360	<380	<360	<360	<370	<370	<360	<370	<360	<370	<350	<350	<360	<380	<340	<2000	<350	<400	<990	<1800	<390	<350	<360	<340	<350	<370	<390	<370	<350	<410	n/a	n/a
bis(2-Chloroethyl)ether	<180	<37	<36	<37	<35	<35	<37	<39	<36	<38	<36	<36	<37	<37	<36	<37	<36	<37	<35	<35	<36	<38	<34	<200	<35	<40	<99	<180	<39	<35	<36	<34	<35	<37	<39	<37	<35	<41	n/a	n/a
bis(2-Chloroisopropyl)ether	<1800	<370	<360	<370	<350	<350	<370	<390	<360	<380	<360	<360	<370	<370	<360	<370	<360	<370	<350	<350	<360	<380	<340	<2000	<350	<400	<990	<1800	<390	<350	<360	<340	<350	<370	<390	<370	<350	<410	n/a	n/a
bis(2-Ethylhexyl)phthalate	<1800	<370	390	170 J	<350	<350	<370	<390	<360	<380	<360	<360	7,500	2,200	<360	<370	<360	<370	<350	<350	<360	<380	<340	<2000	<350	<400	<990	<1800	<390	<350	250 J	<340	<350	<370	410	<370	<350	160 J	n/a	n/a
Butylbenzylphthalate	<1800	<370	540	190 J	<350	<350	<370	<390	<360	<380	<360	<360	<370	<370	<360	<370	<360	<370	<350	<350	<360	51 J	<340	<2000	<350	<400	<990	<1800	59 J	<350	<360	<340	<350	<370	<390	<370	<350	<410	n/a	n/a
Caprolactam	<1800	<370	<360	<370	<350	<350	<370	<390	<360	<380	<360	<360	<370	<370	<360	<370	<360	<370	<350	<350	<360	<380	<340	<2000	<350	<400	<990	<1800	<390	<350	<360	<340	<350	<370	<390	<370	<350	<410	n/a	n/a
Carbazole	<1800	53 J	420	140 J	240 J	57 J	<370	<390	44 J	<380	<360	<360	79 J	150 J	<360	<370	56 J	110 J	<350	<350	49 J	<380	140 J	430 J	86 J	50 J	120 J	220 J	340 J	<350	<360	<340	<350	65 J	89 J	59 J	51 J	100 J	n/a	n/a
Chrysene	1300 J	720	4,400	1,700	1,500	620	300 J	570	340 J	380	230 J	340 J	950	1,700	330 J	490	570	950	45 J	53 J	510	440	4,200	8,100	1,400	850	1,500	3,700	3,100	95 J	280 J	49 J	150 J	1,900	840	2,300	770	1,400	56,000	1,000
Dibenzo(a,h)anthracene	370	180	730	350	320	130	69	120	72	110	60	92	260	420	98	150	120	190	<35	<35	120	120	310	930	160	170	340	860	660	40	74	33 J	52	210	150	200	180	300	560	330
Dibenzofuran	<1800	<370	140 J	<370	180 J	<350	<370	<390	<360	<380	<360	<360	<370	47 J	<360	<370	<360	<370	<350	<350	<360	<380	<340	2,500	<350	<400	<990	<1800	91 J	<350	<360	<340	<350	<370	90 J	<370	<350	<410	350,000	7,000
Diethylphthalate	<1800	<370	<360	<370	<350	<350	<370	<390	<360	<380	<360	<360	<370	<370	<360	<370	<360	<370	<350	<350	<360	<380	<340	<2000	<350	<400	<990	<1800	<390	<350	<360	<340	<350	<370	<390	<370	<350	<410	n/a	n/a
Dimethylphthalate	<1800	<370	<360	<370	<350	<350	<370	<390	<360	<380	<360	<360	<370	<370	<360	<370	<360	<370	<350	<350	<360	<380	<340	<2000	<350	<400	<990	<1800	<390	<350	<360	<340	<350	<370	<390	<370	<350	<410	n/a	n/a
Di-n-butylphthalate	<1800	<370	<360	<370	<350	<350	<370	<390	<360	<380	<360	<360	<370	<370	<360	<370	<360	<370	<350	<350	<360	<380	93 J	<2000	62 J	<400	<990	<1800	<390	<350	<360	<340	<350	50 J	65 J	69 J	<350	<410	n/a	n/a
Di-n-octylphthalate	<1800	<370	<360	<370	<350	<350	<370	<390	<360	<380	<360	<360	<370	<370	<360	<370	<360	<370	<350	<350	<360	<380	<340	<2000	<350	<400	<990	<1800	<390	<350	<360	<340	<350	<370	<390	<370	<350	<410	n/a	n/a
Fluoranthene	2,100	1,200	7,600	2,900	3,600	1,200	360 J	800	630	590	350 J	600	1,500	2,800	490	750	940	1,800	86 J	77 J	860	740	7,700	16,000	2,000	1,300	2,600	5,800	6,700	170 J	480	76 J	240 J	2,500	1,000	2,900	1,200	2,400	500,000	100,000
Fluorene	<1800	<370	310 J	86 J	140 J	<350	<370	<390	<360	<380	<360	<360	<370	92 J	<360	<370	<360	<370	<350	<350	<360	<380	110 J	3,700	<350	<400	<990	270 J	240 J	<350	<360	<340	<350	89 J	110 J	79 J	<350	52 J	500,000	30,000
Hexachlorobenzene	<180	<37	<36	<37	<35	<35	<37	<39	<36	<38	<36	<36	<37	<37	<36	<37	<36	<37	<35	<35	<36	<38	<34	<200	<35	<40	<99	<180	<39	<35	<36	<34	<35	<37	<39	<37	<35	<41	6,000	330
Hexachlorobutadiene	<370	<76	<74	<75	<72	<72	<74	<78	<73	<78	<72	<73	<75	<74	<74	<75	<73	<75	<72	<72	<74	<77	<70	<400	<70	<81	<200	<370	<79	<72	<73	<69	<70	<74	<78	<75	<72	<83	n/a	n/a
Hexachlorocyclopentadiene	<1800	<370	<360	<370	<350	<350	<370	<390	<360	<380	<360	<360	<370	<370	<360	<370	<360	<370	<350	<350	<360	<380	<340	<2000	<350	<400	<990	<1800	<390	<350	<360	<340	<350	<370	<390	<370	<350	<410	n/a	n/a
Hexachloroethane	<180	<37	<36	<37	<35	<35	<37	<39	<36	<38	<36	<36	<37	<37	<36	<37	<36	<37	<35	<35	<36	<38	<34	<200	<35	<40	<99	<180	<39	<35	<36	<34	<35	<37	<39	<37	<35	<41	n/a	n/a
Indeno(1,2,3-cd)pyrene	1,400	600	2,800	1,400	1,200	490	200	390	230	400	190	310	890	1,500	330	490	420	670	52	56	480	460	1,200	2,900	520	590	1,200	3,300	2,500	84	250	63	180	660	270	750	680	1,200	5,600	500
Isophorone	<1800	<370	<360	<370	<350	<350	<370	<390	<360	<380	<360	<360	<370	<370	<360	<370	<360	<370	<350	<350	<360	<380	<340	<2000	<350	<400	<990	<1800	<390	<350	<360	<340	<350	<370	<390	<370	<350	<410	n/a	n/a
Naphthalene	<1800	<370	78 J	<370	120 J	<350	<370	<390	<360	<380	<360	<360	<370	<370	<360	<370	<360	<370	<350	<350	<360	<380	<340	<2000	<350	<400	<990	<1800	75 J	<350	<360	<340	<350	<370	<390	43 J	<350	<410	500,000	12,000
Nitrobenzene	<180	<37	<36	<37	<35	<35	<37	<39	<36	<38	<36	<36	<37	<37	<36	<37	<36	<37	<35	<35	<36	<38	<34	<200	<35	<40	<99	<180	<39	<35	<36	<34	<35	<37	<39	<37	<35	<41	n/a	n/a
N-Nitrosodi-N-Propylamine	<180	<37	<36	<37	<35	<35	<37	<39	<36	<38	<36	<36	<37	<37	<36	<37	<36	<37	<35	<35	<36	<38	<34	<200	<35	<40	<99	<180	<39	<35	<36	<34	<35	<37	<39	<37	<35	<41	n/a	n/a
N-Nitrosodiphenylamine	<1800	<370	<360	<370	<350	<350	<370	<390	<360	<380	<360	<360	<370	<370	<360	<370	<360	<370	<350	<350	<360	<380	<340	<2000	<350	<400	<990	<1800	<390	<350	<360	<340	<350	<370	<390	<370	<350	<410	n/a	n/a
o-cresol	<1800	<370	<360	<370	<350	<350	<370	<390	<360	<380	<360	<360	<370	<370	<360	<370	<360	<370	<350	<350	<360	<380	<340	<2000	<350	<400	<990	<1800	<390	<350	<360	<340	<350	<370	<390	<370	<350	<410	500,000	330
p-cresol	<1800	<370	<360	<370	<350	<350	<370	<390	<360	<380	<360	<360	<370	<370	<360	<370	<360	<370	<350	<350	<360	<380	<340	<2000	<350	<400	<990	<1800	<390	<350	<360	<340	<350	<370	<390	<370	<350	<410	500,000	330
Pentachlorophenol	<3700	<760	<740	<750	<720	<720	<740	<780	<730	<780	<720	<730	<750	<740	<740	<750	<730	<750	<720	<720	<740	<770	<700	<4000	<700	<810	<2000	<3700	<790	<720	<730	<690	<700	<740	<780	<750	<720	<830	6,700	800
Phenanthrene	1200 J	440	3,700	1,100	2,600	510	130 J	190 J	360	180 J	120 J	200 J	570	1,200	200 J	260 J	440	680	<350	<350	400	240 J	2,000	9,500	600	470	1,100	2,900	2,500	61 J	160 J	<340	83 J	1,100	600	1,200	440	970	500,000	100,000
Phenol (total)	<1800	<370	<360	<370	<350	<350	<370	<390	<360	<380	<360	<360	<370	<370	<360	<370	<360	<370	<350	<350	<360	<380	<340	<2000	<350	<400	<990	<1800	<390	<350	<360	<340	<350	<370	<390	<370	<350	<410	500,000	330
Pyrene	1600 J	820	5,300	1,800	2,000	700	460	560	550	510	320 J	340 J	1,300	2,300	470	650	640	1,200	76 J	74 J	770	520	3,700	7,300	1,200	1,000	1,700	5,300	3,200	110 J	340 J	52 J	170 J	2,300	570	2,600	890	1,500	500,000	100,000
n-Octadecane (TIC)	n/a	n/a	n/a	n/a	n/a	470 JN !	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	650 JN !	n/a	n/a	n/a	n/a	n/a	n/a
.Beta.-sitosterol (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	960 JN !	n/a	n/a	n/a	n/a
.Gamma.-sitosterol (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1500 JN !	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1,7-Dimethylphenanthrene (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	580 JN !	n/a	n/a	n/a	n/a	n/a	n/a
11H-Benzo[B]fluorine (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	340 JN !	1700 JN !	n/a	n/a	n/a	n/a	320 JN !	n/a	n/a	n/a	n/a	n/a	n/a	n/a	420 JN !	n/a	n/a
11H-indeno[2,1-A]phenanthrene (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	620 JN !	n/a	n/a	n/a	n/a	620 JN !	n/a	n/a	n/a	n/a	n/a
1-Methyl-anthracene (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	820 JN !	n/a	n/a	n/a	n/a	n/a	n/a
1-Methyl-benz[A]anthracene (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	490 JN !	n/a	n/a	n/a	n/a
2(1H)Naphthalenone, 3,5,6,7,8,8A-hexahyd (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	480 JN !	n/a	n/a	n/a	540 JN !	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2,6,10,15-Tetramethylheptadecane (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	420 JN !	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	480 JN !	n/a	n/a
2-Methyl phenanthrene (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	930 JN !	n/a	n/a	n/a	n/a
2-Methylpyrene (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	370 JN !	n/a	n/a	n/a	n/a	n/a	n/a
2-Pentanone, 4-Methoxy-4-Methyl- (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	470 JN !	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

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Fairchild Republic Aircraft; Old Sump
Route 110 (Broad Hollow Road)
East Farmingdale, NY
Site No. 152004

2014 Remedial Investigation Soil Analytical Results (ug/Kg)
TestAmerica, Inc.
Methods: SW8270D

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

Location	G-01		G-02		G-03		G-04		G-05		G-06		G-07		G-08		G-09		G-10		G-11		G-12			G-13		G-14		G-15		G-16		G-17			G-18		Soil Cleanup Objectives[a]	
Depth (ft BGS)	0-1	Surf	0-1	Surf	0-1	Surf	0-1	Surf	0-1	Surf	0-1	Surf	0-1	Surf	0-1	Surf	0-1	Surf	0-1	Surf	0-1	Surf	0-1	28-32	Surf	0-1	Surf	0-1	Surf	0-1	Surf	0-1	Surf	0-1	8-12	Surf	0-1	Surf	Commercial	Unrestricted
Date Collected	7/16/14	7/16/14	7/16/14	7/16/14	7/16/14	7/16/14	7/16/14	7/16/14	7/16/14	7/16/14	7/16/14	7/16/14	7/17/14	7/17/14	7/17/14	7/17/14	7/17/14	7/17/14	7/17/14	7/17/14	7/17/14	7/17/14	6/17/14	6/17/14	6/17/14	7/16/14	7/16/14	7/16/14	7/16/14	7/17/14	7/17/14	7/17/14	7/17/14	6/16/14	6/16/14	6/16/14	7/16/14	7/16/14		
Time Collected	10:42 AM	10:41 AM	10:47 AM	10:46 AM	10:52 AM	10:51 AM	10:58 AM	10:57 AM	12:21 PM	12:20 PM	12:33 PM	12:32 PM	10:59 AM	10:58 AM	10:55 AM	10:54 AM	10:50 AM	10:48 AM	9:33 AM	9:32 AM	9:28 AM	9:27 AM	8:58 AM	10:29 AM	8:58 AM	9:13 AM	9:11 AM	9:05 AM	9:04 AM	9:21 AM	9:20 AM	9:17 AM	9:16 AM	8:50 AM	9:11 AM	8:45 AM	8:57 AM	8:56 AM		
4,4,6A,6B,8A,11,12,14B-octamethyl-1,4,4A (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**490 JN !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
4H-Cyclopenta[DEF]phenanthrene (TIC)	n/a	n/a	**920 JN !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**390 JN !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
5-Butyl-docosane (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**2800 JN !**	n/a	n/a	n/a	n/a
7-Methyl-benz[A]anthracene (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**330 JN !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
9.Beta.,13.alpha.,14lanost-7-en-3-one (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**1100 JN !**	n/a	n/a	n/a	n/a
Anthanthrene (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**500 JN !**	n/a
Benz[J]aceanthrylene, 3-methyl- (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**640 JN !**	n/a	n/a	n/a	n/a	n/a
Benzanthrone (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**300 JN !**	n/a	n/a	n/a	n/a	n/a	n/a
Benzo(A)fluorene (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**420 JN !**	n/a	n/a	n/a	n/a
Benzo[A]fluoren-11-one (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**340 JN !**	n/a	n/a	n/a	n/a
Benzo[B]naphto[2,1-D]thiophen (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**340 JN !**	n/a	**380 JN !**	n/a	n/a	n/a	n/a
Benzo[B]triphenylene (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**540 JN !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Benzo[E]pyrene (TIC)	n/a	n/a	**960 JN !**	**1300 JN !**	n/a	n/a	n/a	**400 JN !**	n/a	n/a	n/a	**560 JN !**	n/a	n/a	n/a	n/a	n/a	**650 JN !**	n/a	n/a	**490 JN !**	n/a	**2600 JN !**	**4500 JN !**	**1200 JN !**	**600 JN !**	**1600 JN !**	n/a	**1200 JN !**	n/a	n/a	n/a	n/a	**480 JN !**	**1400 JN !**	**480 JN !**	**500 JN !**	**970 JN !**	n/a	n/a
Butyl hexadecanoate (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**380 JN !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Dibenzo(A,C)fluoren-13-one (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**630 JN !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Fluoranthene, 2-methyl- (TIC)	n/a	n/a	**410 JN !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Heneicosane (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**460 JN !**	n/a	n/a
Heptacosane (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**1800 JN !**	n/a	n/a	n/a	n/a	n/a	n/a
Methyl chrysene (TIC)	n/a	n/a	**330 JN !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Methyl pyrene (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**330 JN !**	n/a	**370 JN !**	n/a	n/a	n/a	n/a
Methylanthracene, 2- (TiC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**780 JN !**	n/a	n/a	n/a	n/a	n/a	n/a
n-Docosane (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**1500 JN !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n-Hexadecane (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**960 JN !**	n/a	**540 JN !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**460 JN !**	n/a	n/a	n/a	n/a
n-Octacosane (TIC)	n/a	n/a	n/a	n/a	**710 JN !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**360 JN !**	n/a	n/a
Nonadecane (All Tics)	n/a	n/a	n/a	n/a	n/a	**420 JN !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**480 JN !**	n/a	n/a	n/a	n/a
n-Tetracosane (All Tics)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**730 JN !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Octadecanal (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**570 JN !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
P105 (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
P115 (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
P76 (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Perylene (TIC)	n/a	**620 JN !**	n/a	n/a	**1200 JN !**	**440 JN !**	n/a	n/a	n/a	n/a	n/a	**1100 JN !**	**1200 JN !**	n/a	n/a	n/a	**490 JN !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**2700 JN !**	n/a	n/a	n/a	n/a	n/a	n/a	**2400 JN !**	n/a	**510 JN !**	n/a	n/a
Phenanthrene, 2,5-dimethyl- (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**820 JN !**	n/a	n/a	n/a	n/a
Phenol, 4-(1,1,3,3-tetramethylbutyl)- (TIC)	**17000 JN !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Picene (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**630 JN !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Triphenylene, 2-methyl- (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**330 JN !**	n/a	n/a	n/a	n/a	**460 JN !**	n/a	n/a	n/a	n/a	n/a
Unknown SVOC with 10th Highest Conc. (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**780 J !**	n/a	n/a	n/a	n/a	n/a
Unknown SVOC with 11th Highest Conc. (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**760 J !**	n/a	n/a	n/a	n/a	n/a
Unknown SVOC with 12th Highest Conc. (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**750 J !**	n/a	n/a	n/a	n/a	n/a
Unknown SVOC with 13th Highest Conc. (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**700 J !**	n/a	n/a	n/a	n/a	n/a
Unknown SVOC with 14th Highest Conc. (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**690 J !**	n/a	n/a	n/a	n/a	n/a
Unknown SVOC with 15th Highest Conc. (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**630 J !**	n/a	n/a	n/a	n/a	n/a
Unknown SVOC with 16th Highest Conc. (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**570 J !**	n/a	n/a	n/a	n/a	n/a
Unknown SVOC with 2nd Highest Conc. (TIC)	**16000 J !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**440 J !**	n/a	**620 J !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**500 J !**	n/a	n/a	**1200 J !**	n/a	n/a	n/a	n/a	**910 J !**	**6200 J !**	n/a	**430 J !**	n/a	n/a
Unknown SVOC with 3rd Highest Conc. (TIC)	**12000 J !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**530 J !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**620 J !**	n/a	n/a	n/a	n/a	**760 J !**	**2200 J !**	n/a	n/a	n/a	n/a
Unknown SVOC with 4th Highest Conc. (TIC)	**12000 J !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**510 J !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**560 J !**	n/a	n/a	n/a	n/a	**500 J !**	**2000 J !**	n/a	n/a	n/a	n/a
Unknown SVOC with 5th Highest Conc. (TIC)	**11000 J !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**470 J !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**490 J !**	n/a	n/a	n/a	n/a	**480 J !**	**1800 J !**	n/a	n/a	n/a	n/a
Unknown SVOC with 6th Highest Conc. (TIC)	**9800 J !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**1600 J !**	n/a	n/a	n/a	n/a	n/a
Unknown SVOC with 7th Highest Conc. (TIC)	**6200 J !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**1300 J !**	n/a	n/a	n/a	n/a	n/a
Unknown SVOC with 8th Highest Conc. (TIC)	**2200 J !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**980 J !**	n/a	n/a	n/a	n/a	n/a
Unknown SVOC with 9th Highest Conc. (TIC)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**800 J !**	n/a	n/a	n/a	n/a	n/a
Unknown semivolatile with highest conc. (TIC)	**23000 J !**	n/a	**300 J !**	**590 J !**	**370 J !**	**550 J !**	**330 J !**	n/a	n/a	**860 J !**	n/a	**820 J !**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**280 J !**	n/a	**410 J !**	**500 J !**	n/a	n/a	**2100 J !**	n/a	n/a	n/a	n/a	**910 J !**	**6300 J !**	**940 J !**	n/a	**500 J !**	n/a	n/a
Calculated Total SVOC's	123,600	8,303	51,920	20,225	20,785	9,075	3,129	5,810	3,828	5,890	2,400	7,487	19,059	22,675	4,058	5,266	6,116	10,810	439	458	6,224	4,727	42,913	97,960	15,754	9,780	20,530	38,240	46,755	960	3,064	503	1,953	27,968	39,394	32,070	8,168	17,162	n/a	n/a

Notes:
n/a - not applicable / not analyzed
B - Analyte was detected in associated lab blank
J - Indicates an estimated value below laboratory reporting limits
N - Indicates the presumptive evidence of a compound
! - Indicates parameter/value was reported as a Tentatively Identified Compound (TIC)
[a] - 6 NYCRR 375-6.8 (a, b)
- value exceeds 6 NYCRR 375-6.8 (a,b) unrestricted use SCO
- value exceeds both 6 NYCRR 375-6.8 (a,b) commercial and unrestricted use SCO's

Fairchild Republic Aircraft; Old Sump
Route 110 (Broad Hollow Road)
East Farmingdale, NY
Site No. 152004

2014 Remedial Investigation Soil Analytical Results (mg/Kg)
TestAmerica, Inc.
Methods: SW6010C, SW7471B

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

Location	Depth (ft BGS)	Date Collected	Time Collected	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium (total)	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Vanadium	Zinc
G-01	0-1	7/16/2014	10:42 AM	4,180	<3.8	2.7 J	58.1	<0.38	<0.76	8,850	13.8	2 J	26.5	6,790	65.3	1,270	116	0.12	8.2	286 J	<3.8	<1.9	<952	<3.8	10.9	109
	surf	7/16/2014	10:41 AM	2,930	<4.2	2 J	30 J	<0.42	<0.84	1,590	14.4	1.7 J	12.8	15,700	32.1	768 J	141	0.07	10.8	142 J	<4.2	<2.1	<1050	<4.2	8.2 J	49.4
G-02	0-1	7/16/2014	10:47 AM	4,320	<3.9	4.4	78.4	<0.39	0.29 J	6,460	12.7	2.5 J	43.7	8,150	94.5	1,840	111	0.24	9.3	367 J	<3.9	<2	<979	<3.9	14.6	131
	surf	7/16/2014	10:46 AM	4,800	<3.9	3.7	72.1	<0.39	2.2	7,380	11.8	2.6 J	29.9	8,430	91.8	2,370	134	0.14	10	449 J	<3.9	<2	<977	<3.9	15.8	130
G-03	0-1	7/16/2014	10:52 AM	2,990	<3.8	2.4 J	25.6 J	<0.38	<0.76	1,370	8	1.9 J	8	7,090	77.2	681 J	80.9	0.05	3.9 J	141 J	<3.8	<1.9	<947	<3.8	8.5 J	51.4
	surf	7/16/2014	10:51 AM	2,160	<4.1	1.1 J	19.1 J	<0.41	<0.82	1,240	5.8	1.2 J	7.2	4,900	28.2	633 J	70.7	0.03	3.5 J	157 J	<4.1	<2.1	<1030	<4.1	5.6 J	46.1
G-04	0-1	7/16/2014	10:58 AM	2,200	<4	1 J	13.1 J	<0.4	<0.81	3,670	4.9	1.1 J	4.9 J	4,750	19.7	2,120	53.6	0.08	3 J	128 J	<4	<2	<1010	<4	5.5 J	25.4
	surf	7/16/2014	10:57 AM	4,530	<4.3	2.4 J	29.8 J	<0.43	<0.85	3,400	11.1	1.9 J	12.7	7,590	46.2	2,190	77.7	0.07	5.1 J	217 J	<4.3	<2.1	<1060	<4.3	11	65.5
G-05	0-1	7/16/2014	12:21 PM	4,990	<3.9	1.6 J	16.4 J	<0.39	<0.78	747 J	7.1	1.9 J	5.8	7,580	9.5	757 J	80.8	0.04	4.3 J	260 J	<3.9	<1.9	<971	<3.9	9.1 J	19.2
	surf	7/16/2014	12:20 PM	6,940	<4	3.1	31.8 J	<0.4	<0.79	1,160	10.6	2.5 J	11	10,600	25.1	1,010	105	0.08	6.5 J	350 J	<4	<2	<989	<4	13.5	42.2
G-06	0-1	7/16/2014	12:33 PM	3,140	<4.1	1.7 J	13.7 J	<0.41	<0.82	2,230	13.7	1.6 J	6.9	7,020	10.7	1,330	76.9	0.04	4.6 J	183 J	<4.1	<2.1	<1030	<4.1	8 J	22
	surf	7/16/2014	12:32 PM	2,810	<4.2	1.2 J	13.3 J	<0.42	<0.84	671 J	7	1.5 J	8	5,380	13	580 J	75.4	0.02	4.4 J	202 J	<4.2	<2.1	<1060	<4.2	6.1 J	29.2
G-07	0-1	7/17/2014	10:59 AM	4,900	<4	2.4 J	24.8 J	<0.4	<0.81	10,500	10.2	2.1 J	8.8	8,150	22.3	1,340	92	0.08	5.6 J	199 J	<4	<2	<1010	<4	12	32.3
	surf	7/17/2014	10:58 AM	4,360	<4	2 J	25 J	<0.4	<0.79	6,410	10.5	2 J	7.1	7,400	18.8	1,060	102	0.11	5 J	310 J	<4	<2	<990	<4	11.9	30.5
G-08	0-1	7/17/2014	10:55 AM	6,440	<4.4	3.7	26.2 J	<0.44	<0.88	1,700	15.9	2.9 J	6.9	12,300	15.2	986 J	171	0.05	5.5 J	300 J	<4.4	<2.2	<1100	<4.4	13.6	24.7
	surf	7/17/2014	10:54 AM	4,620	<4.2	2.5 J	26 J	<0.42	<0.84	2,900	9.5	2.3 J	8.1	9,320	20.5	1,110	138	0.08	5.3 J	265 J	<4.2	<2.1	<1050	<4.2	9.9 J	32
G-09	0-1	7/17/2014	10:50 AM	5,030	<3.9	2.8 J	34 J	<0.39	0.53 J	4,000	28.3	2.2 J	15.2	11,000	36	824 J	102	0.1	7.1 J	204 J	<3.9	2	<970	<3.9	17.3	51.5
	surf	7/17/2014	10:48 AM	4,310	<4.2	1.9 J	39.8 J	<0.42	<0.84	2,810	14.9	2 J	15.6	8,050	55.9	963 J	100	0.08	6.6 J	241 J	<4.2	0.43 J	<1050	<4.2	10.6	70.5
G-10	0-1	7/17/2014	9:33 AM	4,370	<3.8	1.2 J	15 J	<0.38	<0.76	133 J	7	3.9 J	4.7 J	9,960	5.6	654 J	365	0.02	5.1 J	210 J	<3.8	<1.9	<954	<3.8	8.3 J	14.7
	surf	7/17/2014	9:32 AM	3,300	<4.2	1 J	14.5 J	<0.42	<0.83	194 J	5.4	4.1 J	4.6 J	7,750	4.5	551 J	363	0.02 J	4.6 J	176 J	<4.2	<2.1	<1040	<4.2	7.1 J	14.1
G-11	0-1	7/17/2014	9:28 AM	2,730	<4.2	1.5 J	11.5 J	<0.42	<0.85	921 J	6.2	1.1 J	5.2 J	4,490	9.3	475 J	48.7	0.08	2.9 J	163 J	<4.2	<2.1	<1060	<4.2	6 J	13.8
	surf	7/17/2014	9:27 AM	3,850	<4.2	1.1 J	18.6 J	<0.42	<0.84	2,440	10.1	3.5 J	58.7	12,400	13.9	881 J	102	0.07	3.4 J	435 J	<4.2	<2.1	<1050	<4.2	7.7 J	32.4
G-12	0-1	6/17/2014	8:58 AM	5,200	<4.1	3.5	21.7 J	<0.41	<0.82	3,940	15.9	2.2 J	10.1	8,710	31.6	1,310	102	0.28	5.8 J	295 J	<4.1	<2	<1020	<4.1	15	56.8
	28-32	6/17/2014	10:29 AM	2,930	<4.2	1.4 J	15.2 J	<0.42	<0.84	3,260	10.5	1 J	5.8	3,640	20.9	1,730	26.8	0.02	2.7 J	140 J	<4.2	<2.1	<1050	<4.2	9.2 J	24.4
	surf	6/17/2014	8:58 AM	4,330	<3.7	2.9	19.3 J	<0.37	<0.74	5,140	14	2.7 J	9.5	7,890	26.7	1,980	111	0.7	5.5 J	263 J	<3.7	<1.9	<929	<3.7	13.2	64.7
G-13	0-1	7/16/2014	9:13 AM	5,350	<4.4	3.7	41.9 J	<0.44	0.38 J	4,700	16.8	2.7 J	19.3	9,220	58.5	1,190	133	0.15	7.4 J	307 J	<4.4	<2.2	<1100	<4.4	14	79.4
	surf	7/16/2014	9:11 AM	11,000	<5.9	7.2	115	<0.59	1.2	14,400	34.4	5.3 J	55.3	15,000	177	2,930	250	0.48	16.7	711 J	<5.9	0.73 J	<1460	<5.9	29.8	229
G-14	0-1	7/16/2014	9:05 AM	4,680	<4	6.3	97.5	<0.4	0.41 J	11,500	13.3	3.2 J	50.4	12,800	130	1,780	214	0.17	12.7	308 J	<4	<2	<992	<4	18.9	154
	surf	7/16/2014	9:04 AM	6,020	<4.7	4.4	114	<0.47	0.37 J	10,000	14.1	3.1 J	47.2	11,400	141	2,780	162	0.2	13.3	525 J	<4.7	<2.3	<1160	<4.7	19.3	170
G-15	0-1	7/17/2014	9:21 AM	3,790	<4	<3	10.5 J	<0.4	<0.8	206 J	7.5	2.5 J	4.2 J	5,560	5.2	551 J	101	0.03	4 J	176 J	<4	<2	<1000	<4	6.7 J	12.7
	surf	7/17/2014	9:20 AM	3,000	<4.3	0.92 J	11.2 J	<0.43	<0.86	366 J	11	1.4 J	6.4	5,280	8.9	530 J	80.6	0.03	3.7 J	154 J	<4.3	0.58 J	<1070	<4.3	5.9 J	24.2
G-16	0-1	7/17/2014	9:17 AM	1,280	<4	1.2 J	5.5 J	<0.4	<0.8	244 J	3.7	1 J	3.2 J	3,340	3.7	246 J	41.8	<0.016	2.1 J	99.8 J	<4	<2	<1000	<4	3.2 J	16.9
	surf	7/17/2014	9:16 AM	2,410	<3.9	1.1 J	10.9 J	<0.39	<0.79	288 J	5.7	1.5 J	4.8 J	5,080	7	539 J	75.6	<0.016	3.3 J	202 J	<3.9	<2	<983	<3.9	5.7 J	16.3
G-17	0-1	6/16/2014	8:50 AM	6,280	<4.2	2.6 J	25.6 J	<0.42	<0.85	2,030	15.1	4 J	8.9	10,000	20.5	1,060	147	0.05	7.1 J	402 J	<4.2	<2.1	<1060	<4.2	12.8	37.7
	8-12	6/16/2014	9:11 AM	5,960	<4.2	2.7 J	26.8 J	<0.42	1.6	1,620	765	2.2 J	31.6	6,930	78.3	735 J	78.8	0.2	7.6 J	226 J	<4.2	15.7	<1050	<4.2	13.1	62.2
	surf	6/16/2014	8:45 AM	6,230	<4.2	6.5	24.7 J	<0.42	<0.84	2,860	17.9	2.9 J	9.1	10,500	21.4	1,570	152	0.05	6.2 J	467 J	<4.2	<2.1	<1050	<4.2	14.1	43.3
G-18	0-1	7/16/2014	8:57 AM	4,480	<3.7	3.5	30.6 J	<0.37	0.36 J	2,250	38.6	2.6 J	15.7	14,700	41.9	1,200	148	0.06	19.3	263 J	<3.7	0.44 J	<921	<3.7	13.5	120
	surf	7/16/2014	8:56 AM	4,210	<4.8	2.1 J	32.8 J	<0.48	0.56 J	2,370	22.3	2.3 J	19.2	8,040	66.9	1070 J	92.4	0.1	6.6 J	273 J	<4.8	0.47 J	<1210	<4.8	12.1	181
Soil Cleanup Objectives[a]	Commercial			n/a	n/a	16	400	590	9.3	n/a	1,500[b]	n/a	270	n/a	1,000	n/a	10,000	2.8	310	n/a	1,500	1,500	n/a	n/a	n/a	10,000
	Unrestricted			n/a	n/a	13	350	7.2	2.5	n/a	30[b]	n/a	50	n/a	63	n/a	1,600	0.18	30	n/a	3.9	2	n/a	n/a	n/a	109

Notes:
n/a - not applicable / not analyzed
J - Indicates an estimated value below laboratory reporting limits
[a] - 6 NYCRR 375-6.8 (a, b)
[b] - SCO's for trivalent chromium are presented
- value exceeds 6 NYCRR 375-6.8 (a,b) unrestricted use SCO

Fairchild Republic Aircraft; Old Sump
Route 110 (Broad Hollow Road)
East Farmingdale, NY
Site No. 152004

2014 Remedial Investigation Soil Analytical Results (ug/Kg)
TestAmerica, Inc.
Methods: SW8081B

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

Location	Depth (ft BGS)	Date Collected	Time Collected	4,4,-DDT	4,4-DDD	4,4-DDE	a BHC	Aldrin	b BHC	Chlordane	delta-BHC	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan Sulfate	Endrin	Endrin Aldehyde	Endrin ketone	Gamma-BHC(Lindane)	Heptachlor	Heptachlor Epoxide	Methoxychlor	Toxaphene
G-01	0-1	7/16/2014	10:42 AM	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<75	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<75
	surf	7/16/2014	10:41 AM	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6	<76	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6	<76
G-02	0-1	7/16/2014	10:47 AM	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<74	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<74
	surf	7/16/2014	10:46 AM	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<75	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<75
G-03	0-1	7/16/2014	10:52 AM	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<72	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<72
	surf	7/16/2014	10:51 AM	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<72	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<72
G-04	0-1	7/16/2014	10:58 AM	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<74	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<74
	surf	7/16/2014	10:57 AM	<7.8	<7.8	<7.8	<7.8	<7.8	<7.8	<78	<7.8	<7.8	<7.8	<7.8	<7.8	<7.8	<7.8	<7.8	<7.8	<7.8	<7.8	<7.8	<78
G-05	0-1	7/16/2014	12:21 PM	<7.3	<7.3	<7.3	<7.3	<7.3	<7.3	<73	<7.3	<7.3	<7.3	<7.3	<7.3	<7.3	<7.3	<7.3	<7.3	<7.3	<7.3	<7.3	<73
	surf	7/16/2014	12:20 PM	<7.8	<7.8	<7.8	<7.8	<7.8	<7.8	<78	<7.8	<7.8	<7.8	<7.8	<7.8	<7.8	<7.8	<7.8	<7.8	<7.8	<7.8	<7.8	<78
G-06	0-1	7/16/2014	12:33 PM	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<72	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<72
	surf	7/16/2014	12:32 PM	<7.3	<7.3	<7.3	<7.3	<7.3	<7.3	<73	<7.3	<7.3	<7.3	<7.3	<7.3	<7.3	<7.3	<7.3	<7.3	<7.3	<7.3	<7.3	<73
G-07	0-1	7/17/2014	10:59 AM	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<75	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<75
	surf	7/17/2014	10:58 AM	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<74	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<74
G-08	0-1	7/17/2014	10:55 AM	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<74	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<74
	surf	7/17/2014	10:54 AM	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<75	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<75
G-09	0-1	7/17/2014	10:50 AM	<7.3	<7.3	<7.3	<7.3	<7.3	<7.3	<73	<7.3	<7.3	<7.3	<7.3	<7.3	<7.3	<7.3	<7.3	<7.3	<7.3	<7.3	<7.3	<73
	surf	7/17/2014	10:48 AM	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<75	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<75
G-10	0-1	7/17/2014	9:33 AM	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<72	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<72
	surf	7/17/2014	9:32 AM	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<72	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<72
G-11	0-1	7/17/2014	9:28 AM	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<74	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<74
	surf	7/17/2014	9:27 AM	<7.7	<7.7	<7.7	<7.7	<7.7	<7.7	<77	<7.7	<7.7	<7.7	<7.7	<7.7	<7.7	<7.7	<7.7	<7.7	<7.7	<7.7	<7.7	<77
G-12	0-1	6/17/2014	8:58 AM	<7	<7	<7	<7	<7	<7	<70	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<70
	28-32	6/17/2014	10:29 AM	<8	<8	<8	<8	<8	<8	<80	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<80
	surf	6/17/2014	8:58 AM	<7	<7	<7	<7	<7	<7	<70	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<70
G-13	0-1	7/16/2014	9:13 AM	<8.1	<8.1	<8.1	<8.1	<8.1	<8.1	<81	<8.1	<8.1	<8.1	<8.1	<8.1	<8.1	<8.1	<8.1	<8.1	<8.1	<8.1	<8.1	<81
	surf	7/16/2014	9:11 AM	<10	<10	<10	<10	<10	<10	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<100
G-14	0-1	7/16/2014	9:05 AM	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<74	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<74
	surf	7/16/2014	9:04 AM	<7.8	<7.8	<7.8	<7.8	<7.8	<7.8	<78	<7.8	<7.8	<7.8	<7.8	<7.8	<7.8	<7.8	<7.8	<7.8	<7.8	<7.8	<7.8	<78
G-15	0-1	7/17/2014	9:21 AM	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<72	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<72
	surf	7/17/2014	9:20 AM	<7.3	<7.3	<7.3	<7.3	<7.3	<7.3	<73	<7.3	<7.3	<7.3	<7.3	<7.3	<7.3	<7.3	<7.3	<7.3	<7.3	<7.3	<7.3	<73
G-16	0-1	7/17/2014	9:17 AM	<6.9	<6.9	<6.9	<6.9	<6.9	<6.9	<69	<6.9	<6.9	<6.9	<6.9	<6.9	<6.9	<6.9	<6.9	<6.9	<6.9	<6.9	<6.9	<69
	surf	7/17/2014	9:16 AM	<7	<7	<7	<7	<7	<7	<70	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<70
G-17	0-1	6/16/2014	8:50 AM	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<74	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	<74
	8-12	6/16/2014	9:11 AM	<7.9	<7.9	<7.9	<7.9	<7.9	<7.9	<79	<7.9	<7.9	<7.9	<7.9	<7.9	<7.9	<7.9	<7.9	<7.9	<7.9	<7.9	<7.9	<79
	surf	6/16/2014	8:45 AM	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<75	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<75
G-18	0-1	7/16/2014	8:57 AM	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<72	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<72
	surf	7/16/2014	8:56 AM	<8.3	<8.3	<8.3	<8.3	<8.3	<8.3	<83	<8.3	<8.3	<8.3	<8.3	<8.3	<8.3	<8.3	<8.3	<8.3	<8.3	<8.3	<8.3	<83

Soil Cleanup Objectives[a]	Commercial	47,000	92,000	62,000	3,400	680	3,000	n/a	500,000	1,400	200,000	200,000	200,000	89,000	n/a	n/a	9,200	15,000	n/a	n/a	n/a
	Unrestricted	3.3	3.3	3.3	20	5	36	n/a	40	5	2,400	2,400	2,400	14	n/a	n/a	100	42	n/a	n/a	n/a

Notes:
n/a - not applicable / not analyzed
[a] - 6 NYCRR 375-6.8 (a, b)

Fairchild Republic Aircraft; Old Sump
Route 110 (Broad Hollow Road)
East Farmingdale, NY
Site No. 152004

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

2014 Remedial Investigation Groundwater Analytical Results (ug/L)
TestAmerica, Inc.
Methods: SW8082A

Location	BAW-06C	MW-1	MW-1A	MW-2	MW-3	MW-4	TOGS111 ClassGA Standard[a]	TOGS111 ClassGA Guidance[a]
Depth (ft BGS)	20-30	40-50	-	19-29	20-30	22-32		
Date Collected	7/28/2014	7/28/2014	7/28/2014	7/28/2014	7/28/2014	7/28/2014		
Time Collected	1:35 PM	9:36 AM	10:25 AM	11:23 AM	12:10 PM	12:55 PM		
Aroclor 1016	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	n/a	n/a
Aroclor 1221	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	n/a	n/a
Aroclor 1232	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	n/a	n/a
Aroclor 1242	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	n/a	n/a
Aroclor 1248	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	n/a	n/a
Aroclor 1254	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	n/a	n/a
Aroclor 1260	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	n/a	n/a
Aroclor 1262	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	n/a	n/a
Aroclor 1268	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	n/a	n/a
Polychlorinated biphenyls (total)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	5	n/a

[a] - TOGS 1.1.1 - Ambient Water Quality Standards & Guidance Values, Class GA (groundwater)

Fairchild Republic Aircraft; Old Sump
Route 110 (Broad Hollow Road)
East Farmingdale, NY
Site No. 152004

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

2014 Remedial Investigation Groundwater Analytical Results (ug/L)
TestAmerica, Inc.
Methods: SW8260C

Location	BAW-06C	MW-1	MW-1A	MW-2	MW-3	MW-4	TOGS111 ClassGA Standard[a]	TOGS111 ClassGA Guidance[a]
Depth (ft BGS)	20-30	40-50	-	19-29	20-30	22-32		
Date Collected	7/28/2014	7/28/2014	7/28/2014	7/28/2014	7/28/2014	7/28/2014		
Time Collected	1:35 PM	9:36 AM	10:25 AM	11:23 AM	12:10 PM	12:55 PM		
1,1 Dichloroethane	<1	<1	<1	<1	<1	<1	5	n/a
1,1 Dichloroethene	<1	<1	<1	<1	<1	<1	5	n/a
1,1,1 Trichloroethane	<1	<1	<1	<1	<1	<1	5	n/a
1,1,2 Trichloroethane	<1	<1	<1	<1	<1	<1	1	n/a
1,1,2,2 Tetrachloroethane	<1	<1	<1	<1	<1	<1	5	n/a
1,2 Dibromoethane	<1	<1	<1	<1	<1	<1	0.001	n/a
1,2 Dichlorobenzene	<1	<1	<1	<1	<1	<1	3	n/a
1,2 Dichloroethane	<1	<1	<1	<1	<1	<1	0.6	n/a
1,2 Dichloropropane	<1	<1	<1	<1	<1	<1	1	n/a
1,2,3 Trichlorobenzene	<1	<1	<1	<1	<1	<1	5	n/a
1,2,4 Trichlorobenzene	<1	<1	<1	<1	<1	<1	5	n/a
1,3 Dichlorobenzene	<1	<1	<1	<1	<1	<1	3	n/a
1,4 Dichlorobenzene	<1	<1	<1	<1	<1	<1	3	n/a
1,4-Dioxane	<50	<50	<50	<50	<50	<50	n/a	n/a
2-Hexanone	<5	<5	<5	<5	<5	<5	n/a	50
4-Methyl-2-Pentanone	<5	<5	<5	<5	<5	<5	n/a	n/a
Acetone	<5	<5	<5	<5	<5	<5	n/a	50
Benzene	<1	<1	<1	0.1 J	<1	0.17 J	1	n/a
Bromochloromethane	<1	<1	<1	<1	<1	<1	5	n/a
Bromodichloromethane	<1	<1	<1	<1	<1	<1	n/a	50
Bromoform	<1	<1	<1	<1	<1	<1	n/a	50
Bromomethane	<1	<1	<1	<1	<1	<1	5	n/a
c 1,3 Dichloropropene	<1	<1	<1	<1	<1	<1	n/a	n/a
Carbon Disulfide	<1	<1	<1	<1	<1	<1	n/a	60
Carbon Tetrachloride	<1	<1	<1	<1	<1	<1	5	n/a
Chlorobenzene	<1	<1	<1	0.32 J	<1	<1	5	n/a
Chloroethane	<1	<1	<1	<1	<1	<1	5	n/a
Chloroform	<1	0.17 J	<1	<1	<1	0.16 J	7	n/a
Chloromethane	<1	<1	<1	<1	<1	<1	5	n/a
cis-1,2-Dichloroethene	<1	<1	1	<1	0.62 J	0.53 J	5	n/a
Cyclohexane	<1	<1	<1	0.17 J	<1	<1	n/a	n/a
Cyclohexane, methyl-	<1	<1	<1	0.18 J	<1	<1	n/a	n/a
Dibromochloromethane	<1	<1	<1	<1	<1	<1	n/a	50
Dibromochloropropane	<1	<1	<1	<1	<1	<1	0.04	n/a
Dichlorodifluoromethane	<1	<1	<1	<1	<1	<1	5	n/a
Ethylbenzene	<1	<1	<1	<1	<1	0.23 J	5	n/a
Freon 113	<1	<1	<1	<1	<1	<1	5	n/a
Isopropylbenzene	<1	<1	<1	<1	<1	<1	5	n/a
m + p Xylene	<1	<1	<1	<1	<1	<1	5*	n/a
Methyl acetate	<5	<5	<5	<5	<5	<5	n/a	n/a
Methyl Ethyl Ketone	<5	<5	<5	<5	<5	<5	n/a	50
Methylene Chloride	<1	<1	<1	<1	<1	<1	5	n/a

Fairchild Republic Aircraft; Old Sump
Route 110 (Broad Hollow Road)
East Farmingdale, NY
Site No. 152004

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

2014 Remedial Investigation Groundwater Analytical Results (ug/L)
TestAmerica, Inc.
Methods: SW8260C

Location	BAW-06C	MW-1	MW-1A	MW-2	MW-3	MW-4	TOGS111 ClassGA Standard[a]	TOGS111 ClassGA Guidance[a]
Depth (ft BGS)	20-30	40-50	-	19-29	20-30	22-32		
Date Collected	7/28/2014	7/28/2014	7/28/2014	7/28/2014	7/28/2014	7/28/2014		
Time Collected	1:35 PM	9:36 AM	10:25 AM	11:23 AM	12:10 PM	12:55 PM		
o-Xylene	<1	<1	<1	<1	<1	<1	5	n/a
Styrene	<1	<1	<1	<1	<1	0.27 J	5	n/a
t 1,3 Dichloropropene	<1	<1	<1	<1	<1	<1	n/a	n/a
t butylmethylether	<1	<1	<1	0.76 J	0.29 J	<1	n/a	10
Tetrachloroethene	0.56 J	0.57 J	0.63 J	<1	6	1.1	5	n/a
Toluene	<1	0.23 J	<1	0.17 J	<1	<1	5	n/a
trans-1,2-Dichloroethene	<1	<1	<1	<1	<1	0.33 J	5	n/a
Trichloroethylene	0.89 J	0.15 J	0.59 J	<1	2.4	0.34 J	5	n/a
Trichlorofluoromethane	<1	<1	<1	<1	<1	<1	5	n/a
Vinyl Chloride	<1	<1	<1	<1	<1	0.54 J	2	n/a
Calculated								
Total VOC's	1.45	1.12	2.22	1.7	9.31	3.67	n/a	n/a
Total BTEX	<5	0.23	<5	0.27	<5	0.4	n/a	n/a

Notes:
n/a - not applicable / not analyzed
J - Indicates an estimated value below laboratory reporting limits
* - standard applies to both isomers separately
[a] - TOGS 1.1.1 - Ambient Water Quality Standards & Guidance Values, Class GA (groundwater)
- value exceeds TOGS standard/guidance value

Fairchild Republic Aircraft; Old Sump
Route 110 (Broad Hollow Road)
East Farmingdale, NY
Site No. 152004

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

2014 Remedial Investigation Groundwater Analytical Results (ug/L)
TestAmerica, Inc.
Methods: SW8270D

Location	BAW-06C	MW-1	MW-1A	MW-2	MW-3	MW-4	TOGS111 ClassGA Standard[a]	TOGS111 ClassGA Guidance[a]
Depth (ft BGS)	20-30	40-50	-	19-29	20-30	22-32		
Date Collected	7/28/2014	7/28/2014	7/28/2014	7/28/2014	7/28/2014	7/28/2014		
Time Collected	1:35 PM	9:36 AM	10:25 AM	11:23 AM	12:10 PM	12:55 PM		
1,1-Biphenyl	<10	<10	<10	<10	<10	<10	**5**	n/a
1,2,4,5-Tetrachlorobenzene	<10	<10	<10	<10	<10	<10	n/a	n/a
2,3,4,6-Tetrachlorophenol	<10	<10	<10	<10	<10	<10	n/a	n/a
2,4,5-Trichlorophenol	<10	<10	<10	<10	<10	<10	n/a	n/a
2,4,6-Trichlorophenol	<10	<10	<10	<10	<10	<10	n/a	n/a
2,4-Dichlorophenol	<10	<10	<10	<10	<10	<10	**5**	n/a
2,4-Dimethylphenol	<10	<10	<10	<10	<10	<10	n/a	**50**
2,4-Dinitrophenol	<30	<30	<30	<30	<30	<30	n/a	**10**
2,4-Dinitrotoluene	<2	<2	<2	<2	<2	<2	**5**	n/a
2,6-Dinitrotoluene	<2	<2	<2	<2	<2	<2	n/a	n/a
2-Chloronaphthalene	<10	<10	<10	<10	<10	<10	n/a	**10**
2-Chlorophenol	<10	<10	<10	<10	<10	<10	n/a	n/a
2-Methyl-4,6-dinitrophenol	<30	<30	<30	<30	<30	<30	n/a	n/a
2-Methylnaphthalene	<10	<10	<10	<10	<10	<10	n/a	n/a
2-Nitroaniline	<20	<20	<20	<20	<20	<20	**5**	n/a
2-Nitrophenol	<10	<10	<10	<10	<10	<10	n/a	n/a
3,3-Dichlorobenzidine	<20	<20	<20	<20	<20	<20	**5**	n/a
3-Nitroaniline	<20	<20	<20	<20	<20	<20	**5**	n/a
4-Bromophenyl-phenylether	<10	<10	<10	<10	<10	<10	n/a	n/a
4-Chloro-3-methylphenol	<10	<10	<10	<10	<10	<10	n/a	n/a
4-Chloroaniline	<1	<1	<1	<1	<1	<1	**5**	n/a
4-Chlorophenyl-phenylether	<10	<10	<10	<10	<10	<10	n/a	n/a
4-Nitroaniline	<20	<20	<20	<20	<20	<20	**5**	n/a
4-Nitrophenol	<30	<30	<30	<30	<30	<30	n/a	n/a
Acenaphthene	<10	<10	<10	**3.1 J**	<10	<10	n/a	**20**
Acenaphthylene	<10	<10	<10	<10	<10	<10	n/a	n/a
Acetophenone	<10	<10	<10	<10	<10	<10	n/a	n/a
Anthracene	<10	<10	<10	<10	<10	<10	n/a	**50**
Atrazine	<10	<10	<10	<10	<10	<10	**7.5**	n/a
Benzaldehyde	<10	<10	<10	<10	<10	<10	n/a	n/a
Benzo(a)anthracene	<1	<1	<1	<1	<1	<1	n/a	**0.002**
Benzo(a)pyrene	<1	<1	<1	<1	<1	<1	n/a	n/a
Benzo(b)fluoranthene	<1	<1	<1	<1	<1	<1	n/a	**0.002**
Benzo(g,h,i)perylene	<10	<10	<10	<10	<10	<10	n/a	n/a
Benzo(k)fluoranthene	<1	<1	<1	<1	<1	<1	n/a	**0.002**
bis(2-Chloroethoxy)methane	<10	<10	<10	<10	<10	<10	**5**	n/a
bis(2-Chloroethyl)ether	<1	<1	<1	<1	<1	<1	**1**	n/a
bis(2-Chloroisopropyl)ether	<10	<10	<10	<10	<10	<10	**5**	n/a
bis(2-Ethylhexyl)phthalate	<10	<10	<10	<10	<10	<10	**5**	n/a
Butylbenzylphthalate	<10	<10	<10	<10	<10	<10	n/a	**50**
Caprolactam	<10	<10	<10	<10	<10	<10	n/a	n/a
Carbazole	<10	<10	<10	<10	<10	<10	n/a	n/a
Chrysene	<10	<10	<10	<10	<10	<10	n/a	**0.002**
Dibenzo(a,h)anthracene	<1	<1	<1	<1	<1	<1	n/a	n/a

Fairchild Republic Aircraft; Old Sump
Route 110 (Broad Hollow Road)
East Farmingdale, NY
Site No. 152004

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

2014 Remedial Investigation Groundwater Analytical Results (ug/L)
TestAmerica, Inc.
Methods: SW8270D

Location	BAW-06C	MW-1	MW-1A	MW-2	MW-3	MW-4	TOGS111 ClassGA Standard[a]	TOGS111 ClassGA Guidance[a]
Depth (ft BGS)	20-30	40-50	-	19-29	20-30	22-32		
Date Collected	7/28/2014	7/28/2014	7/28/2014	7/28/2014	7/28/2014	7/28/2014		
Time Collected	1:35 PM	9:36 AM	10:25 AM	11:23 AM	12:10 PM	12:55 PM		
Dibenzofuran	<10	<10	<10	<10	<10	<10	n/a	n/a
Diethylphthalate	<10	<10	<10	<10	<10	<10	n/a	**50**
Dimethylphthalate	<10	<10	<10	<10	<10	<10	n/a	**50**
Di-n-butylphthalate	<10	<10	<10	<10	<10	<10	**50**	n/a
Di-n-octylphthalate	<10	<10	<10	<10	<10	<10	n/a	**50**
Fluoranthene	<10	<10	<10	<10	<10	<10	n/a	**50**
Fluorene	<10	<10	<10	**1.9 J**	<10	<10	n/a	**50**
Hexachlorobenzene	<1	<1	<1	<1	<1	<1	**0.04**	n/a
Hexachlorobutadiene	<2	<2	<2	<2	<2	<2	**0.5**	n/a
Hexachlorocyclopentadiene	<10	<10	<10	<10	<10	<10	**5**	n/a
Hexachloroethane	<1	<1	<1	<1	<1	<1	**5**	n/a
Indeno(1,2,3-cd)pyrene	<1	<1	<1	<1	<1	<1	n/a	**0.002**
Isophorone	<10	<10	<10	<10	<10	<10	n/a	**50**
Naphthalene	<10	<10	<10	<10	<10	<10	n/a	**10**
Nitrobenzene	<1	<1	<1	<1	<1	<1	**0.4**	n/a
N-Nitrosodi-N-Propylamine	<1	<1	<1	<1	<1	<1	n/a	n/a
N-Nitrosodiphenylamine	<10	<10	<10	<10	<10	<10	n/a	**50**
o-cresol	<10	<10	<10	<10	<10	<10	n/a	n/a
p-cresol	<10	<10	<10	<10	<10	<10	n/a	n/a
Pentachlorophenol	<30	<30	<30	<30	<30	<30	**1.5**	n/a
Phenanthrene	<10	<10	<10	<10	<10	<10	n/a	**50**
Phenol (total)	<10	<10	<10	<10	<10	<10	**1**	n/a
Pyrene	<10	<10	<10	<10	<10	<10	n/a	**50**
Calculated Total SVOC's	<658	<658	<658	**5**	<658	<658	n/a	n/a

Notes:
n/a - not applicable / not analyzed
J - Indicates an estimated value below laboratory reporting limits
[a] - TOGS 1.1.1 - Ambient Water Quality Standards & Guidance Values, Class GA (groundwater)

Fairchild Republic Aircraft; Old Sump
Route 110 (Broad Hollow Road)
East Farmingdale, NY
Site No. 152004

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

2014 Remedial Investigation Groundwater Analytical Results (ug/L)
TestAmerica, Inc.
Methods: SW6010C, SW7470A

Location	BAW-06C	MW-1	MW-1A	MW-2	MW-3	MW-4	TOGS111 ClassGA Standard[a]	TOGS111 ClassGA Guidance[a]
Depth (ft BGS)	20-30	40-50	-	19-29	20-30	22-32		
Date Collected	7/28/2014	7/28/2014	7/28/2014	7/28/2014	7/28/2014	7/28/2014		
Time Collected	1:35 PM	9:36 AM	10:25 AM	11:23 AM	12:10 PM	12:55 PM		
Aluminum	<200	<200	106 J	128 J	<200	255	n/a	n/a
Antimony	<20	<20	<20	<20	<20	<20	3	n/a
Arsenic	<15	<15	4.9 J	<15	<15	<15	25	n/a
Barium	23.3 J	57.7 J	71.3 J	114 J	32 J	16.9 J	1,000	n/a
Beryllium	<2	<2	<2	<2	<2	<2	n/a	3
Cadmium	<4	<4	<4	<4	<4	<4	5	n/a
Calcium	48,700	25,800	48,100	150,000	59,200	39,400	n/a	n/a
Chromium (total)	<10	11.3	<10	6 J	<10	<10	50	n/a
Cobalt	<50	<50	<50	<50	<50	<50	n/a	n/a
Copper	<25	<25	<25	<25	<25	<25	200	n/a
Iron	69.6 J	<150	6,070	14,300	<150	6,900	300	n/a
Lead	<10	<10	<10	<10	<10	<10	25	n/a
Magnesium	4170 J	4020 J	5,050	9,440	5,480	2170 J	n/a	35,000
Manganese	67	<15	1,040	713	187	1,160	300	n/a
Mercury	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.7	n/a
Nickel	<40	<40	<40	<40	<40	<40	100	n/a
Potassium	3160 J	2960 J	3290 J	10,100	6,320	3500 J	n/a	n/a
Selenium	<20	<20	<20	<20	<20	<20	10	n/a
Silver	<10	<10	<10	<10	<10	<10	50	n/a
Sodium	14,700	24,000	17,900	14,800	18,000	14,900	20,000	n/a
Thallium	<20	<20	<20	<20	<20	<20	n/a	0.5
Vanadium	<50	<50	<50	<50	<50	<50	n/a	n/a
Zinc	<30	<30	8 J	7.7 J	6.6 J	<30	n/a	2,000

Notes:
J - Indicates an estimated value below laboratory reporting limits
[a] - TOGS 1.1.1 - Ambient Water Quality Standards & Guidance Values, Class GA (groundwater)
- value exceeds TOGS standard/guidance value

Fairchild Republic Aircraft; Old Sump
Route 110 (Broad Hollow Road)
East Farmingdale, NY
Site No. 152004

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

2014 Remedial Investigation Groundwater Analytical Results (ug/L)
TestAmerica, Inc.
Methods: SW8081B

Location	BAW-06C	MW-1	MW-1A	MW-2	MW-3	MW-4	TOGS111 ClassGA Standard[a]	TOGS111 ClassGA Guidance[a]
Depth (ft BGS)	20-30	40-50	-	19-29	20-30	22-32		
Date Collected	7/28/2014	7/28/2014	7/28/2014	7/28/2014	7/28/2014	7/28/2014		
Time Collected	1:35 PM	9:36 AM	10:25 AM	11:23 AM	12:10 PM	12:55 PM		
4,4,-DDT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	**0.2**	n/a
4,4-DDD	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	**0.3**	n/a
4,4-DDE	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	**0.2**	n/a
a BHC	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	**0.01**	n/a
Aldrin	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	n/a	n/a
b BHC	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	**0.04**	n/a
Chlordane	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**0.05**	n/a
delta-BHC	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	**0.04**	n/a
Dieldrin	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	n/a	n/a
Endosulfan I	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	n/a	n/a
Endosulfan II	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	n/a	n/a
Endosulfan Sulfate	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	n/a	n/a
Endrin	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	n/a	n/a
Endrin Aldehyde	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	**5**	n/a
Endrin ketone	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	**5**	n/a
Gamma-BHC(Lindane)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	**0.05**	n/a
Heptachlor	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	**0.04**	n/a
Heptachlor Epoxide	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	**0.03**	n/a
Methoxychlor	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	**35**	n/a
Toxaphene	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**0.06**	n/a

[a] - TOGS 1.1.1 - Ambient Water Quality Standards & Guidance Values, Class GA (groundwater)

Fairchild Republic Aircraft; Old Sump
Route 110 (Broad Hollow Road)
East Farmingdale, NY
Site No. 152004

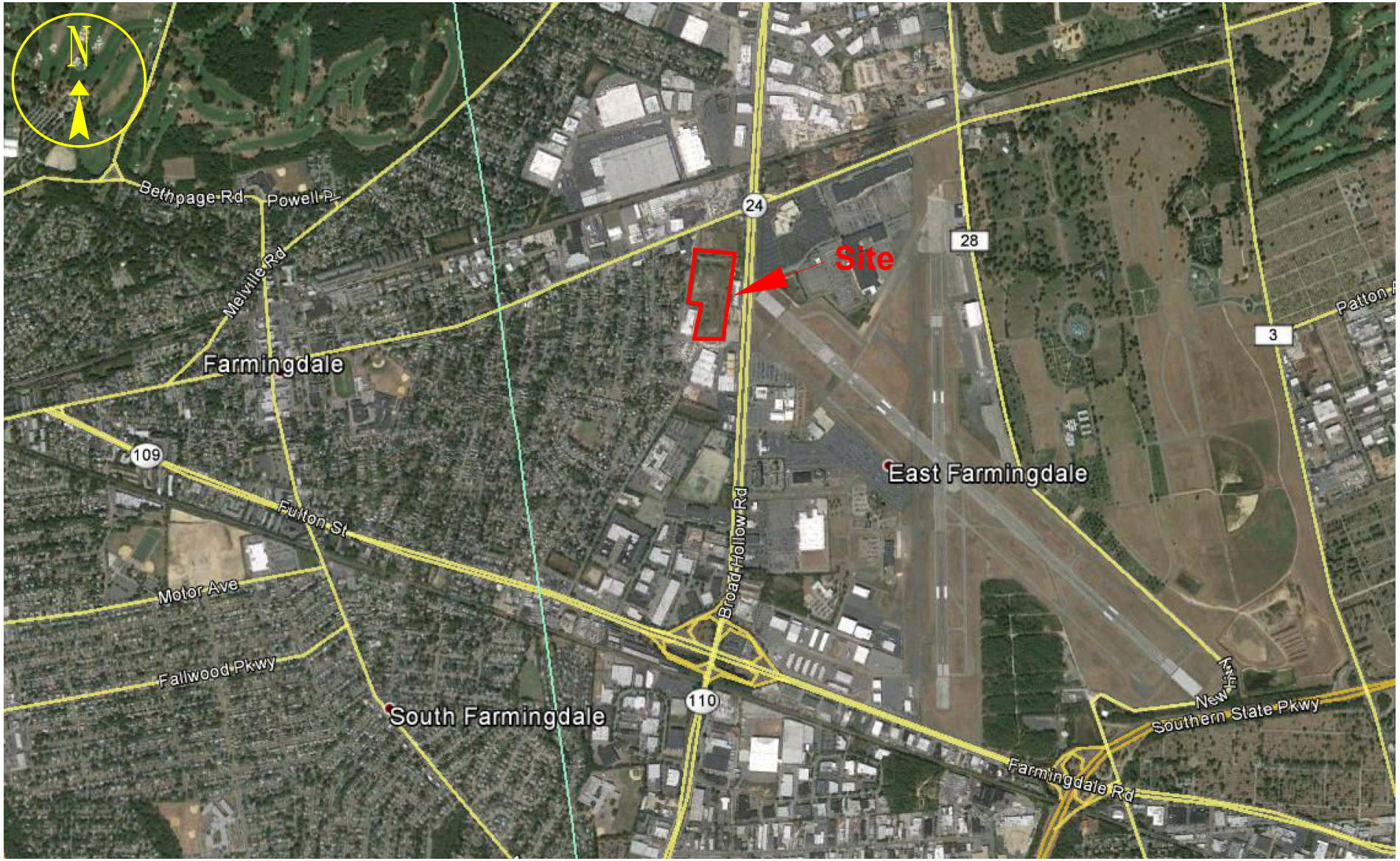
ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

2014 Remedial Investigation Groundwater Analytical Results
EAR Field Screening

Location	Depth (ft BGS)	Date Collected	Time Collected	Dissolved Oxygen *mg/L*	pH -	Temperature *°C*	ORP (Oxidation Reduction Potential) *mV*	Conductivity *us/cm*	Turbidity *NTU*
BAW-06C (20-30)	20-30	7/28/2014	1:35 PM	4.01	6.99	16.98	59.1	303	5.64
MW-1	40-50	7/28/2014	9:36 AM	4.58	5.90	16.45	203.7	274	0.29
MW-1A	-	7/28/2014	10:25 AM	1.59	6.49	17.08	51.0	331	4.10
MW-2	19-29	7/28/2014	11:23 AM	1.50	7.16	16.65	-32.3	754	4.25
MW-3	20-30	7/28/2014	12:10 PM	1.71	7.02	16.53	30.2	371	2.71
MW-4	22-32	7/28/2014	12:55 PM	1.50	7.24	17.52	-112.0	286	5.10

FIGURES

Figure 1: Site Location Map
Figure 2: Site Map
Figure 3: Site Map – Commercial SCO Exceedances



Modified from 2014 Europa Technologies, Google

Not to Scale

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

Figure 1
Site Location Map

Fairchild Republic Aircraft; Old Sump
Broad Hollow Road
East Farmingdale, NY
Site No. 152004



0 175
SCALE IN FEET

Legend

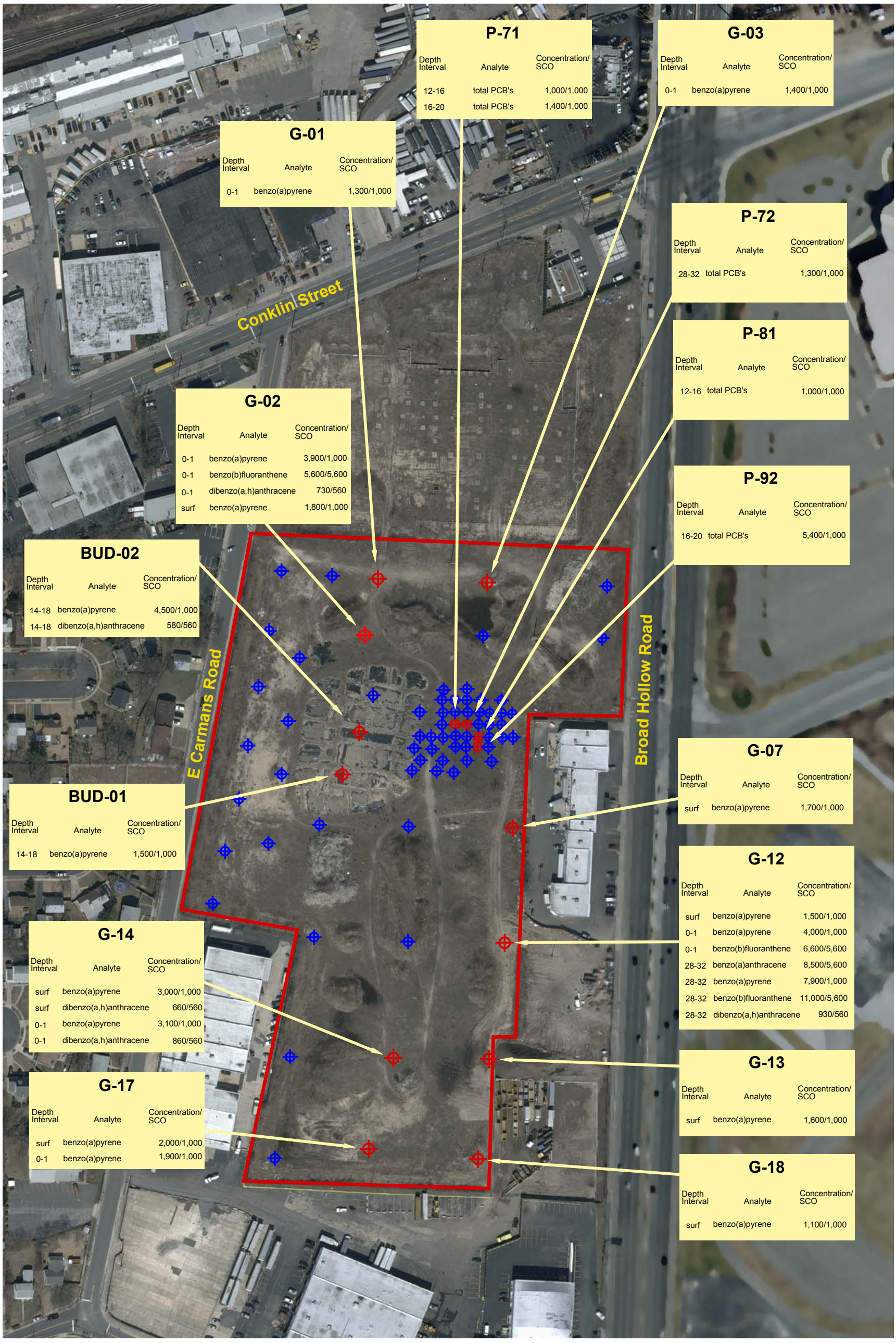
MW-1 - **Well ID Labels**

- **Surveyed Well Locations**

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Figure 2
Site Map

Fairchild Republic Aircraft; Old Sump
Broad Hollow Road
East Farmingdale, NY
Site No.152004



P-71

Depth Interval	Analyte	Concentration/ SCO
12-16	total PCB's	1,000/1,000
16-20	total PCB's	1,400/1,000

G-03

Depth Interval	Analyte	Concentration/ SCO
0-1	benzo(a)pyrene	1,400/1,000

G-01

Depth Interval	Analyte	Concentration/ SCO
0-1	benzo(a)pyrene	1,300/1,000

P-72

Depth Interval	Analyte	Concentration/ SCO
28-32	total PCB's	1,300/1,000

P-81

Depth Interval	Analyte	Concentration/ SCO
12-16	total PCB's	1,000/1,000

G-02

Depth Interval	Analyte	Concentration/ SCO
0-1	benzo(a)pyrene	3,900/1,000
0-1	benzo(b)fluoranthene	5,600/5,600
0-1	dibenzo(a,h)anthracene	730/560
surf	benzo(a)pyrene	1,800/1,000

P-92

Depth Interval	Analyte	Concentration/ SCO
16-20	total PCB's	5,400/1,000

BUD-02

Depth Interval	Analyte	Concentration/ SCO
14-18	benzo(a)pyrene	4,500/1,000
14-18	dibenzo(a,h)anthracene	580/560

G-07

Depth Interval	Analyte	Concentration/ SCO
surf	benzo(a)pyrene	1,700/1,000

BUD-01

Depth Interval	Analyte	Concentration/ SCO
14-18	benzo(a)pyrene	1,500/1,000

G-12

Depth Interval	Analyte	Concentration/ SCO
surf	benzo(a)pyrene	1,500/1,000
0-1	benzo(a)pyrene	4,000/1,000
0-1	benzo(b)fluoranthene	6,600/5,600
28-32	benzo(a)anthracene	8,500/5,600
28-32	benzo(a)pyrene	7,900/1,000
28-32	benzo(b)fluoranthene	11,000/5,600
28-32	dibenzo(a,h)anthracene	930/560

G-14

Depth Interval	Analyte	Concentration/ SCO
surf	benzo(a)pyrene	3,000/1,000
surf	dibenzo(a,h)anthracene	660/560
0-1	benzo(a)pyrene	3,100/1,000
0-1	dibenzo(a,h)anthracene	860/560

G-13

Depth Interval	Analyte	Concentration/ SCO
surf	benzo(a)pyrene	1,600/1,000

G-17

Depth Interval	Analyte	Concentration/ SCO
surf	benzo(a)pyrene	2,000/1,000
0-1	benzo(a)pyrene	1,900/1,000

G-18

Depth Interval	Analyte	Concentration/ SCO
surf	benzo(a)pyrene	1,100/1,000

- Soil Sampling Location w/ Commercial SCO Exceedance
- Soil Sampling Location

All concentrations reported in ug/Kg
Depth intervals provided in feet below grade surface
All analyses by Test America, Inc.

0 175
SCALE IN FEET

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Figure 3

Commercial SCO Exceedances

June-July 2014 Remedial Investigation

6 NYCRR 375-6.8 Commercial Use Soil Cleanup Objectives

Fairchild Republic Aircraft; Old Sump
Broad Hollow Road
East Farmingdale, NY
Site No.152004

Appendix A: Drilling/Boring Logs

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Installation Date 6/26/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-EASTFARMINGDALE
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	1-52-004
BORING I.D.	BUD-01
PURPOSE	Investigation
DRILLING METHOD	Direct Push
DRILLING COMPANY	Clearwater Drilling, Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	N/A
TOTAL BORING DEPTH	22'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 14'-18', 18'-22'

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	Direct push, no lithology logged.				
4'-8'	2.7' Brown/black fine sand, some medium sand, trace coarse sand, trace gravel, trace red brick; dry, odor.	MC	4'-8'	21.3ppm	68
8'-12'	2.2' Brown/black fine sand, some medium sand, trace coarse sand, trace gravel; dry, odor.	MC	8'-12'	25.8ppm	55
12'-16'	1.7' Black fine sand, some medium sand, trace coarse sand, trace gravel; dry, odor. 1.0' Concrete, little brown fine sand, trace medium sand; dry. 0.3' Tan fine sand, some medium sand, little coarse sand, trace gravel; dry, no odor.	MC	12'-16'	23.2ppm	75
16'-20'	0.5' Black fine sand, some medium sand, trace coarse sand; dry, odor. 0.4' Brown fine sand, some medium sand, little coarse sand; dry, no odor. 1.5' Tan fine sand, some medium sand, little coarse sand, trace gravel; dry, no odor.	MC	16'-20'	40.4ppm	60
20'-22'	0.6' Brown fine sand, some medium sand, little coarse sand; dry. 0.3' Concrete	MC	20'-22'	2.1ppm	45

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/26/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-EASTFARMINGDALE
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	1-52-004
BORING I.D.	BUD-02
PURPOSE	Investigation
DRILLING METHOD	Direct Push
DRILLING COMPANY	Clearwater Drilling, Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	N/A
TOTAL BORING DEPTH	22'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 14'-18', 18'-22'

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-14'	Direct push, no lithology logged.				
14'-18'	0.1' Black fine sand, little medium sand; dry, odor.	MC	14'-18'	25.1ppm	68
	2.6' Tan fine sand, some medium sand, some coarse sand, trace gravel; dry, odor.				
18'-22'	0.9' Tan fine sand, some medium sand, trace coarse sand, trace gravel; dry.	MC	18'-22'	1.4ppm	23

"Trace", 1 - 10%
"Little", 10 - 20%
"Some", 20 - 30%
"And", 30 - 50%

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Installation Date 6/26/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-EASTFARMINGDALE
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	1-52-004
BORING I.D.	BUD-03
PURPOSE	Investigation
DRILLING METHOD	Direct Push
DRILLING COMPANY	Clearwater Drilling, Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	N/A
TOTAL BORING DEPTH	26'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 14'-18', 22'-26'

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-14'	Direct push, no lithology logged.				
14'-18'	2.5' Brown fine sand, some medium sand, little coarse sand, trace gravel.	MC	14'-18'	15.9ppm	63
18'-22'	0.3' Black clay, some fine sand, some medium sand; moist. 1.1' Tan fine sand, some medium sand, little coarse sand, trace gravel; moist. 0.3' Black clay; moist, odor.	MC	18'-22'	10.3ppm	43
22'-26'	2.1' Tan fine and medium sand, little coarse sand, trace gravel; moist.	MC	22'-26'	0.8ppm	53

"Trace", 1 - 10%
"Little", 10 - 20%
"Some", 20 - 30%
"And", 30 - 50%

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Installation Date 06/17/14

DRILLING LOG - Monitoring Well Installation

DRILLING DETAILS

PROJECT/SITE NAME: DEC-EASTFARMINGDALE
SITE ADDRESS: Fairchild Republic Aircraft,Old Sump
Broad Hollow Rd.
East Farmingdale, NY
SITE NUMBER: 152004
WELL I.D.: MW-1 (G-17)
DRILLING METHOD: Direct Push
DRILLING COMPANY: Clearwater Drilling, Inc.
HEAD DRILLER: B. Vigliotta
LOGGED BY: J. Lohan
BOREHOLE DIAMETER: 4"
SAMPLE METHOD: Macro Core
DEPTH-TO-WATER: 16'
TOTAL WELL DEPTH: 50'

WELL CONSTRUCTION

CASING
Type PVC Diameter 0.75" Length 40'

SCREEN
Type PVC Diameter 0.75" Slot .010" Length 10'

GRAVEL PACK: Pre-Packed Screen
CASING SEAL: Bentonite (Hydrated Pellets) (13'-18' BGS)
FILL: Native (0'-13' BGS & 18'-32' BGS)
SECURITY: Locking Well Cap / J Plug
3753 Master Lock
FINISH: N/A - Stick-Up
COMMENTS: * Pre-packed screens - 0.75" PVC screen packed w/ 20/40 mesh, silica sand enclosed by 0.011" stainless steel mesh at 1.4" OD

Depth Below Grade	Well Design	Soil Lithology/Field Observations				
		Depth	Description/Classification	Sample Type	Screening Interval	PID Reading
		Surf	Brown fine sand, some medium sand, trace coarse sand, trace gravel: dry.	HA	Surf	1.3ppm
		0'-1'	1' Brown fine sand, some medium sand, trace coarse sand, trace gravel: dry.	HA	0'-1'	0.3ppm
16'		1'-4'	3' Brown fine sand, some medium sand, little coarse sand, trace gravel: dry.	MC	1'-4'	0.1ppm
			0.2' Concrete			
			0.3' Brown fine sand, some medium sand, little coarse sand, trace gravel: dry.			
			0.2' Concrete			
		4'-8'	0.8' Brown fine sand, some medium sand, little coarse sand, trace gravel:	MC	4'-8'	0.3ppm
		8'-12'	dry.	MC	8'-12'	0.0ppm
			0.5' Black fine sand, trace medium sand; moist			
			Tan fine sand, little medium sand , little coarse sand, trace gravel; moist			
		12'-16'	0.2' Brown fine sand, some medium sand, little coarse sand, trace gravel; dry.	MC	12'-16'	0.0ppm
			1.2' Tan fine and medium sand, little coarse sand; moist			
			1.6' Tan fine sand, some medium sand, little coarse sand, little gravel; moist			
		16-20'	1.2' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	16-20'	0.5ppm
		20-24'	1.8' Tan fine and medium sand, little coarse sand; moist	MC	20-24'	0.3ppm
TWD 50'		24-28'	1.8' Tan fine and medium sand, little coarse sand; moist	MC	24-28'	0.2ppm
	NOT TO SCALE					

Backfill Bentonite

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Installation Date 06/17/14

DRILLING LOG - Monitoring Well Installation

WELL I.D. MW-1

Soil Lithology/Field Observations

		Sample Type	Screening Interval	PID Reading
28-32'	0.3' Tan fine sand, little medium sand, tr coarse sand; wet.	MC	28-32'	0.3ppm
	0.2' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.			
	1.5' Tan fine sand, some medium sand, trace coarse sand, trace gravel; wet.			
32'-36'	0.4' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	32'-36'	0.2ppm
	0.2' Tan fine sand, some medium sandl; wet.			
	0.2' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.			
36'-40'	1.2' Tan fine sand, little medium sand, tr coarse sand; wet.	MC	36'-40'	0.4ppm
	1' Tan fine sand, little medium sand, some coarse sand, trace gravel; wet.			
40'-44'	1.9' Tan fine and medium sand, little coarse sand, trace gravel; wet.	MC	40'-44'	0.3ppm
44'-48'	1.1' Tan fine sand, some medium sand, trace coarse sandl; wet.	MC	44'-48'	0.3ppm
	0.6' Tan fine and medium sand, some coarse sand, trace gravel; wet.			
	0.8' Tan fine sand, some medium sand, little coarse sand; wet.			
48'-52'	1.1' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	48'-52'	0.6ppm
	0.5' Tan fine and medium sand, some coarse sand, trace gravel; wet.			
	0.8' Tan fine sand, some medium sand, trace coarse sand, trace gravel; wet.			

Cement/ Bentonite Grout  Gravel  Backfill 

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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DRILLING LOG - Monitoring Well Installation

DRILLING DETAILS

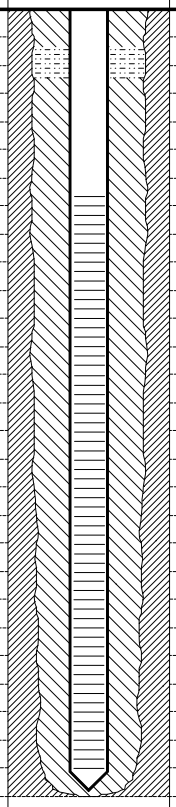
PROJECT/SITE NAME	DEC-EASTFARMINGDALE
SITE ADDRESS	Fairchild Republic Aircraft, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE NUMBER	152004
WELL I.D.	MW-2 (G-12)
DRILLING METHOD	Direct Push
DRILLING COMPANY	Clearwater Drilling, Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
SAMPLE METHOD	Macro Core
DEPTH-TO-WATER	18'
TOTAL WELL DEPTH	29'

WELL CONSTRUCTION

CASING
Type PVC Diameter 0.75" Length 19'

SCREEN
Type PVC Diameter 0.75" Slot .010" Length 10'

GRAVEL PACK	Pre-Packed Screen
CASING SEAL	Bentonite (Hydrated Pellets) (13'-18' BGS)
FILL	Native (0'-13' BGS & 18'-32' BGS)
SECURITY	Locking well Cap / J Plug
	3753 Master Lock
FINISH	N/A - Stand-Up
COMMENTS	* Pre-packed screens - 0.75" PVC screen packed w/ 20/40 mesh, silica sand enclosed by 0.011" stainless steel mesh at 1.4" OD



Soil Lithology/Field Observations

Depth Below Grade	Depth	Description/Classification	Sample Type	Screening Interval	PID Reading
	Surf	Brown fine sand, some medium sand, trace coarse sand, trace gravel: dry.		Surf	1.3ppm
	0'-1'	1' Brown fine sand, some medium sand, trace coarse sand, trace gravel: dry.	HA	0'-1'	0.3ppm
	1'-4'	3' Brown fine sand, some medium sand, little coarse sand, trace gravel: dry.	MC	1'-4'	0.1ppm
18'		0.2' Concrete.			
		0.3' Brown fine sand, some medium sand, little coarse sand, trace gravel: dry.			
		0.2' Concrete.			
	4'-8'	0.8' Brown fine sand, some medium sand, little coarse sand, trace gravel: dry.	MC	4'-8'	0.3ppm
		1.2' Dark brown fine sand, some medium sand, little coarse sand, trace gravel; dry.			
		0.5' Light brown fine sand, some medium sand, little coarse sand, trace gravel; dry.			
	8'-12'	0.6' Tan fine sand, some medium sand, little coarse sand; dry.	MC	8'-12'	0.1ppm
		0.6' Dark brown fine sand,little medium sand, trace coarse sand, trace gravel; moist.			
		0.6' Tan/light brown fine and medium sand, little coarse sand, trace gravel: moist.			
	12'-16'	0.6' Brown fine sand, some medium sand, little coarse sand, trace gravel gravel: dry.	MC	12'-16'	0.2ppm
TWD		0.6' Tan fine and medium sand, little coarse sand, trace gravel; moist			
29'		0.3 Dark brown fine and medium sand; moist			
		0.4' concrete.			
		1.5' Dark brown to tan fine sand some medium sand, little coarse sand; moist.			

Backfill Bentonite

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DRILLING LOG - Monitoring Well Installation

WELL I.D. MW-2

Soil Lithology/Field Observations

		Sample Type	Screening Interval	PID Reading
16-20'	1.7' Brown fine sand, little medium sand, trace coarse sand, trace gravel; moist.	MC	16-20'	0.5ppm
	0.5' Concrete.			
	1.5' Grey/brown fine and medium sand, some coarse sand, little gravel; wet.			
20-24'	1.2' Dark grey medium sand, some fine sand, little coarse sand; wet.	MC	20-24'	0.3ppm
24-28'	Dark grey/black fine and medium sand, little coarse sand, trace gravel; wet. Unable	MC	24-28'	1.1ppm
	to measure due to wetness			
28-32'	1.5' Dark grey medium sand, some fine sand, some coarse sand; wet.	MC	28-32'	0.9ppm

Cement/ Bentonite Grout  Gravel  Backfill 

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 06/17/14- 6/18/14

DRILLING LOG - Monitoring Well Installation

DRILLING DETAILS

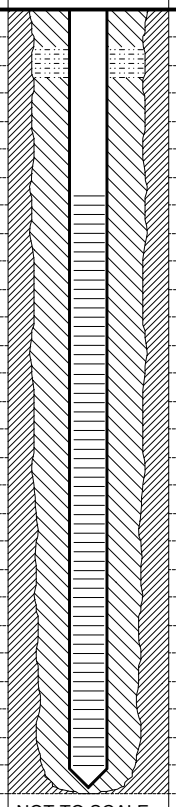
PROJECT/SITE NAME	DEC-EASTFARMINGDALE
SITE ADDRESS	Fairchild Republic Aircraft, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE NUMBER	152004
WELL I.D.	MW-3
DRILLING METHOD	Direct Push
DRILLING COMPANY	Clearwater Drilling, Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
SAMPLE METHOD	Macro Core
DEPTH-TO-WATER	15'
TOTAL WELL DEPTH	30'

WELL CONSTRUCTION

CASING
Type PVC Diameter 0.75" Length 20'

SCREEN
Type PVC Diameter 0.75" Slot .010" Length 10'

GRAVEL PACK	Pre-Packed Screen
CASING SEAL	Bentonite (Hydrated Pellets) (7'-13' BGS)
FILL	Native (0'-7' BGS & 13-40' BGS)
SECURITY	Locking well Cap / J Plug
	3753 Master Lock
FINISH	N/A - Stand-Up
COMMENTS	* Pre-packed screens - 0.75" PVC screen packed w/ 20/40 mesh, silica sand enclosed by 0.011" stainless steel mesh at 1.4" OD



Soil Lithology/Field Observations

Depth Below Grade	Depth	Description/Classification	Sample Type	Screening Interval	PID Reading
	0'-4'	1.5' Light brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.	MC	1'-4'	0.8ppm
		0.5' Brown fine and medium sand, trace coarse sand, trace grave; dry.			
		1.5' Tan fine sand, little medium sand, trace coarse sand, trace gravel; dry.			
	4'-8'	1.1' Tan fine and medium sand, little coarse sand, trace gravel; dry.	MC	4'-8'	0.1ppm
		0.3' Brown fine and medium sand, little coarse sand, trace gravel; dry.			
15'		0.8' Tan medium sand, some fine sand, little coarse sand, trace gravel; dry.			
	8'-12'	0.8' Tan fine sand, some medium sand, trace coarse sand, trace gravel; dry.	MC	8'-12'	0.1ppm
		3' Brown fine sand, little medium sand, trace coarse sand; dry.			
	12'-16'	0.5' Light brown fine sand, some medium sand, trace coarse sand, trace gravel; moist.	MC	12'-16'	0.2ppm
		3' Brown fine and medium sand, little coarse sand, trace gravel; wet.			
	16-20'	1' Brown fine sand, little medium sand, trace coarse sand, trace gravel; wet.	MC	16-20'	0.3ppm
		0.9' Tan/grey fine sand, some medium sand, trace coarse sand, trace gravel; wet.			
	20-24'	1.2' Tan medium and coarse sand, some fine sand, little gravel; wet.	MC	20-24'	0.1ppm
		0.5' Tan medium sand, some fine sand, little coarse sand, trace gravel; wet.			
	24-28'	1.4' Tan fine sand, some medium sand, trace coarse sand, trace gravel; wet.	MC	24-28'	0.2ppm

Backfill Bentonite

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Installation Date 6/17/14 - 6/18/14

DRILLING LOG - Monitoring Well Installation

WELL I.D. MW-3

Soil Lithology/Field Observations

		Sample Type	Screening Interval	PID Reading
28-32'	1.5' Tan medium and coarse sand, some fine sand, little gravel; wet.	MC	28-32'	0.3ppm
32'-36'	0.2' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	32'-36'	0.3ppm
	0.6' Tan fine sind, some medium sand, trace coarse sand; wet.			
	0.5' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.			
	0.6' Tan fine sand, some medium sand, trace coarse sand; wet.			
36'-40'	0.5' Tan fine and medium sand, some coarse sand, trace gravel: wet.	MC	36'-40'	0.3ppm
	0.5' Tan medium and coarse sand, little fine sand, little gravel; wet.			
	0.5' Tan fine and medium sand, some coarse sand, trace gravel: wet.			
	0.3' Tan medium and coarse sand, little fine sand, little gravel; wet.			
	0.5' Tan fine and medium sand, some coarse sand, trace gravel: wet.			

Cement/ Bentonite Grout | Gravel | Backfill

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 06/18/14

DRILLING LOG - Monitoring Well Installation

DRILLING DETAILS

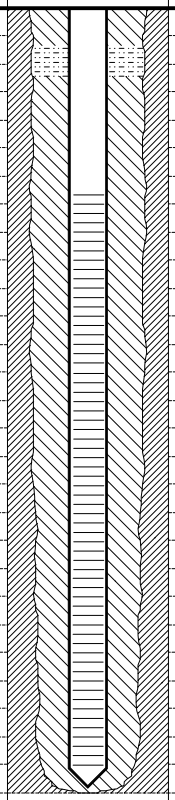
PROJECT/SITE NAME	DEC-EASTFARMINGDALE
SITE ADDRESS	Fairchild Republic Aircraft,Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE NUMBER	152004
WELL I.D.	MW-4 (CR-11)
DRILLING METHOD	Direct Push
DRILLING COMPANY	Clearwater Drilling, Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
SAMPLE METHOD	Macro Core
DEPTH-TO-WATER	14'
TOTAL WELL DEPTH	32'

WELL CONSTRUCTION

CASING
Type PVC Diameter 0.75" Length 22'

SCREEN
Type PVC Diameter 0.75" Slot .010" Length 10'

GRAVEL PACK	Pre-Packed Screen
CASING SEAL	Bentonite (Hydrated Pellets) (7.5'-12.5' BGS)
FILL	Native (0'-12.5' BGS & 12.5'-32' BGS)
SECURITY	Locking well Cap / J Plug
	3753 Master Lock
FINISH	N/A - Stand-Up
COMMENTS	* Pre-packed screens - 0.75" PVC screen packed w/ 20/40 mesh, silica sand enclosed by 0.011" stainless steel mesh at 1.4" OD



Depth	Description/Classification	Sample Type	Screening Interval	PID Reading
Surf	Brown fine sand, some medium sand, trace coarse sand, trace gravel: dry.	HA	Surf	0.3ppm
0'-1'	1' Brown fine sand, some medium sand, trace coarse sand, trace gravel: dry.	HA	0'-1'	0.5ppm
1'-4'	2.3' Brown fine sand, some medium snad, trace coarse sand, trace gravel dry.	MC	1'-4'	1.5ppm
4'-8'	3.3' Brown fine sand, some medium sand, trace coarse sand, trace gravel dry.	MC	4'-8'	0.6ppm
8'-12'	0.6' Brown fine sand, little medium sand, trace coarse sand, trace greavel; dry. 2.5' Brown fine sand, little medium sand, trace coarse sand, trace greavel; moist.	MC	8'-12'	0.1ppm
12'-16'	1.0' Tan fine and medium sand, some coarse sand, trace gravel; moist. 1.5' Tan fine and medium sand, some coarse sand, trace gravel; wet.	MC	12'-16'	0.6ppm
16-20'	1' Tan fine and medium sand, some coarse sand, trace gravel; wet.	MC	16-20'	1.1ppm
20-24'	0.4' Tan fine and medium sand, trace coarse sand, trace gravel; wet. 0.3' Black fine and medium sand, trace coarse sand, trace gravel; wet. 0.3' Tan fine sand, some medium sand, trace coarse sand, trace gravel; wet.	MC	20-24'	1.3ppm
24-28'	Tan fine and medium sand, some coarse sand, trace gravel; wet. 0.2' Black clay, little fine sand, little medium sand, wet. 0.4' Tan fine and medium sand, some coarse sand, trace gravel; wet. 1.2 Black clay, some fine sand, little coarse sand, trace gravel; wet. 0.8' Tan fine and medium sand, little coarse sand, trace gravel; wet. 0.7' Black clay, little fine sand; wet.	MC	24-28'	1.4ppm

Backfill Bentonite

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Installation Date 6/18/14

DRILLING LOG - Monitoring Well Installation

WELL I.D. MW-4

Soil Lithology/Field Observations

		Sample Type	Screening Interval	PID Reading
28-32'	0.1' Black clay, some fine sand, trace medium sand; wet.	MC	28-32'	0.6ppm
	1.8' Tan fine and medium sand, little coarse sand, trace gravel; wet.			

Cement/ Bentonite Grout Gravel Backfill

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/27/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME: DEC-Eastfarmingdale
SITE ADDRESS: Fairchild Republic Airport, Old Sump
Broad Hollow Rd.
East Farmingdale, NY
SITE ID NUMBER: 152004
BORING I.D.: P-06
PURPOSE: Direct Push
DRILLING METHOD: Macro Core
DRILLING COMPANY: Clearwater Drilling Inc.
HEAD DRILLER: B. Vigliotta
LOGGED BY: J. Lohan
BOREHOLE DIAMETER: 4"
DEPTH-TO-WATER: ~19'
TOTAL BORING DEPTH: 32'

SOIL SAMPLING METHOD
Type: Macro Core

GROUNDWATER SAMPLING METHOD
Type: N/A

BACKFILL: Native Fill
FINISH: N/A

COMMENTS: Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'. relocated to P-53 location following refusal at original location.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	1.8' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry. 0.2' Red brick; dry.	MC	0'-4'	0.5ppm	50
4'-8'	2.4' Brown fine sand, some medium sand, little coarse sand, trace gravel, trace red brick, trace cement; dry.	MC	4'-8'	0.7ppm	60
8'-12'	0.2' Brown fine sand, some medium sand, trace coarse sand, trace gravel; dry. 0.3' Red brick; dry. 0.2' Concrete, some fine sand, little medium sand; dry. 1.5' Brown fine sand, some medium sand, little coarse sand, trace gravel; dry.	MC	8'-12'	0.7ppm	55
12'-16'	1.3' Brown fine sand, some coarse sand, little medium sand, trace gravel; dry. 1.0' Black fine sand, some medium sand, little coarse sand, trace gravel; moist.	MC	12'-16'	1.0ppm	58
16'-20'	0.9' Brown fine sand, little medium sand, trace coarse sand; dry. 0.2' Red brick; dry. 0.2' Black fine sand, little medium sand; moist.	MC	16'-20'	4.9ppm	33
20'-24'	0.3' Red brick, some fine brown sand; wet.	MC	20'-24'	0.2ppm	8
24'-28'	0.4' Black clay; wet, odor. 0.2' Red brick; wet. 0.9' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	24'-28'	12.1ppm	38
28'-32'	0.6' Tan fine and medium sand, little coarse sand; wet.	MC	28'-32'	1.4ppm	15

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/25/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME: DEC-Eastfarmingdale
SITE ADDRESS: Fairchild Republic Airport, Old Sump
Broad Hollow Rd.
East Farmingdale, NY
SITE ID NUMBER: 152004
BORING I.D.: P-07
PURPOSE: Direct Push
DRILLING METHOD: Macro Core
DRILLING COMPANY: Clearwater Drilling Inc.
HEAD DRILLER: B. Vigliotta
LOGGED BY: J. Lohan
BOREHOLE DIAMETER: 4"
DEPTH-TO-WATER: ~16'
TOTAL BORING DEPTH: 32'

SOIL SAMPLING METHOD
Type: Macro Core

GROUNDWATER SAMPLING METHOD
Type: N/A

BACKFILL: Native Fill
FINISH: N/A

COMMENTS: Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	0.5' Brown fine sand, trace medium sand, trace gravel; dry.	MC	0'-4'	0.4ppm	88
	0.4' Red brick; dry.				
	0.3' Brown fine sand, trace medium sand, trace coarse sand; dry.				
	0.3' Concrete; dry.				
	0.5'Brown fine sand, little medium sand, trace coarse sand, trace gravel, trace red brick; dry.				
	0.4' Concrete; dry.				
	0.4' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.				
	0.8' Concrete; dry.				
4'-8'	0.2' Concrete; dry.	MC	4'-8'	0.2ppm	85
	0.6' Brown fine sand, little medium sand, trace gravel; dry.				
	0.5' Concrete; dry.				
	2.1' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.				
8'-12'	1.6' Brown fine sand, little medium sand, trace coarse sand, trace gravel; moist.	MC	8'-12'	0.3ppm	50
	0.4' Black clay; sheen, moist, odor.				
12'-16'	2.6' Brown fine sand, little medium sand, trace coarse sand; moist.	MC	12'-16'	0.3ppm	65
16'-20'	1.7' Dark brown fine sand, little medium sand, trace coarse sand; wet.	MC	16'-20'	0.1ppm	100
	2.3' Brown fine sand, little medium sand, trace coarse sand, trace gravel; wet.				
20'-24'	1.9' Brown clayey fine sand, little medium sand, trace coarse sand ; wet.	MC	20'-24'	0.5ppm	48
24'-28'	0.7' Tan fine and medium sand, trace coarse sand; wet.	MC	24'-28'	0.6ppm	18

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/25/14

DRILLING LOG - Direct Push Temporary Borehole Installation

Boring I.D. P-07

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
28'-32'	0.6' Brown fine sand, little medium sand, trace coarse sand; wet. 2.0' Dark brown fine sand, trace medium sand, trace coarse sand; wet.	MC	28'-32'	0.6ppm	65

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/24/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME: DEC-Eastfarmingdale
SITE ADDRESS: Fairchild Republic Airport, Old Sump
Broad Hollow Rd.
East Farmingdale, NY
SITE ID NUMBER: 152004
BORING I.D.: P-08
PURPOSE: Direct Push
DRILLING METHOD: Macro Core
DRILLING COMPANY: Clearwater Drilling Inc.
HEAD DRILLER: B. Vigliotta
LOGGED BY: J. Lohan
BOREHOLE DIAMETER: 4"
DEPTH-TO-WATER: ~17'
TOTAL BORING DEPTH: 32'

SOIL SAMPLING METHOD
Type: Macro Core

GROUNDWATER SAMPLING METHOD
Type: N/A

BACKFILL: Native Fill
FINISH: N/A

COMMENTS: Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	1.6' Brown fine sand, trace medium sand, trace coarse sand; dry.	MC	0'-4'	0.3ppm	63
	0.6' Brown clay.				
	0.3' Brown fine sand, trace medium sand, trace coarse snad; dry.				
4'-8'	0.6' Brown fine sand, little medium sand, trace coarse sand; dry.	MC	4'-8'	0.8ppm	88
	0.5 Brown clay; moist.				
8'-12'	0.4' Brown clay; moist.	MC	8'-12'	6.2ppm	50
	0.3' Brown fine sand, little medium sand, trace coarse sand; dry.				
	1.3' Black clay, some brown fine sand, trace medium sand; sheen, moist, odor.				
12'-16'	2.2' Brown fine sand, little medium sand, trace coarse sand, trace gravel; moist.	MC	12'-16'	0.7ppm	55
16'-20'	1.1' Brown clayey fine sand, little medium sand, trace coarse sand; moist.	MC	16'-20'	1.9ppm	28
20'-24'	0.5' Brown fine sand, little medium sand, trace coarse sand; moist.	MC	20'-24'	0.4ppm	68
	1.4' Brown clay, some fine sand, little medium sand, trace coarse sand; wet.				
	0.8' Brown clayey fine sand, little medium sand, trace coarse sand; wet.				
24'-28'	0.7' Brown fine sand, little medium sand, trace coarse sand, trace gravel; wet.	MC	24'-28'	0.7ppm	18
28'-32'	0.4 Brown/black fine sand some medium sand, trace coarse sand; wet.	MC	28'-32'	0.7ppm	23
	0.5' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.				

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/23/14
Page 1 of 1

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME: DEC-Eastfarmingdale
SITE ADDRESS: Fairchild Republic Airport, Old Sump
Broad Hollow Rd.
East Farmingdale, NY
SITE ID NUMBER: 152004
BORING I.D.: P-11
PURPOSE: Direct Push
DRILLING METHOD: Macro Core
DRILLING COMPANY: Clearwater Drilling Inc.
HEAD DRILLER: B. Vigliotta
LOGGED BY: J. Lohan
BOREHOLE DIAMETER: 4"
DEPTH-TO-WATER: ~17'
TOTAL BORING DEPTH: 32'

SOIL SAMPLING METHOD
Type: Macro Core

GROUNDWATER SAMPLING METHOD
Type: N/A

BACKFILL: Native Fill
FINISH: N/A

COMMENTS: Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	0.2' Brown fine sand, trace medium sand, trace coarse sand; dry. 0.1' concrete; dry. 2.6' Dark brown fine sand, little medium sand, trace coarse sand trace gravel, trace concrete; dry.	MC	0'-4'	35ppm	73
4'-8'	0.3' Black fine sand, trace medium sand; dry, no odor. 1.7' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry. 0.3' concrete; dry. 0.5' Brown fine sand, little medium sand, trace coarse sand, trace gravel; moist.	MC	4'-8'	0.9ppm	70
8'-12'	0.9' Brown fine sand, little medium sand, trace coarse sand; moist. 0.9' Brown fine sand little medium sand, trace coarse sand, trace gravel; moist.	MC	8'-12'	2.7ppm	50
12'-16'	0.6' Brown fine sand, little medium sand; dry. 0.2' Concrete; dry.	MC	12'-16'	3.1ppm	20
16'-20'	0.2' Brown fine sand, some medium sand, trace coarse sand; moist. 1.1' Black clay; sheen, moist, odor. 2.5' Tan medium sand, some fine sand, some coarse sand, trace gravel; wet.	MC	16'-20'	6.7ppm	95
20'-24'	2.0' Tan fine and medium sand, some coarse sand, trace gravel; wet.	MC	20'-24'	0.9ppm	50
24'-28'	1.9' Tan fine and medium sand, little coarse sand, trace gravel; wet.	MC	24'-28'	0.7ppm	48
28'-32'	2.0' Tan fine and medium sand, some coarse sand; wet.	MC	28'-32'	0.4ppm	50

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/27/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME: DEC-Eastfarmingdale
SITE ADDRESS: Fairchild Republic Airport, Old Sump
Broad Hollow Rd.
East Farmingdale, NY
SITE ID NUMBER: 152004
BORING I.D.: P-12
PURPOSE: Direct Push
DRILLING METHOD: Macro Core
DRILLING COMPANY: Clearwater Drilling Inc.
HEAD DRILLER: B. Vigliotta
LOGGED BY: J. Lohan
BOREHOLE DIAMETER: 4"
DEPTH-TO-WATER: ~16'
TOTAL BORING DEPTH: 32'

SOIL SAMPLING METHOD
Type: Macro Core

GROUNDWATER SAMPLING METHOD
Type: N/A

BACKFILL: Native Fill
FINISH: N/A

COMMENTS: Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	2.5' Brown fine sand, little medium sand, little coarse sand, trace gravel; dry.	MC	0'-4'	0.4ppm	63
4'-8'	1.9' Brown fine sand, little medium sand, trace coarse sand; dry.	MC	4'-8'	0.9ppm	48
8'-12'	1.9' Brown fine sand, some medium sand, trace coarse sand, trace gravel; dry.	MC	8'-12'	0.9ppm	48
12'-16'	1.3' Brown fine sand, little medium sand, trace coarse sand, trace clay; moist. 0.2' Black clay; moist, odor.	MC	12'-16'	0.8ppm	38
16'-20'	0.2' Black clay, some fine sand, some medium sand, trace coarse sand; wet, odor. 0.4' Brown fine sand, some medium sand, some coarse sand, trace gravel; wet, odor. 1.1 Black/grey fine and medium sand, little coarse sand, trace gravel; wet.	MC	16'-20'	1.2ppm	43
20'-24'	1.9' Tan fine and medium sand, little coarse sand, trace gravel; wet.	MC	20'-24'	0.8ppm	48
24'-28'	1.7' Tan fine and medium sand, some fine sand, little coarse sand, trace gravel; wet.	MC	24'-28'	0.9ppm	43
28'-32'	2.1' Tan medium sand, some coarse sand, little fine sand, trace gravel; wet.	MC	28'-32'	0.7ppm	53

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/27/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-13
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~11'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', and 28'-32'. 16'-20' interval not sampled due to low recovery.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	1.1' Brown fine sand, little medium sand, trace coarse sand; dry.	MC	0'-4'	1.8ppm	33
	0.7' Brown fine sand, little medium sand, trace coarse sand, trace concrete; dry.				
	0.5' Dark brown fine sand, some medium sand, trace coarse sand, trace red brock; dry.				
4'-8'	0.2' Brown fine sand, little medium sand, little red clay; moist.	MC	4'-8'	2.3ppm	35
	0.8' Black clay, little fine sand, trace medium sand; wet, odor.				
	gravel; dry.				
	0.2' Red brick; dry.				
	0.2' Brown fine sand, some coarse sand, little medium sand; moist.				
8'-12'	0.3' Black clay; moist, odor.	MC	8'-12'	8.8ppm	53
	0.5' Brown fine sand, little medium sand, little coarse sand, trace gravel; dry.				
	0.7' Brown fine sand, little medium sand, little coarse sand, trace gravel; moist.				
	0.2' Black clay; wet, odor.				
	0.4' Brown fine sand, little medium sand, little coarse sand, trace gravel; wet.				
12'-16'	0.4' Brown clay, little fine sand, little medium sand; wet.	MC	12'-16'	15.2ppm	43
	0.6' Brown fine and medium sand, little coarse sand, trace gravel; wet.				
	0.7' Black clay; wet, odor.				
16'-20'	Black clay, some fine sand, trace medium sand; moist, slight odor. Low recovery, sample baged directly from rod.	MC	16'-20'	6.5ppm	-
20'-24'	1.0' Black clay; wet, odor.	MC	20'-24'	9.3ppm	30
	0.2' Black clay, trace medium sand, trace coarse sand; wet.				
24'-28'	1.1' Brown fine sand, some medium sand, little clay, trace coarse sand, trace gravel; wet.	MC	24'-28'	3.0ppm	28

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/27/14

DRILLING LOG - Direct Push Temporary Borehole Installation

Boring I.D. P-13

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
28'-32'	0.1' Black medium sand, some fine sand, trace coarse sand; wet. 1.0' Brown fine sand, some medium sand, trace coarse sand, trace gravel; wet.	MC	28'-32'	6.1ppm	28

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/25/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME: DEC-Eastfarmingdale
SITE ADDRESS: Fairchild Republic Airport, Old Sump
Broad Hollow Rd.
East Farmingdale, NY
SITE ID NUMBER: 152004
BORING I.D.: P-14
PURPOSE: Direct Push
DRILLING METHOD: Macro Core
DRILLING COMPANY: Clearwater Drilling Inc.
HEAD DRILLER: B. Vigliotta
LOGGED BY: J. Lohan
BOREHOLE DIAMETER: 4"
DEPTH-TO-WATER: ~16'
TOTAL BORING DEPTH: 32'

SOIL SAMPLING METHOD
Type: Macro Core

GROUNDWATER SAMPLING METHOD
Type: N/A

BACKFILL: Native Fill
FINISH: N/A

COMMENTS: Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	2.2' Brown fine sand, little medium sand, trace coarse sand; dry.	MC	0'-4'	0.3ppm	55
4'-8'	0.3' Brown fine sand, little medium sand, trace coarse sand; dry. 0.2' Red brick; dry. 1.2'Brown fine sand, little medium sand, trace coarse sand; dry. 1.0' Concrete; dry.	MC	4'-8'	0.5ppm	68
8'-12'	0.7' Brown fine sand, little medium sand, little coarse sand; moist. 0.3' Concrete; dry. 1.2' Brown fine sand, little medium sand, trace coarse sand; moist. 0.1' Black fine sand, little medium sand, trace coarse sand; moist.	MC	8'-12'	0.5ppm	58
12'-16'	0.3' Brown fine sand, little medium sand, trace coarse sand, trace gravel; moist. 0.5' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry. 0.9' Brown fine sand, little medium sand, trace coarse sand, trace gravel; moist. 0.5' Brown fine sand, little medium sand, trace coarse sand, trace black clay; wet.	MC	16'-20'	1.0ppm	65
16'-20'	0.3' Black clay; sheen, wet, odor. 0.3' Brown fine sand, little medium sand, little coarse sand, trace gravel; wet. 0.3' Black clay, trace fine sand, trace medium sand; sheen, wet, odor. 0.4' Brown fine sand, trace medium sand, trace coarse sand, trace gravel; wet.	MC	12'-16'	1.7ppm	63
20'-24'	0.5' Tan medium sand, little fine sand, little coarse sand, trace gravel; wet.	MC	20'-24'	0.6ppm	13
24'-28'	0.7' Tan fine sand, little medium sand, trace coarse sand; wet.	MC	24'-28'	0.5ppm	20

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/25/14

DRILLING LOG - Direct Push Temporary Borehole Installation

Boring I.D. P-14

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
28'-32'	0.3' Black clay; sheen, wet, odor. 1.8' Tan fine sand, some medium sand, trace coarse sand, trace gravel; wet. 0.3' Black clay; sheen, wet, odor.	MC	28'-32'	0.6ppm	60

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/30/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump Broad Hollow Rd. East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-15
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~18'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	1.6' Brown fine sand, little medium sand, little coarse sand, trace gravel, trace asphalt, trace red brick; dry. 0.4' Concrete; dry.	MC	0'-4'	0.7ppm	50
4'-8'	0.4' Brown fine sand, little medium sand, trace coarse sand; dry. 0.1' Concrete; dry. 0.8' Black fine sand, little medium sand, trace coarse sand; dry. 0.5' Cement; dry. 0.3' Black fine sand, little medium sand, trace coarse sand, trace red brick; dry.	MC	4'-8'	0.8ppm	53
8'-12'	0.2' Concrete; dry. 1.8' Brown fine sand, little medium sand, little coarse sand, trace concrete; dry. 0.4' Black fine sand, some red brick, little medium sand, trace coarse sand; dry.	MC	8'-12'	0.8ppm	60
12'-16'	0.5' Brown fine sand, some coarse sand, little medium sand, little concrete; dry. 0.3' Red brick; dry. 1.1' Black fine sand, some red brick, little medium sand, trace coarse sand; dry.	MC	12'-16'	0.9ppm	48
16'-20'	0.4' Brown fine sand, little medium sand, trace coarse sand; moist. 0.4' Black fine sand, some medium sand, little coarse sand; wet.	MC	16'-20'	4.7ppm	20
20'-24'	1.7' Black clay, some fine sand, little medium sand, trace coarse sand, trace gravel; wet, odor.	MC	20'-24'	4.1ppm	43
24'-28'	0.9' Black clay, some fine sand, little medium sand, trace coarse sand, trace gravel; wet.	MC	24'-28'	0.8ppm	23
28'-32'	1.4' Black fine sand, some medium sand, little coarse sand; wet. gravel; wet.	MC	28'-32'	0.5ppm	35

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/30/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-16
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~17'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	2.5' Brown fine sand, little medium sand, little coarse sand, trace gravel; dry.	MC	0'-4'	0.7ppm	70
	0.1' Red brick; dry.				
	0.2' Brown fine sand, little medium sand, trace coarse sand,; dry.				
4'-8'	0.8' Brown/black fine sand, little medium sand, trace coarse sand, trace red brick; dry.	MC	4'-8'	0.8ppm	50
	0.5' Concrete; dry.				
	0.7' Browm fine sand, little medium sand, trace coarse sand, trace red brick, trace cement; dry.				
8'-12'	0.4' Brown fine sand, little coarse sand, trace medium sand, trace red brick, trace cement; dry.	MC	8'-12'	2.1ppm	633
	0.2' Black fine sand, little medium sand, trace coarse sand; dry.				
	1.9' Brown fine sand, little medium sand, trace coarse sand; dry.				
12'-16'	0.6' Brown fine sand, little medium sand, trace coarse sand, trace concrete; dry.	MC	12'-16'	0.8ppm	15
16'-20'	0.7' Brown clay, some fine sand, little medium sand, little coarse sand; wet.	MC	16'-20'	0.7ppm	18
20'-24'	0.5' Black medium sand, some coarse sand, little fine sand; wet.	MC	20'-24'	N/A	53
	0.5' Black/brown clay, some fine sand, trace medium sand, trace wood; wet.				
	0.1' Black clay, little fine sand, trace medium sand, trace wood; wet.				
24'-28'	No recovery, only a few pieces of black wood, no sand, clay, or gravel.	MC	24'-28'	0.9ppm	0
28'-32'	1.2' Black clay, some fine sand, some medium sand, trace coarse sand, trace wood; wet.	MC	28'-32'	0.6ppm	30

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump Broad Hollow Rd. East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-17
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~16'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	1.7' Brown fine sand, some medium sand, trace coarse sand, trace gravel; dry.	MC	0'-4'	2.1ppm	43
4'-8'	1.0' Brown fine sand, trace medium sand, trace coarse sand; dry. 0.8' Brown fine sand, little medium sand, trace coarse sand; dry.	MC	4'-8'	1.3ppm	45
8'-12'	1.4' Brown fine sand, little gravel, trace medium sand, trace coarse sand; dry. 0.5' Brown fine sand, little medium sand, trace coarse sand, trace gravel; moist.	MC	8'-12'	1.0ppm	48
12'-16'	0.4' Brown fine sand, little medium sand, little gravel, trace coarse sand; dry. 0.6' Brown fine sand, little gravel, trace medium sand, trace coarse sand; dry. 0.5' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.	MC	16'-20'	0.9ppm	38
16'-20'	0.4' Tan fine sand, some medium sand, little coarse sand; wet. 0.5' Brown fine sand, little medium sand, trace coarse sand; dry.	MC	12'-16'	0.5ppm	23
20'-24'	0.7' Brown fine sand, little medium sand, trace coarse sand; moist. 0.2' Grey fine sand, some medium sand, trace coarse sand; wet.	MC	20'-24'	0.8ppm	23
24'-28'	0.9' Grey fine sand, some medium sand, little coarse sand; wet.	MC	24'-28'	0.7ppm	23
28'-32'	0.4' Grey fine sand, little medium sand, trace coarse sand, trace gravel; wet. 0.6' Brown clay, some fine sand, little medium sand; wet. 1.0 Grey fine sand, some medium sand, trace coarse sand, trace gravel; wet.	MC	28'-32'	0.9ppm	50

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/30/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME: DEC-Eastfarmingdale
SITE ADDRESS: Fairchild Republic Airport, Old Sump
Broad Hollow Rd.
East Farmingdale, NY
SITE ID NUMBER: 152004
BORING I.D.: P-18
PURPOSE: Direct Push
DRILLING METHOD: Macro Core
DRILLING COMPANY: Clearwater Drilling Inc.
HEAD DRILLER: B. Vigliotta
LOGGED BY: J. Lohan
BOREHOLE DIAMETER: 4"
DEPTH-TO-WATER: ~16'
TOTAL BORING DEPTH: 32'

SOIL SAMPLING METHOD
Type: Macro Core

GROUNDWATER SAMPLING METHOD
Type: N/A

BACKFILL: Native Fill
FINISH: N/A

COMMENTS: Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	2.2' Brown fine sand, little medium sand, little coarse sand, trace gravel, trace red brick; dry.	MC	0'-4'	0.4ppm	55
4'-8'	0.9' Brown fine sand, little medium sand, little coarse sand, trace gravel; dry. 0.2' Concrete; dry. 0.9" Brown find sand, little clay, little medium sand, trace gravel; dry.	MC	4'-8'	0.2ppm	50
8'-12'	0.3' Brown/black clay, some fine sand, little coarse sand, trace medium sand; moist. 0.6' Brown fine and medium sand, little coarse sand; dry. 0.5' Brown clay, some fine sand, little medium sand, trace coarse sand; moist.	MC	8'-12'	0.3ppm	35
12'-16'	0.5' Brown fine sand, little medium sand, trace coarse sand; dry. 0.3' Brown fine sand, some clay, little medium sand: wet.	MC	12'-16'	0.2ppm	20
16'-20'	0.5' Brown fine sand, come clay, trace medium sand, trace coarse sand; wet. 1.6' Black clay, trace fine sand, trace medium sand; wet, odor.	MC	16'-20'	2.1ppm	53
20'-24'	1.5' Black/tan fine sand, some medium sand, little coarse sand; wet, slight odor. 0.2' Tan fine sand, little coarse sand, trace medium sand, trace gravel; wet.	MC	20'-24'	0.6ppm	43
24'-28'	1.7' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	24'-28'	0.2ppm	43
28'-32'	1.0' Tan fine and medium sand, little coarse sand, trace gravel; wet.	MC	28'-32'	0.3ppm	25

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/30/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-19
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~16'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	1.7' Brown fine sand, some coarse sand, trace medium sand, trace gravel; dry.	MC	0'-4'	0.3ppm	55
	0.1' Concrete; dry.				
	0.4' Brown fine sand, little coarse sand, trace medium sand; dry.				
4'-8'	2.1' Brown fine sand, little medium sand, little coarse sand, trace trace red brick; dry.	MC	4'-8'	0.2ppm	53
8'-12'	1.2' Brown fine sand, little medium sand, little coarse sand, trace gravel; dry.	MC	8'-12'	1.3ppm	65
	0.3' Brown fine sand, some clay, little medium sand, little coarse sand; moist.				
	0.1' Asphalt; moist				
	0.3' Red brick; dry.				
	0.2' Cement; dry.				
	0.5' Tan fine sand, some medium sand, trace coarse sand; moist.				
12'-16'	1.5' Brown fine sand, little medium sand, little coarse sand; dry.	MC	12'-16'	0.6ppm	93
	2.0' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.				
16'-20'	1.9' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	16'-20'	0.3ppm	48
20'-24'	1.5' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	20'-24'	0.4ppm	38
24'-28'	1.6' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	24'-28'	0.3ppm	40
28'-32'	1.6' Tan fine sand, some medium sand, some coarse sand, trace gravel; wet.	MC	28'-32'	0.3ppm	40

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/27/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME: DEC-Eastfarmingdale
SITE ADDRESS: Fairchild Republic Airport, Old Sump
Broad Hollow Rd.
East Farmingdale, NY
SITE ID NUMBER: 152004
BORING I.D.: P-20
PURPOSE: Direct Push
DRILLING METHOD: Macro Core
DRILLING COMPANY: Clearwater Drilling Inc.
HEAD DRILLER: B. Vigliotta
LOGGED BY: J. Lohan
BOREHOLE DIAMETER: 4"
DEPTH-TO-WATER: ~17'
TOTAL BORING DEPTH: 32'

SOIL SAMPLING METHOD
Type: Macro Core

GROUNDWATER SAMPLING METHOD
Type: N/A

BACKFILL: Native Fill
FINISH: N/A

COMMENTS: Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	1.2' Brown fine sand, little medium sand, little coarse sand, trace gravel; dry. 0.4' Concrete; dry. 0.7' Brown fine sand, little medium sand, trace coarse sand; dry.	MC	0'-4'	0.3ppm	58
4'-8'	0.2' Brown fine sand, little medium sand, trace coarse sand; dry. 0.2' Concrete; dry. 0.4' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.	MC	4'-8'	1.1ppm	20
8'-12'	1.0' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry. 0.2' Concrete; dry. 0.2' Brown fine sand, trace coarse sand, trace red brick; dry. 0.3' Tan fine sand, little medium sand, little coarse sand, trace gravel; dry.	MC	8'-12'	0.8ppm	43
12'-16'	0.7' Brown fine sand, some medium sand, little coarse sand, trace gravel; moist. 1.2' Tan fine sand, some medium sand, little coarse sand, trace gravel; dry. 1.0' Tan medium sand, some fine sand, little coarse sand, trace gravel; moist.	MC	12'-16'	0.4ppm	73
16'-20'	0.2' Tan fine sand, some medium sand, some coarse sand; moist. 0.6' Brown fine sand, some medium sand, little coarse sand; moist. 2.0' Tan fine and medium sand, some coarse sand, trace gravel; wet.	MC	16'-20'	0.6ppm	70
20'-24'	2.0' Tan fine and medium sand, little coarse sand, trace gravel; wet.	MC	20'-24'	0.9ppm	50
24'-28'	1.7' Tan fine sand, some medium sand, trace coarse sand, trace gravel; wet.	MC	24'-28'	1.0ppm	43

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/27/14

DRILLING LOG - Direct Push Temporary Borehole Installation

Boring I.D. P-20

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
28'-32'	1.9' Tan medium sand, some fine sand, little coarse sand, trace gravel; wet.	MC	28'-32'	0.6ppm	48

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-21
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~18'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	0.4' Light brown fine sand, trace medium sand, trace coarse sand, trace gravel; dry. Piece of tarp at the bottom.	MC	0'-4'	0.2ppm	35
	1.0' Brown fine sand, trace medium sand, trace coarse sand, trace gravel; dry.				
4'-8'	0.1' Concrete.	MC	4'-8'	0.1ppm	68
	0.7' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.				
	0.4' Concrete.				
	0.2' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.				
	0.4' Concrete.				
	0.4' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.				
	0.3' Red brick.				
	0.2' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.				
8'-12'	0.4' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.	MC	8'-12'	0.8ppm	70
	0.8' Concrete.				
	1.1' Black clay; sheen, moist, odor.				
	0.5' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.				
12'-16'	1.7' Brown fine sand, little medium sand, trace coarse sand, trace gravel; moist.	MC	12'-16'	0.6ppm	100
	2.3' Tan fine sand, some medium sand, trace coarse sand, trace gravel; moist.				
16'-20'	0.1' Black clay; sheen, moist, odor.	MC	16'-20'	0.8ppm	100
	0.3 Tan fine sand, some medium sand, trace coarse sand,trace gravel; moist.				
	1.1' Brown fine sand, some medium sand, trace coarse sand, trace				

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/23/14

DRILLING LOG - Direct Push Temporary Borehole Installation

Boring I.D. P-21

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
	gravel; moist.				
	2.5' Tan fine sand, some medium sand, trace coarse sand; wet.				
20'-24'	1.8' Tan fine and medium sand, trace coarse sand, trace gravel; wet.	MC	20'-24'	0.6ppm	45
24'-28'	0.9' Tan fine and medium sand, trace coarse sand, trace gravel; wet.	MC	24'-28'	0.4ppm	23
28'-32'	1.8' Tan medium and coarse sand, little fine sand, trace gravel; wet.	MC	28'-32'	0.4ppm	20

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/20/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-23
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~18'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	0.6' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.	MC	0'-4'	1.8ppm	70
	0.8' Black fine sand, little medium sand, little coarse sand; moist.				
	1.4' Brown fine snad, little medium sand, trace coarse sand, trace gravel; dry.				
4'-8'	0.3' Black fine sand, little medium sand, little coarse sand; moist.	MC	4'-8'	0.6ppm	55
	0.6' Brown fine sand, little medium sand, trace coarse sand, trace gravel; moist.				
	0.5' Concrete; dry.				
	0.2' Brown fine sand, some medium sand, trace coarse sand, trace gracel; moist.				
	0.5' Concrete; moist.				
	0.1' Brown fine sand, some medium sand, trace coarse sand; moist.				
8'-12'	0.3' Brown fine sand, some medium sand, trace coarse sand, trace gravel; dry.	MC	8'-12'	0.5ppm	33
	0.2' Black fine sand, some medium sand, trace coarse sand, trace gravel; moist.				
	0.8' Light brown fine sand, trace medium sand; moist.				
12'-16'	1.1' Brown fine sand, some medium sand, trace coarse sand, trace gravel; moist.	MC	12'-16'	0.5ppm	95
	0.1' Tan fine sand, little medium sand, trace coarse sand, trace gravel; moist.				
	0.5' Brown fine sand, some medium sand, trace coarse sand, trace red brick; moist.				
	2.8' Tan fine sand, some medium sand, trace coarse sand, trace gravel; moist,				
16'-20'	0.4' Tan fine and medium sand, some coarse sand, trace gravel; moist.	MC	16'-20'	0.4ppm	95
	0.8' Brown fine sand, little medium sand, trace coarse sand,				

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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DRILLING LOG - Direct Push Temporary Borehole Installation

Boring I.D. P-23

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
	trace red brick; moist.				
	2.6' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.				
20'-24'	2.1' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	20'-24'	0.4ppm	53
24'-28'	2.0' Tan fine and medium sand, little coarse sand, trace gravel; wet.	MC	24'-28'	0.4ppm	50
28'-32'	1.0' Tan fine and medium sand, trace coarse sand, trace gravel; wet.	MC	28'-32'	0.8ppm	25

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/23/14-6/24/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-24
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~14'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	2.0' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.	MC	0'-4'	0.3ppm	68
	0.5' Concrete; dry.				
	0.2' Brown fine sand, little medium sand, trace coarse sand; dry.				
4'-8'	0.5' Brown fine sand, little medium sand, trace coarse sand; dry.	MC	4'-8'	1.1ppm	53
	1.1' Concrete; dry.				
	0.5' Brown fine sand, trace medium sand, trace coarse sand; dry.				
8'-12'	1.6' Brown fine sand, little medium sand, trace coarse sand, trace gravel, trace concrete; dry.	MC	8'-12'	0.4ppm	40
12'-16'	1.8' Brown fine sand, little medium sand, trace coarse sand, trace gravel; moist.	MC	12'-16'	0.8ppm	98
	2.1' Tan fine and medium sand, little coarse sand, trace gravel; wet.				
16'-20'	0.2' Grey fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	16'-20'	0.7ppm	25
	0.8' Tan fine sand, little coarse sand, trace gravel; wet.				
20'-24'	1.8' Tan fine and medium sand, little coarse sand; wet.	MC	20'-24'	0.3ppm	45
24'-28'	0.2' Tan medium and coarse sand, little fine sand, trace gravel; wet.	MC	24'-28'	0.5ppm	50
	0.6' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.				
	1.2' Tan mediumsand, some coarse sand, little fine sand, trace gravel; wet.				
28'-32'	1.9' Tan medium sand, some fine sand, some coarse sand, trace gravel; wet.	MC	28'-32'	0.4ppm	48

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-27
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~20'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	2.2' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry. 0.5' Concrete; dry. 0.4' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.	MC	0'-4'	5.3ppm	78
4'-8'	1.2' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry. 0.6' Concrete; dry. 0.7' Tan fine sand, some medium sand, little coarse sand, trace gravel; moist. 1.0' Brown fine sand, trace medium sand; moist.	MC	4'-8'	0.2ppm	88
8'-12'	2.4' Brown fine sand, little medium sand, trace coarse sand, trace gravel; moist. 0.5' Concrete; moist.	MC	8'-12'	1.2ppm	90
12'-16'	0.4' Brown fine sand, some medium sand, trace coarse sand, trace gravel; moist 0.5' Concrete; moist. 0.9' Tan fine sand, some medium sand, trace coarse sand, trace gravel; moist.	MC	12'-16'	0.4ppm	45
16'-20'	0.8' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry. 1.8' Tan fine and medium sand, little coarse sand, trace gravel; moist.	MC	16'-20'	0.4ppm	65
20'-24'	1.0' Tan medium and coarse sand, some fine sand, little gravel; wet.	MC	20'-24'	0.3ppm	43
24'-28'	1.5' Tan fine sand, some medium sand, trace coarse sand; wet. 0.5' Tan medium sand, some fine sand, little coarse sand, trace gravel; wet.	MC	24'-28'	0.6ppm	50

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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DRILLING LOG - Direct Push Temporary Borehole Installation

Boring I.D. P-27

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
28'-32'	2.1' Tan medium and coarse sand, some fine sand, trace gravel; wet.	MC	28'-32'	0.3ppm	53

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-28
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~15'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	2.0' Brown fine sand, little medium sand, trace coarse sand; dry.	MC	0'-4'	0.3ppm	80
	0.5' Tan fine sand, some medium sand, little coarse sand, trace gravel; dry.				
	0.7' Brown fine sand, little medium sand, trace coarse sand; dry.				
4'-8'	2.8' Brown fine sand, little medium sand, trace coarse sand, trace gravel, trace concrete; dry.	MC	4'-8'	0.1ppm	88
	0.3' Concrete; dry.				
	0.4' Brown fine sand, little medium sand, trace coarse sand; dry.				
8'-12'	0.5' Brown fine sand, some medium sand, trace coarse sand; moist.	MC	8'-12'	0.2ppm	73
	0.5' Tan fine sand, some medium sand, trace coarse sand; moist.				
	0.2' Concrete; dry.				
	0.3' Brown fine sand, some medium sand, trace coarse sand; moist.				
	1.8' Concrete with brown fine sand, little medium sand; moist.				
12'-16'	0.3' Brown fine sand, little medium sand, trace coarse sand; moist.	MC	12'-16'	0.3ppm	60
	0.4' Concrete; dry.				
	0.9' Light brown fine and medium snad, little coarse sand, trace gravel; wet.				
	0.7' Tan fine and medium sand, little coarse sand, trace gravel; wet.				
16'-20'	1.3' Grey fine and medium sand, little coarse sand, trace gravel; wet.	MC	16'-20'	0.5ppm	63
	1.2' Tan medium and coarse sand, some fine sand, trace gravel; wet.				
20'-24'	1.5' Tan fine and medium sand, little coarse sand, trace gravel; wet.	MC	20'-24'	0.4ppm	38

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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DRILLING LOG - Direct Push Temporary Borehole Installation

Boring I.D. P-28

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
24'-28'	2.2' Tan fine and medium sand, little coarse sand, trace gravel; wet.	MC	24'-28'	0.2ppm	55
28'-32'	1.4' Tan fine and medium sand, little coarse sand, trace gravel; wet.	MC	28'-32'	0.4ppm	35

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-29
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~14'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	0.5' Brown fine sand, some medium sand, trace coarse sand, trace gravel; dry.	MC	0'-4'	0.2ppm	85
	1.3' Dark brown fine sand, some medium sand, trace coarse sand, trace gravel; dry.				
	0.8' Brown fine sand, some medium sand, trace coarse sand, concrete; dry.				
	0.8' Concrete and red brick; dry.				
4'-8'	0.6' Brown fine sand, some medium sand, trace coarse sand; dry.	MC	4'-8'	0.2ppm	45
	0.6' Concrete and red brick; dry.				
	0.6' Brown fine sand, some medium sand, trace coarse sand; dry.				
8'-12'	1.8' Brown fine sand, some medium sand, trace coarse sand, trace gravel, trace red brick; moist.	MC	8'-12'	0.1ppm	90
	0.6' Concrete; dry.				
	1.2' Brown fine sand, some medium sand, trace coarse sand, trace gravel; moist.				
12'-16'	1.5' Brown fine sand, some medium sand, trace coarse sand, trace gravel, trace red brick; moist.	MC	12'-16'	0.1ppm	98
	0.2' Concrete; dry.				
	1.2' Tan fine and medium sand, little coarse sand, trace gravel; wet.				
	1.0' Tan medium and coarse sand, some fine sand, trace gravel; wet.				
16'-20'	0.5' Tan medium sand, some fine sand, litle coarse sand, trace gravel; wet.	MC	16'-20'	0.4ppm	43
	0.3' Tan fine sand, some medium sand, litle coarse sand, trace gravel; wet.				
	0.4' Tan medium sand, some fine sand, litle coarse sand, trace gravel; wet.				
	0.5' Tan fine sand, some medium sand, litle coarse sand, trace gravel; wet.				

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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DRILLING LOG - Direct Push Temporary Borehole Installation

Boring I.D. P-29

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
20'-24'	0.2' Grey medium and coarse sand, some fine sand; wet.	MC	20'-24'	0.3ppm	43
	0.5' Tan medium and coarse sand, some fine sand, trace gravel; wet.				
	0.5' Tan fine sand, some medium sand, trace coarse sand; wet.				
	0.3' Tan medium and coarse sand, some fine sand, trace gravel; wet.				
24'-28'	0.7' Tan medium and coarse sand, some fine sand, trace gravel; wet.	MC	24'-28'	0.6ppm	18
28'-32'	0.9' Tan fine and medium sand, trace coarse sand, trace gravel; wet.	MC	28'-32'	0.3ppm	43
	0.3' Tan medium and coarse sand, little fine sand, trace gravel; wet.				
	0.5' Tan fine sand, some medium sand, trace coarse sand; wet.				

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/26/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME: DEC-Eastfarmingdale
SITE ADDRESS: Fairchild Republic Airport, Old Sump
Broad Hollow Rd.
East Farmingdale, NY
SITE ID NUMBER: 152004
BORING I.D.: P-30
PURPOSE: Direct Push
DRILLING METHOD: Macro Core
DRILLING COMPANY: Clearwater Drilling Inc.
HEAD DRILLER: B. Vigliotta
LOGGED BY: J. Lohan
BOREHOLE DIAMETER: 4"
DEPTH-TO-WATER: ~16'
TOTAL BORING DEPTH: 32'

SOIL SAMPLING METHOD
Type: Macro Core

GROUNDWATER SAMPLING METHOD
Type: N/A

BACKFILL: Native Fill
FINISH: N/A

COMMENTS: Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	1.0' Brown fine sand, little clay, little medium sand, trace coarse sand; moist. 0.9' Brown fine sand, little medium sand, trace coarse sand; dry. 0.3' Concrete; dry.	MC	0'-4'	0.3ppm	55
4'-8'	0.4' Cement, trace brown fine sand; dry. 0.3' Red brick, little brown fine sand, trace medium sand; dry. 0.8' Cement, some fine sand, little medium sand, trace coarse sand; dry.	MC	4'-8'	0.5ppm	38
8'-12'	0.4' Brown fine sand, some medium sand, trace coarse sand, trace gravel; dry. 1.0' Concrete; dry. 0.3' Brown fine sand, some medium sand, trace coarse sand; dry.	MC	8'-12'	0.3ppm	43
12'-16'	1.1' Brown fine sand, some medium sand, trace coarse sand, trace gravel; dry. 1.2' Tan fine sand, some medium sand, little coarse sand, trace gravel; moist.	MC	12'-16'	0.4ppm	58
16'-20'	0.7' Brown fine sand, little medium sand, trace coarse sand, trace gravel; wet. 1.4' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	16'-20'	0.3ppm	53
20'-24'	2.1' Tan fine sand, some medium sand, some coarse sand, trace gravel; wet.	MC	20'-24'	1.0ppm	53
24'-28'	1.8' Tan medium sand, some fine sand, some coarse sand, little gravel; wet.	MC	24'-28'	1.1ppm	45
28'-32'	1.4' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	28'-32'	1.7ppm	35

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/19/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-31
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~15'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	2.9' Brown fine sand, some medium sand, trace coarse sand, trace gravel; dry.	MC	0'-4'	0.3ppm	73
4'-8'	1.5' Brown fine sand, some medium sand, trace coarse sand, trace gravel; dry. 0.4' Red brick. 0.5' Brown fine sand, some medium sand, trace coarse sand, trace gravel; dry. 0.4' Concrete. 0.3' Red brick.	MC	4'-8'	0.3ppm	78
8'-12'	0.3' Brown fine sand, some medium sand, trace coarse sand, trace gravel; dry. 0.2' Red brick. 0.4' Brown fine sand, some medium sand, trace coarse sand, trace gravel; moist. 0.3' Black fine sand, some medium sand, trace coarse sand, trace gravel; moist.	MC	8'-12'	0.4ppm	30
12'-16'	1.2' Brown fine sand, trace medium sand, trace gravel; moist. 2.3' Tan Fine and medium sand, some coarse sand, trace gravel; wet.	MC	12'-16'	0.4ppm	88
16'-20'	1.0' Tan Fine and medium sand, little coarse sand, trace gravel; wet.	MC	16'-20'	0.4ppm	25
20'-24'	1.8' Tan medium and coarse sand, some fine sand, trace gravel; wet.	MC	20'-24'	0.3ppm	45
24'-28'	1.7' Tan medium and coarse sand, some fine sand, trace gravel; wet.	MC	24'-28'	0.5ppm	43
28'-32'	1.2' Tan medium and coarse sand, some fine sand, trace gravel; wet.	MC	28'-32'	0.4ppm	30

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/26/14
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DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME: DEC-Eastfarmingdale
SITE ADDRESS: Fairchild Republic Airport, Old Sump
Broad Hollow Rd.
East Farmingdale, NY
SITE ID NUMBER: 152004
BORING I.D.: P-32
PURPOSE: Direct Push
DRILLING METHOD: Macro Core
DRILLING COMPANY: Clearwater Drilling Inc.
HEAD DRILLER: B. Vigliotta
LOGGED BY: J. Lohan
BOREHOLE DIAMETER: 4"
DEPTH-TO-WATER: ~16'
TOTAL BORING DEPTH: 32'

SOIL SAMPLING METHOD
Type: Macro Core

GROUNDWATER SAMPLING METHOD
Type: N/A

BACKFILL: Native Fill
FINISH: N/A

COMMENTS: Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	1.1' Brown fine sand, little medium sand, trace coarse sand; dry.	MC	0'-4'	0.8ppm	30
	0.2' Concrete; dry.				
	0.1' Red brick; dry.				
	0.8' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.				
4'-8'	0.2' Red brick; dry.	MC	4'-8'	0.6ppm	15
	0.4' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.				
8'-12'	2.4' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.	MC	8'-12'	0.8ppm	75
	0.6' Tan fine sand, little coarse sand, trace medium sand, trace gravel; dry.				
12'-16'	1.3' Brown fine sand, little medium sand, little coarse sand, trace gravel; dry.	MC	12'-16'	0.7ppm	88
	2.2' Tan fine sand, some coarse sand, little medium sand, trace gravel; wet.				
16'-20'	1.8' Tan fine sand, little medium sand, little coarse sand, trace gravel; wet.	MC	16'-20'	0.8ppm	45
20'-24'	2.0' Tan fine sand, little medium sand, little coarse sand, trace gravel; wet.	MC	20'-24'	0.5ppm	48
24'-28'	2.1' Tan fine and medium sand, tracec coarse sand, trace gravel; wet.	MC	24'-28'	0.5ppm	53
28'-32'	1.4' Tan medium sand, some fine sand, litttle coarse sand, trace gravel; wet.	MC	28'-32'	0.6ppm	53
	0.3' Tan finesand, trace medium sand; wet.				
	1.4' Tan medium sand, some fine sand, some coarse sand, trace gravel; wet.				

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/25/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-33
PURPOSE	Soil Investigation
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~16'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	0.5' Brown fine sand, trace medium sand, trace gravel; dry.	MC	0'-4'	0.4ppm	88
	0.4' Red brick; dry.				
	0.3' Brown fine sand, trace medium sand, trace coarse sand; dry.				
	0.3' Concrete; dry.				
	0.5'Brown fine sand, little medium sand, trace coarse sand, trace gravel, trace red brick; dry.				
	0.4' Concrete; dry.				
	0.4' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.				
	0.8' Concrete; dry.				
4'-8'	0.2' Concrete; dry.	MC	4'-8'	0.2ppm	85
	0.6' Brown fine sand, little medium sand, trace gravel; dry.				
	0.5' Concrete; dry.				
	2.1' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.				
8'-12'	1.6' Brown fine sand, little medium sand, trace coarse sand, trace gravel; moist.	MC	8'-12'	0.3ppm	50
	0.4' Black clay; sheen, moist, odor.				
16'-20'	2.6' Brown fine sand, little medium sand, trace coarse sand; moist.	MC	16'-20'	0.3ppm	65
12'-16'	1.7' Dark brown fine sand, little medium sand, trae coarse sand; wet.	MC	12'-16'	0.1ppm	100
	2.3' Brown fine sand, little medium sand, trace coarse sand, trace gravel; wet.				
20'-24'	1.9' Brown clayey fine sand, little medium sand, trace coarse sand ; wet.	MC	20'-24'	0.5ppm	48
24'-28'	0.7' Tan fine and medium sand, trace coarse sand; wet.	MC	24'-28'	0.6ppm	18

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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DRILLING LOG - Direct Push Temporary Borehole Installation

Boring I.D. P-33

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
28'-32'	0.6' Brown fine sand, little medium sand, trace coarse sand; wet.	MC	28'-32'	0.6ppm	65
	2.0' Dark brown fine sand, trace medium sand, trace coarse sand; wet.				

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 7/01/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-50
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~15'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	0.8' Brown fine sand, little medium sand, trace coarse sand; dry 1.1' Brown clayey fine sand, little medium sand; moist 0.2' Brown fine sand, little medium sand, trace coarse sand; dry.	MC	0'-4'	0.0ppm	53
4'-8'	0.2' Brown fine sand, little medium sand, trace coarse sand; dry. 0.1' Concrete; dry. 0.3' Brown fine sand, little medium sand, trace coarse sand; dry. 1.1' Brown/black clay, trace fine sand, trace concrete; moist.	MC	4'-8'	0.4ppm	43
8'-12'	0.3' Brown clay, little fine sand, little medium sand; moist. 1.0' Brown fine sand, little medium sand, little coarse sand, trace black clay; moist. 0.5' Brown fine sand, little medium sand, little coarse sand; moist.	MC	8'-12'	2.5ppm	45
12'-16'	1.2' Black clay, some fine sand, little medium sand; moist. 2.8' Brown fine sand, some medium sand, little coarse sand; wet.	MC	12'-16'	0.8ppm	100
16'-20'	1.2' Brown fine sand, come coarse sand, little medium sand, trace gravel; wet.	MC	16'-20'	0.8ppm	30
20'-24'	1.0' Grey/tan fine and medium sand, little coarse sand, 0.05' band of black fine and medium sand in the middle; wet.	MC	20'-24'	0.8ppm	25
24'-28'	01.0' Tan fine and medium sand, come coarse sand, trace gravel wet.	MC	24'-28'	0.7ppm	48
28'-32'	1.8' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	28'-32'	0.3ppm	45

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 7/01/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-51
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~16'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	1.5' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.	MC	0'-4'	0.4ppm	38
4'-8'	0.1' Brown fine sand, little medium sand, trace coarse sand; dry. 0.6' Concrete; dry. 1.6' Brown fine sand, some medium sand, trace coarse sand, trace gravel; dry.	MC	4'-8'	0.2ppm	58
8'-12'	0.5' Brown fine sand, little medium sand, little coarse sand, trace gravel; dry. 0.3' Concrete; dry. 1.3' Brown fine sand, some coarse sand, little medium sand, trace gravel; moist.	MC	8'-12'	0.3ppm	53
12'-16'	1.0' Brown fine sand, little coarse sand, trace medium sand, trace gravel, trace concrete; dry. 0.8' Brown medium sand, some fine sand, trace coarse sand, gravel; wet.	MC	12'-16'	0.3ppm	45
16'-20'	1.0' Brown fine sand, little coarse sand, trace medium sand, trace gravel, trace red brick; dry.	MC	16'-20'	0.1ppm	25
20'-24'	1.5' Brown fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	20'-24'	0.5ppm	38
24'-28'	0.5' Brown/black fine sand, some medium sand, little coarse sand; wet. 0.4' Black asphalt 0.9' Brown fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	24'-28'	0.6ppm	48

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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DRILLING LOG - Direct Push Temporary Borehole Installation

Boring I.D. P-51

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
28'-32'	1.1' Brown Clayey fine sand, some coarse sand, little medium sand; wet.	MC	28'-32'	13.8ppm	53
	0.5' Black clay, little fine sand, trace medium sand; wet, odor.				
	0.5' Tan fine sand, some medium sand, some coarse sand; wet.				

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 7/01/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME: DEC-Eastfarmingdale
SITE ADDRESS: Fairchild Republic Airport, Old Sump
Broad Hollow Rd.
East Farmingdale, NY
SITE ID NUMBER: 152004
BORING I.D.: P-52
PURPOSE: Direct Push
DRILLING METHOD: Macro Core
DRILLING COMPANY: Clearwater Drilling Inc.
HEAD DRILLER: B. Vigliotta
LOGGED BY: J. Lohan
BOREHOLE DIAMETER: 4"
DEPTH-TO-WATER: ~15'
TOTAL BORING DEPTH: 32"

SOIL SAMPLING METHOD
Type: Macro Core

GROUNDWATER SAMPLING METHOD
Type: N/A

BACKFILL: Native Fill
FINISH: N/A

COMMENTS: Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	1.2' Brown fine sand, little medium sand, little coarse sand; dry. 0.2' Concrete; dry. 0.6' Brown fine sand, little coarse sand, trace medium sand; dry.	MC	0'-4'	0.4ppm	50
4'-8'	1.1' Brown fine sand, little medium sand, little coarse sand; dry.	MC	4'-8'	1.1ppm	28
8'-12'	1.5' Brown fine sand, little medium sand, little coarse sand, trace gravel, trace red brick, trace asphalt; dry.	MC	8'-12'	1.7ppm	38
12'-16'	0.4' Brown fine sand, some medium sand, little coarse sand; dry. 1.0' Brown clayey fine sand, little medium sand, little coarse sand; wet.	MC	12'-16'	3.1ppm	35
16'-20'	1.1' Brown fine sand, some clay, some coarse sand, little medium sand; wet. 0.5' Black clay, trace fine sand, trace medium sand; wet, odor.	MC	16'-20'	14.2ppm	40
20'-24'	0.2' Black clay, trace fine sand, trace medium sand; wet, odor. 1.5' Brown fine sand, some medium sand, little clay, little coarse sand, trace gravel; wet.	MC	20'-24'	1.7ppm	43
24'-28'	0.4' Brown fine sand, some coarse sand, little medium sand; wet. 0.4' Concrete; wet. 0.6' Brown fine sand, some medium sand, some coarse sand, gravel; wet.	MC	24'-28'	3.2ppm	38
28'-32'	1.3' Brown fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	28'-32'	1.4ppm	33

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-54
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~16'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	1.3' Brown fine sand, little medium sand, little coarse sand, trace gravel; dry.	MC	0'-4'	0.4ppm	48
	0.5' Red brick; dry.				
	0.1' Concrete; dry.				
4'-8'	0.1' Red brick; dry.	MC	4'-8'	0.2ppm	70
	0.1' Concrete; dry.				
	2.4' Brown fine sand, little medium sand, little coarse sand, trace concrete, trace asphalt, trace red brick; dry.				
8'-12'	1.1' Brown fine sand, little medium sand, little coarse sand, trace gravel, trace concrete; dry.	MC	8'-12'	0.3ppm	55
	0.6' Concrete; dry.				
	0.5' Brown fine sand, some coarse sand, little medium sand; dry.				
12'-16'	1.9' Brown fine sand, little medium sand, little coarse sand, trace gravvel, trace red brick, trace concrete; dry.	MC	12'-16'	0.3ppm	65
	0.7' Brown fine sand, little medium sand, little coarse sand, trace gravel; wet.				
16'-20'	1.7' Brown fine sand, some coarse sand, little medium sand, trace gravel. trace red brick; moist.	MC	16'-20'	0.1ppm	65
	0.8' Brown fine sand, little medium sand, little coarse sand, little clay, trace gravel; wet.				
	0.1' Black clay, some fine sand, little medium sand; wet.				
20'-24'	1.2' Brown/black clay, trace fine sand, trace medium sand; wet.	MC	20'-24'	0.5ppm	43
	0.5' Grey fine and medium sand, little coarse sand, trace gravel; wet.				
24'-28'	03' Black clay, some fine sand, little medium sand, trace coarse sand; wet.	MC	24'-28'	0.6ppm	50
	1.7' Grey fine and medium sand, little coarse sand, trace gravel wet.				

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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DRILLING LOG - Direct Push Temporary Borehole Installation

Boring I.D. P-54

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
28'-32'	1.7' Grey fine and medium sand, little coarse sand, trace gravel; wet.	MC	28'-32'	1.7ppm	65

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 7/03/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME: DEC-Eastfarmingdale
SITE ADDRESS: Fairchild Republic Airport, Old Sump
Broad Hollow Rd.
East Farmingdale, NY
SITE ID NUMBER: 152004
BORING I.D.: P-60
PURPOSE: Direct Push
DRILLING METHOD: Macro Core
DRILLING COMPANY: Clearwater Drilling Inc.
HEAD DRILLER: B. Vigliotta
LOGGED BY: J. Lohan
BOREHOLE DIAMETER: 4"
DEPTH-TO-WATER: ~12'
TOTAL BORING DEPTH: 32'

SOIL SAMPLING METHOD
Type: Macro Core

GROUNDWATER SAMPLING METHOD
Type: N/A

BACKFILL: Native Fill
FINISH: N/A

COMMENTS: Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	1.9' Brown fine sand, little medium sand, little coarse sand, trace gracel, trace red brick; dry.	MC	0'-4'	0.2ppm	48
4'-8'	2.0' Brown fine sand, some medium sand, little coarse sand, trace gravel; dry.	MC	4'-8'	0.3ppm	50
8'-12'	1.1' Brown fine sand, some clay, little coarse sand, trace medium sand; moist.	MC	8'-12'	1.0ppm	28
12'-16'	0.1' Brown fine sand, come clay, some medium sand, little coarse sand; wet. 0.2' Black clay, trace fine sand, trace medium sand; wet. 1.6' Brown fine sand, some medium sand, little clay, little coarse sand; wet.	MC	12'-16'	3.2ppm	48
16'-20'	0.5' Black clay, little fine sand, little medium sand; wet, odor. 1.6' Brown fine sand, some medium sand, little coarse sand, trace cly, trace gravel; wet. 1.1' Black clay, little fine sand, trace medium sand; wet.	MC	16'-20'	3.8ppm	80
20'-24'	0.4' Black fine sand, little clay, little medium sand, little coarse sand; wet. 0.3' Brown fine and medium sand, little clay, little coarse sand; wet.	MC	20'-24'	5.3ppm	18
24'-28'	0.2' Black clay, little fine sand, trace medium sand; wet. 0.7' Grey medium sand, some fine sand, some coarse sand; wet. 1.1' Tan fine sand, some medium sand, trace coarse sand; wet.	MC	24'-28'	6.8ppm	50
28'-32'	1.9' tan fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	28'-32'	0.5ppm	48

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 7/03/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-61
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~16'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	1.1' Brown fine sand, little medium sand, little coarse sand, trace gravel; dry.	MC	0'-4'	3.9ppm	50
	0.2' Red brick; dry.				
	0.7' Brown fine sand, litttle medium sand, little coarse sand, trace gravel; dry.				
4'-8'	1.1' Brown fine sand, little medium sand, little coarse sand; dry	MC	4'-8'	0.2ppm	28
8'-12'	0.6' Brown fine sand, little medium sand, little coarse sand, trace red brick; dry.	MC	8'-12'	0.3ppm	38
	0.9' Brown fine sand, some medium sand, little coarse sand, trace gravel; wet.				
12'-16'	0.7' Brown fine sand, little medium sand, little coarse sand; moist.	MC	12'-16'	0.3ppm	55
	0.4' Brown fine sand, some coarse sand, little medium sand, trace gravel; wet.				
	0.3' Black clay, trace fine sand; wet.				
	0.8' Brown fine sand, little medium sand, little coarse sand,l trace gravel;wet.				
	0.4' Black clay; sheen, moist, odor.				
16'-20'	1.3' Brown fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	16'-20'	0.1ppm	33
20'-24'	0.2' Black fine sand, some medium sand, some coarse sand; wet.	MC	20'-24'	0.5ppm	28
	0.1' Black clay, trace fine sand; wet, odor.				
	0.8' Brown fine sand, some medium sand, some coarse sand, trace gravel; wet.				
24'-28'	0.7' Brown fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	24'-28'	0.6ppm	48
	0.2' Black clay, trace fine sand; wet, odor.				

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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DRILLING LOG - Direct Push Temporary Borehole Installation

Boring I.D. P-61

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
28'-32'	1.7' Brown/black fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	28'-32'	8.2ppm	58
	0.4' Black clay, trace fine sand; wet, odor.				
	0.2' Tan fine and medium sand, little coarse sand; wet.				

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-62
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~16'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	0.2' Brown fine and medium sand, little coarse sand; moist.	MC	0'-4'	0.7ppm	45
	0.2' Concrete; dry.				
	1.4' Brown fine sand, little medium sand, little coarse sand, trace gravel, trace red brick; dry.				
4'-8'	1.5' Brown fine sand, some coarse sand, little medium sand, trace gravel, trace concrete, trace red brick, trace asphalt; dry.	MC	4'-8'	1.2ppm	95
	0.7' Concrete; dry.				
	0.6' Brown fine sand, little medium sand, little coarse sand; dry.				
8'-12'	0.1' Brown fine sand, little medium sand, trace coarse sand; dry.	MC	8'-12'	1.1ppm	78
	1.8' Concrete; dry.				
	0.6' Black clay; moist, odor.				
	0.6' Brown fine sand, some medium sand, little coarse sand, trace gravel; dry.				
12'-16'	0.1' Concrete; dry.	MC	12'-16'	0.9ppm	63
	2.1' Brown fine sand, some medium sand, little coarse sand, trace gravel, trace concrete, trace red brick; dry.				
	0.3' Brown fine and medium sand, little coarse sand, trace gravel; moist.				
16'-20'	0.4' Brown fine sand, little medium sand, trace coarse sand; dry.	MC	16'-20'	0.3ppm	30
	0.8' Brown fine sand, some medium sand, little coarse sand, trace gravel; wet.				
20'-24'	No recovery.	MC	N/A	N/A	N/A
24'-28'	0.7' Brown/grey fine sand, some medium sand, little coarse sand; wet.	MC	24'-28'	13.1ppm	53
	1.4' Black clay, trace fine sand; moist, odor.				

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 7/03/14

DRILLING LOG - Direct Push Temporary Borehole Installation

Boring I.D. P-62

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
28'-32'	1.2' Black clay, trace fine sand; wet, odor.	MC	28'-32'	9.8ppm	63
	0.7' Brown fine sand, some clay, little medium sand, little caorse sand, trace gravel; wet.				
	0.6' Brown fine sand, some medium sand, little coarse sand, trace gravel; wet.				

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 7/03/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME: DEC-Eastfarmingdale
SITE ADDRESS: Fairchild Republic Airport, Old Sump
Broad Hollow Rd.
East Farmingdale, NY
SITE ID NUMBER: 152004
BORING I.D.: P-70
PURPOSE: Direct Push
DRILLING METHOD: Macro Core
DRILLING COMPANY: Clearwater Drilling Inc.
HEAD DRILLER: B. Vigliotta
LOGGED BY: J. Lohan
BOREHOLE DIAMETER: 4"
DEPTH-TO-WATER: ~19'
TOTAL BORING DEPTH: 32'

SOIL SAMPLING METHOD
Type: Macro Core

GROUNDWATER SAMPLING METHOD
Type: N/A

BACKFILL: Native Fill
FINISH: N/A

COMMENTS: Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	2.4' Brown fine sand, some coarse sand, little medium sand, trace gravel; dry.	MC	0'-4'	1.0ppm	60
4'-8'	1.8' Brown fine sand, some medium sand, some coarse sand, trace gravel, trace asphalt; dry.	MC	4'-8'	0.6ppm	45
8'-12'	2.4' Brown fine sand, some medium sand, some coarse sand, trace gravel; dry. 1.1' Tan fine sand, some medium sand, little coarse sand, trace gravel; moist.	MC	8'-12'	0.3ppm	88
12'-16'	0.6' Brown fine sand, some medium sand, little coarse sand, trace gravel; dry. 2.2' Tan fine sand, some medium sand, little coarse sand, trace gravel; moist.	MC	12'-16'	0.9ppm	70
16'-20'	1.2' Brown fine sand, some medium sand, little coarse sand, trace gravel; moist. 1.9' Tan fine sand, some mediu sand, little coarse sand, trace gravel; moist.	MC	16'-20'	0.4ppm	78
20'-24'	2.3' Tan fine sand, little medium sand, little coarse sand, trace gravel; wet.	MC	20'-24'	0.2ppm	58
24'-28'	1.9' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	24'-28'	0.5ppm	48
28'-32'	1.7' Tan fine sand, little medium sand, little coarse sand; wet.	MC	28'-32'	0.7ppm	43

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 7/07/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-71
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~16'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	1.7' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.	MC	0'-4'	0.4ppm	43
4'-8'	1.5' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry. 0.2' Light brown fine sand, trace medium sand; moist. 0.6' Brown fine sand, little medium sand, trace coarse sand, trace gravel, trace asphalt; moist. 0.2' Concrete; dry.	MC	4'-8'	0.6ppm	85
8'-12'	0.3' Brown dine sand, little medium sand, trace coarse sand, trace gravel; dry. 0.1' Grey fine sand, some medium sand, little concrete; moist. 0.7' Brown/ black fine sand some clay, little medium sand. trace coarse sand, trace gravel; moist, odor.	MC	8'-12'	0.5ppm	28
12'-16'	0.3' Brown fine sand, little medium sand, trace coarse sand, trace gravel; wet. 0.2' Brown fine sand, trace medium sand, trace coarse sand, trace gravel; dry. 0.4' Brown fine sand, some medium sand, trace coarse sand, trace gravel; wet.	MC	12'-16'	0.4ppm	23
16'-20'	2.0' Black clay, trace fine sand, trace medium sand; sheen, wet, odor.	MC	16'-20'	2.1ppm	50
20'-24'	0.7' Grey fine sand, some medium sand, trace coarse sand; wet. 0.4' Tan fine sand, some medium sand, trace coarse sand, trace gravel; wet.	MC	20'-24'	0.3ppm	28
24'-28'	1.7' Tan fine sand, little medium sand, trace coarse sand, trace gravel; wet.	MC	24'-28'	0.2ppm	43

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 7/07/14

DRILLING LOG - Direct Push Temporary Borehole Installation

Boring I.D. P-71

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
28'-32'	1.4' Tan fine sand, little medium sand, trace coarse sand; wet.	MC	28'-32'	0.1ppm	38
	0.1' Grey fine sand, little medium sand, trace coarse sand; wet.				

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME: DEC-Eastfarmingdale
SITE ADDRESS: Fairchild Republic Airport, Old Sump
Broad Hollow Rd.
East Farmingdale, NY
SITE ID NUMBER: 152004
BORING I.D.: P-72
PURPOSE: Direct Push
DRILLING METHOD: Macro Core
DRILLING COMPANY: Clearwater Drilling Inc.
HEAD DRILLER: B. Vigliotta
LOGGED BY: J. Lohan
BOREHOLE DIAMETER: 4"
DEPTH-TO-WATER: ~16'
TOTAL BORING DEPTH: 32'

SOIL SAMPLING METHOD
Type: Macro Core

GROUNDWATER SAMPLING METHOD
Type: N/A

BACKFILL: Native Fill
FINISH: N/A

COMMENTS: Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	0.6' Brown fine sand, little medium sand, trace coarse sand; dry.	MC	0'-4'	0.8ppm	60
	0.7' Concrete; dry.				
	1.1' Brown fine sand, little medium sand trace coarse sand, trace gravel; dry.				
4'-8'	0.6' Brown fine sand, little medium sand, trace coarse sand, trace concrete; dry.	MC	4'-8'	0.4ppm	53
	1.5' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.				
8'-12'	0.2' Brown fine sand, little medium sand, trace coarse sand; moist.	MC	8'-12'	0.3ppm	18
	0.5' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.				
12'-16'	2.4' Brown/black clay, some fine sand, trace medium sand, trace coarse sand; wet, odor.	MC	12'-16'	0.4ppm	60
16'-20'	2.1' Brown fine sand, some medium sand, little clay, trace coarse sand; wet.	MC	16'-20'	0.3ppm	53
20'-24'	0.4' Black/ grey fine sand, little medium sand, trace coarse sand; wet.	MC	20'-24'	0.3ppm	23
	0.3' Brown fine sand, little medium sand, trace coarse sand; wet.				
	0.2' Black clay; sheen, wet, odor.				
24'-28'	Black fine sand, little medium sand, trace coarse sand; wet, odor. Low recovery, bagged directly from sampler..	MC	24'-28'	0.4ppm	??
28'-32'	0.7' Black/grey fine sand, some medium sand, little coarse sand; wet.	MC	28'-32'	1.2ppm	18

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 7/07/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME: DEC-Eastfarmingdale
SITE ADDRESS: Fairchild Republic Airport, Old Sump
Broad Hollow Rd.
East Farmingdale, NY
SITE ID NUMBER: 152004
BORING I.D.: P-73
PURPOSE: Direct Push
DRILLING METHOD: Macro Core
DRILLING COMPANY: Clearwater Drilling Inc.
HEAD DRILLER: B. Vigliotta
LOGGED BY: J. Lohan
BOREHOLE DIAMETER: 4"
DEPTH-TO-WATER: ~16'
TOTAL BORING DEPTH: 32'

SOIL SAMPLING METHOD
Type: Macro Core

GROUNDWATER SAMPLING METHOD
Type: N/A

BACKFILL: Native Fill
FINISH: N/A

COMMENTS: Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	2.0' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.	MC	0'-4'	0.4ppm	50
4'-8'	2.2' Brown fine sand, little medium sand, little coarse sand, trace asphalt, trace red brick; dry.	MC	4'-8'	0.2ppm	55
8'-12'	1.0' Brown fine sand, little medium sand, trace coarse sand; moist. 0.2' Light brown fine sand, little medium sand, little coarse sand, moist.	MC	8'-12'	0.3ppm	30
12'-16'	2.0' Brown fine sand, some medium sand, little coarse sand, trace gravel; wet. 0.4' Black clay; sheen, wet, odor.	MC	12'-16'	1.5ppm	60
16'-20'	0.8' Brown/black fine sand, little medium sand, trace coarse sand; wet.	MC	16'-20'	0.3ppm	20
20'-24'	1.3' Brown fine sand, little medium sand, trace coarse sand; wet. 0.1' Black fine sand, little medium sand, trace coarse sand; wet. 0.1' Brown fine sand, little medium sand, trace coarse sand; wet.	MC	20'-24'	0.5ppm	38
24'-28'	1.2' Brown/grey fine sand, little medium sand, trace coarse sand, gravel; wet.	MC	24'-28'	0.6ppm	30
28'-32'	1.5' Black clay, trace fine sand, trace medium sand; wet. 0.6' Grey fine sand, little medium sand, trace coarse sand, trace gravel; wet.	MC	28'-32'	3.1ppm	53

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 7/07/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME: DEC-Eastfarmingdale
SITE ADDRESS: Fairchild Republic Airport, Old Sump
Broad Hollow Rd.
East Farmingdale, NY
SITE ID NUMBER: 152004
BORING I.D.: P-74
PURPOSE: Direct Push
DRILLING METHOD: Macro Core
DRILLING COMPANY: Clearwater Drilling Inc.
HEAD DRILLER: B. Vigliotta
LOGGED BY: J. Lohan
BOREHOLE DIAMETER: 4"
DEPTH-TO-WATER: ~16'
TOTAL BORING DEPTH: 32'

SOIL SAMPLING METHOD
Type: Macro Core

GROUNDWATER SAMPLING METHOD
Type: N/A

BACKFILL: Native Fill
FINISH: N/A

COMMENTS: Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	1.9' Brown fine sand, trace medium sand, trace coarse sand, trace concrete; dry.	MC	0'-4'	0.4ppm	48
4'-8'	2.0' Brown fine sand, little medium sand, trace coarse sand, trace concrete, trace asphalt; dry.	MC	4'-8'	0.2ppm	50
8'-12'	2.2' Brown fine sand, little medium sand, trace coarse sand; dry.	MC	8'-12'	0.4ppm	55
12'-16'	1.5' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry. 0.6' Tan/brown fine sand, little medium sand, trace coarse sand; wet. 0.2' Black clay; wet. 0.2' Grey/brown fine sand, some medium sand, tracce coarse sand; wet.	MC	12'-16'	0.6ppm	63
16'-20'	0.7' Brown fine sand, little medium sand, trace coarse sand; dry. 1.1' Brown fine snad, some medium sand, trace coarse sand; wet. 1.1' Black clay, some fine sand, trace medium sand, trace coarse sand; wet, odor. 1.0' Brown fine sand, little medium sand, trace coarse sand, trace gravel; wet.	MC	16'-20'	1.1ppm	98
20'-24'	0.4' Brown fine sand, little medium sand, trace coarse sand; trace gravel; wet.	MC	20'-24'	0.2ppm	10
24'-28'	No recovery.	MC	24'-28'	N/A	0
28'-32'	2.3' Black clay, trace fine sand, trace medium sand; wet. 0.3' Grey/tan fine sand, some medium sand, trace coarse sand	MC	28'-32'	1.2ppm	65

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-75
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~16'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	1.1' Brown fine sand, little medium sand, trace coarse sand, trace concrete; dry. 0.4' Concrete; dry. 0.9' Brown fine sand, little medium sand, trace coarse sand, trace trace asphalt, trace redbrick; dry.	MC	0'-4'	1.1ppm	88
4'-8'	0.3' Brown fine sand, little medium sand, trace coarse sand, trace concrete; dry 0.4' Concrete; dry. 0.8' Brown fine sand, little medium sand, treace coarse sand, trace asphalt, trace red brick; dry.	MC	4'-8'	0.7ppm	38
8'-12'	2.4' Brown/black fine sand, little medium sand, trace coarse sand, trace asphalt, trace concrete; dry.	MC	8'-12'	1.0ppm	60
12'-16'	2.0' Dark brown fine sandlittle medium sand traace coarse sand trace concrete, trace aspalt; dry. 0.6' Tan/grey fine sand, some medium sand, trace coarse sand wet.	MC	12'-16'	1.5ppm	65
16'-20'	0.8' Brown fine sand, little medium, trace coarse sand, trace concrete; dry. 1.3' Grey fine sand, some medium sand, trace coarse sand, trace gravel; wet.	MC	16'-20'	0.7ppm	53
20'-24'	0.1' Concrete; wet. 0.5' Dark brown fine sand, little medium sand, trace coarse sand, trace red brick, trace asphalt; dry. 1.0' Grey fine sand, some medium sand, trace coarse coarse sand; wet.	MC	20'-24'	0.8ppm	40
24'-28'	1.5' Grey/black fine sand, some medium sand, trace coarse sand trace gravel; wet.	MC	24'-28'	0.7ppm	38

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 7/07/14

DRILLING LOG - Direct Push Temporary Borehole Installation

Boring I.D. P-75

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
28'-32'	1.2' Grey/black fine sand, some medium sand, trace coarse sand, trace gravel; wet.	MC	28'-32'	1.0ppm	38
	0.3' Tan fine sand, little medium sannd, trace coarse sand; wet.				

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 7/08/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-80
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~16'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	2.1' Brown fine sand, little medium sand, trace coarse sand, trace asphalt, trace concrete; dry.	MC	0'-4'	0.8ppm	53
4'-8'	0.8' Dark brown fine sand, little medium sand, trace coarse sand, trace concrete; dry. 1.4' Light brown fine sand, little coarse sand, trace asphalt; dry.	MC	4'-8'	0.6ppm	55
8'-12'	1.8' Brown fine sand, little medium sand, trace coarse sand; dry. 1.1' Brown/tan fine sand, little medium sand, trace coarse sand; moist.	MC	8'-12'	1.0ppm	50
12'-16'	0.3' Brown fine sand, little medium sand, trace coarse sand; moist. 1.0' Tan/dark brown fine sand, little medium sand, trace coarse sand; moist. 1.5' Tan fine sand, little medium sand, trace coarse sand; moist. 0.9' Tan medium sand, some fine sand, little coarse sandn, trace gravel; wet.	MC	12'-16'	1.0ppm	93
16'-20'	1.3' Brown fine sand, trace medium sand, trace coarse sand; moist. 2.6' Brown/tan medium sand, some fine sand, trace coarse sand; wet.	MC	16'-20'	0.8ppm	73
20'-24'	1.6' Tan fine sand, some medium sand, trace coarse sand; wet. 0.6' Tan medium sand, trace coarse sand, little fine sand, trace gravel; wet.	MC	20'-24'	0.7ppm	55
24'-28'	0.9' Tan medium sand, some fine sand, little coarse sand; wet. 1.0' Tan fine sand, little medium sand, little coarse sand; wet.	MC	24'-28'	0.6ppm	48
28'-32'	0.2' Brown fine sand, some medium sand, little coarse sand, trace gravel; wet. 0.4' Tan fine sand, trace medium sand, trace coarse sand; wet. 0.1' Tan fine sand, little medium sand, trace coarse sand; wet.	MC	28'-32'	0.6ppm	18

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 7/08/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME: DEC-Eastfarmingdale
SITE ADDRESS: Fairchild Republic Airport, Old Sump
Broad Hollow Rd.
East Farmingdale, NY
SITE ID NUMBER: 152004
BORING I.D.: P-81
PURPOSE: Direct Push
DRILLING METHOD: Macro Core
DRILLING COMPANY: Clearwater Drilling Inc.
HEAD DRILLER: B. Vigliotta
LOGGED BY: J. Lohan
BOREHOLE DIAMETER: 4"
DEPTH-TO-WATER: ~16'
TOTAL BORING DEPTH: 32'

SOIL SAMPLING METHOD
Type: Macro Core

GROUNDWATER SAMPLING METHOD
Type: N/A

BACKFILL: Native Fill
FINISH: N/A

COMMENTS: Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	1.7' Brown fine sand, little medium sand, trace coarse sand, trace gravel, trace red brick, trace cement; dry.	MC	0'-4'	3.1ppm	43
4'-8'	0.2' Brown fine sand, trace medium, sand trace coarse sand; dry. 0.7' Tan fine sand, little medium sand, trace coarse sand; dry. 0.3' Brown fine sand, trace medium sand, trace coarse sand; dry.	MC	4'-8'	3.2ppm	30
8'-12'	1.4' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry. 0.1' Black clay; moist. 0.2' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.	MC	8'-12'	4.3ppm	43
12'-16'	0.4' Brown fine sand, little medium sand, trace coarse sand; moist. 0.5' Black clay; wet. 1.6' Brown fine sand, little medium sand, little coarse sand, trace gravel; wet.	MC	12'-16'	5.3ppm	63
16'-20'	0.3' Brown fine sand, little medium sand, trace coarse sand; dry. 0.9' Black clay, some fine sand, trace medium sand, trace coarse sand; moist. 0.9' Brown/grey sand, some medium sand, little coarse sand; moist.	MC	16'-20'	3.4ppm	53
20'-24'	No recovery.	MC	20'-24'	N/A	0
24'-28'	0.4' Black clay, little fine sand, trace medium sand; wet.	MC	24'-28'	11.5ppm	10
28'-32'	02' Grey fine sand, little medium sand; wet. 1.2' Tan fine sand, little medium sand, trace coarse sand; wet.	MC	28'-32'	2.5ppm	35

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 7/08/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-82
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~16'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	2.1' Brown fine sand, little medium sand, trace coarse sand, trace contrete, trace red brick; dry.	MC	0'-4'	2.5ppm	63
	0.4' Dark brown fine sand, little asphalt, little medium sand, trace coarse sand; dry.				
4'-8'	0.5' Dark brown fine sand, little medium sand, little coarse sand, trace gravel, trace red bricck; dry.	MC	4'-8'	3.0ppm	75
	2.5' Brownfine sand, little medium sand, trace coarse sand, trace gravel, trace red brick; dry.				
8'-12'	0.2' Brown fine sand, little medium sand, trace coarse sand; dry.	MC	8'-12'	2.5ppm	63
	0.2' Red brick; dry.				
	1.6' Brown fine sand, little medium sand, little coarse sand, trace gravel; dry.				
	0.5' Black fine sand, little medium sand, trace coarse sand, trace asphalt; moist.				
12'-16'	2.4' Brown fine sand, little medium sand, little coarse sand, trace gravel, trace red brick; moist.	MC	12'-16'	4.5ppm	83
	0.9' Brown/grey fine sand, little medium sand, trace coarse sand; wet.				
16'-20'	1.1' Brown fine sand, little medium sand, trace coarse sand; dry	MC	16'-20'	2.1ppm	93
	2.4' Brown/grey fine sand, little medium sand, little coarse sand, trace gravel; wet.				
20'-24'	1.2' Dark grey fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	20'-24'	4.6ppm	30
24'-28'	0.9' Dark grey fine sand, little medium sand, little coarse sand, trace gravel; wet.	MC	24'-28'	2.3ppm	48
	1.0' Grey fine sand, little medium sand, trace coarse sand, trace gravel; wet.				

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 7/08/14

DRILLING LOG - Direct Push Temporary Borehole Installation

Boring I.D. P-82

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
28'-32'	2.1' Grey fine sand, little medium sand, trace coarse sand, trace gravel; wet. 0.1' Black clay; wet, odor. 0.2' Grey/tan fine sand, little medium sand, trace coarse sand; wet.	MC	28'-32'	3.5ppm	65

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 7/08/14-7/09/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-74
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~16'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	1.2' Brown fine sand, little medium sand, trace coarse sand, trace concrete; dry.	MC	0'-4'	5.5ppm	55
	0.5' Concrete; dry.				
	0.4' Brown fine sand, little medium sand, trace coarse sand, trace concrete; dry.				
	0.3' Concrete; dry.				
4'-8'	0.2' Concrete; dry.	MC	4'-8'	4.3ppm	48
	1.7' Brown fine sand, little medium sand, trace concrete, trace asphalt; dry.				
8'-12'	2.6' Brown fine sand, little medium sand, trace coarse sand, trace concrete, trace red brick, trace wood: dry.	MC	8'-12'	5.1ppm	80
	0.6' Tan fine sand, trace medium sand, trace coarse sand; dry.				
12'-16'	1.1' Brown fine sand, little medium sand, trace coarse sand, trace asphalt; dry.	MC	12'-16'	2.5ppm	90
	2.0' Tan fine sand, trace medium sand, trace coarse sand; dry.				
	0.5' Tan fine sand, little medium sand, little coarse sand; moist.				
16'-20'	0.2' Grey fine sand, some medium sand, trace coarse sand; wet.	MC	16'-20'	1.0ppm	45
	1.6' Tan fine sand, little medium sand, trace coarse sand; wet.				
20'-24'	0.1' Grey fine sand, little medium sand trace coarse sand; wet.	MC	20'-24'	1.1ppm	50
	1.1' Tan fine sand, little medium sand, trace coarse sand; wet.				
	0.5' Tan fine sand, trace medium sand, trace coarse sand; wet.				
	0.3' Tan fine sand, little medium sand, trace coarse sand, wet.				
24'-28'	0.1' Grey fine sand, little medium sand, trace coarse sand; wet.	MC	24'-28'	1.8ppm	53
	2.0' Tan fine sand, little medium sand, trace coarse sand; wet.				
28'-32'	2.0' Tan fine sand, little medium sand, trace coarse sand, trace gravel; wet.	MC	28'-32'	1.2ppm	50

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 7/09/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-91
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~15'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	0.8' Brown fine sand, little medium sand, trace coarse sand; dry.	MC	0'-4'	0.8ppm	50
	0.1' Concrete; dry.				
	0.3' Brown fine sand, trace medium sand, trace coarse sand; dry.				
	0.8' Dark brown fine sand, little medium sand, trace coarse sand, trace asphalt; dry.				
4'-8'	0.1' Dark brown fine sand, little medium sand, trace coarse sand; dry.	MC	4'-8'	0.7ppm	70
	1.7' Brown fine sand, trace medium sand, trace coarse sand; dry.				
8'-12'	0.3' Brown fine sand, trace medium sand, trace coarse sand; dry.	MC	8'-12'	1.1ppm	80
	0.4' Dark brown fine sand, little medium sand, trace coarse sand; dry.				
	03' Brown fine sand, little medium sand, trace coarse sand; dry.				
	0.7' Black/brown fine sand, trace medium sand, trace coarse sand, trace gravel; moist.				
	0.6' Brown fine sand, trace medium sand, trace coarse sand, trace gravel; moist.				
	0.3' Tan fine sand, little medium sand, trace coarse sand, trace gravel; moist.				
12'-16'	1.4' Dark brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.	MC	12'-16'	1.4ppm	93
	0.7' Tan fine sand, trace medium sand, trace coarse sand; moist.				
	1.4' Tan fine sand, little medium sand, trace coarse sand, trace gravel; wet.				
16'-20'	0.7' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.	MC	16'-20'	0.7ppm	88
	1.0' Tan fine sand, little medium sand, trace coarse sand; wet.				
	0.9' Light grey fine sand, little medium sand, trace coarse sand, wet.				
	0.7' Tan fine sand, trace medium sand, trace coarse sand; wet.				

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 7/09/14

DRILLING LOG - Direct Push Temporary Borehole Installation

Boring I.D. P-91

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
20'-24'	1.5' Tan fine sand, little medium sand, trace coarse sand; wet.	MC	20'-24'	1.8ppm	38
24'-28'	1.1' Tan fine sand, some medium sand, little coarse sand; wet.	MC	24'-28'	1.6ppm	58
	1.2' Tan fine sand, trace medium sand, trace coarse sand; wet.				
28'-32'	0.5' Tan fine sand, little medium sand, trace coarse sand; wet.	MC	28'-32'	1.7ppm	38
	0.3' Tan medium sand, some fine sand, little coarse sand; wet.				
	0.7' Tan fine sand, little medium sand, trace coarse sand; wet.				

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-92
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~16'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	0.9' Brown fine sand, trace medium sand, trace coarse sand, trace gravel; dry. 0.7' Red brick; dry. 1.0' Brown fine sand, little red brick, trace medium sand, trace coarse sand; dry. 0.4' Red brick; dry. 0.5' Brown fine sand, trace medium sand, trace coarse sand, trace red brick; dry.	MC	0'-4'	0.9ppm	93
4'-8'	0.1' Brown fine sand, trace medium sand, trace coarse sand; dry. 0.3' Red brick; dry. 1.6' Brown fine sand, trace medium sand, trace coarse sand, trace gravel; dry.	MC	4'-8'	2.1ppm	50
8'-12'	1.3' Brown fine sand, little medium sand, trace coarse sand, trace red brick; dry. 0.1' Dark brown fine sand, trace medium sand; dry. 0.7' Brown fine sand, little medium sand, trace coarse sand; dry. 0.4' Dark brown fine sand, trace medium sand, trace coarse sand; moist.	MC	8'-12'	2.8ppm	63
12'-16'	1.0' Brown fine sand, little medium sand, little red brick, trace coarse sand; dry. 0.2' Brown/tan fine sand, little medium sand, trace coarse sand; moist. 0.4' Grey/black fine sand, little medium sand, trace coarse sand; wet.	MC	12'-16'	4.1ppm	40
16'-20'	1.0' Brown fine sand, little medium sand, little red brick, trace coarse sand; dry. 1.4' Brown fine sand, some clay, little medium sand, trace coarse sand; wet. 0.8' Black clay, trace fine sand, trace medium sand; wet, odor.	MC	16'-20'	5.8ppm	80

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/25/14

DRILLING LOG - Direct Push Temporary Borehole Installation

Boring I.D. P-92

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
20'-24'	0.9' Grey fine and medium sand, little coarse sand, trace gravel; wet.	MC	20'-24'	3.1ppm	23
24'-28'	1.4' Tan fine sand, little medium sand, trace coarse sand, tracce gravel; wet.	MC	24'-28'	4.2ppm	35
28'-32'	0.5' Tan fine sand, little medium sand, trace coarse sand; wet. 0.5' Tan fine sand, some medium sand, little coarse sand; wet. 0.4' Tan fine sand, trace medium sand; wet. 0.5' Tan fine sand, little medium sand, trace coarse sand; wet.	MC	28'-32'	3.7ppm	48

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 7/09/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME: DEC-Eastfarmingdale
SITE ADDRESS: Fairchild Republic Airport, Old Sump
Broad Hollow Rd.
East Farmingdale, NY
SITE ID NUMBER: 152004
BORING I.D.: P-93
PURPOSE: Direct Push
DRILLING METHOD: Macro Core
DRILLING COMPANY: Clearwater Drilling Inc.
HEAD DRILLER: B. Vigliotta
LOGGED BY: J. Lohan
BOREHOLE DIAMETER: 4"
DEPTH-TO-WATER: ~16'
TOTAL BORING DEPTH: 32'

SOIL SAMPLING METHOD
Type: Macro Core

GROUNDWATER SAMPLING METHOD
Type: N/A

BACKFILL: Native Fill
FINISH: N/A

COMMENTS: Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	1.5' Brown fine sand, trace medium sand, trace coarse sand, trace red brick; dry. 0.4' Concrete; dry.	MC	0'-4'	0.4ppm	88
4'-8'	2.1' Brown fine sand, little medium sand, little concrete, trace coarse sand, trace gravel; dry.	MC	4'-8'	0.2ppm	85
8'-12'	0.5' Brown fine sand, little medium sand, trace coarse sand; dry. 0.4' Light brown fine sand, little medium sand, trace coarse sand; dry. 0.5' Light brown fine sand, little medium sand, trace coarse sand, trace gravel; moist.	MC	8'-12'	0.3ppm	50
12'-16'	1.3' Brown fine sand, little medium sand, trace coarse sand; dry. 0.1' Asphalt; dry. 0.2' Brown fine sand, little clay, little medium sand, trace coarse sand; moist. 0.4' Grey fine sand, little medium sand, trace coarse sand; wet.	MC	12'-16'	0.3ppm	65
16'-20'	1.4' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry. 0.7' Grey fine sand, little medium sand, trace coarse sand; wet. 1.6' Black fine sand, little medium sand, trace coarse sand; wet.	MC	16'-20'	0.1ppm	100
20'-24'	1.9' Grey fine sand, little medium sand, trace coarse sand; wet.	MC	20'-24'	0.5ppm	48
24'-28'	0.7' Black/grey fine sand, little medium sand, trace coarse sand; wet.	MC	24'-28'	0.6ppm	18
28'-32'	2.1' Grey fine sand, little medium sand, trace coarse sand, trace gravel; wet. 0.1' Grey/tan fine sand, little medium sand, trace coarse sand; wet.	MC	28'-32'	0.6ppm	65

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

Appendix B: Field Notes

DEC-~~Oakdale~~ 1619 6/9/14

12-16' @ 1146 PID 5.7 ~~Bob~~ comp

1.1 14

1.6 [illegible] Sand, Some Silt

Trace Gravel, moist, no odor

Interval 4-8 Sampled

backfilled w/ native f 16'-3' bgs.

[illegible] to make w/ bentonite

patties w/ asphalt

Loc-10

11' N of N curb of [illegible]

5' E of MW

8-12 78 JPL

DEC-E Farmingdale 6/16/14

Start: 0630 on: 0745 off: 1400 End: 1500

Purpose: find sediment layer for sampling & install MW

on site: JPL (Geo) JH (CAMP) BV, DcV (CDI)

Equip: 06 PID, 07S

Weather: 70's, Sunny, light breeze

Notes

- JH on site upon arrival
- CDI on site @ ~ 0815
- JH reported some trouble setting up the PIN's for CAMP, called Pine Env.
- After 3' on 6-17, called PM JH (EAR) to report findings. JH said to go to ~40' to 100f for sediment layer. (@ ~ 1023)
- After reaching 40', still no sign of sediment layer. Called JH who spoke w/ DER, said go to 50' & then install well Wether Sed layer is found or not. (called @ ~ 1100 AM)

After talking w/ JH, who discussed w/ Bob from DER interval 8-12 will be sent for testing as well possibly another

- CDI off site ~ 1345
- JH still on site upon departure

1 of 5 79 JPL

DEC-E Farmingdale 6/16/14

G17

Surf @ [illegible] PID 1.2 ppm
Brown F sand, some M, little C, little gravel
dry no odor organics
0-1' @ PID 0.5 ppm
Brown F sand, some M, little C, little gravel
dry, no odor. organics
1-4' @ 0905 PID 0.1 ppm
2.5/4
2.5 - Brown F sand, some M sand, little C sand
little gravel, dry, no odor
4-8' @ 908 PID 0.3
3.5/4
0.2 Brown F sand, some M, little C, Tr gravel
dry, no odor
0.3 - concrete
3 - Brown F sand, some M sand, little C sand
Tr gravel, dry, no odor
8-12' @ 0911 PID 0.0 ppm
2.9/4
2.0' Brown F sand, some M sand, little C
sand, tr gravel, moist
0.5 F black sand, tr M sand, moist
0.4 Tan F sand, little M sand, little C sand,
Tr gravel, moist no odor

G-17 cont.
12-16' @ 920 PID 0.0 ppm 4/4
3/4
0.2 Brown F sand, some M, little C, tr gravel
dry, no odor
1.2 Tan F + M sand, little C sand
moist
1.6 Tan F sand, some M sand, little C sand
little gravel, moist, no odor
16-20' @ 935 PID 0.5 ppm
1.2/4
1.2 Tan F sand, some M sand, little C sand
Tr gravel, wet no odor
20-24' @ 0950 PID 0.3 ppm
1.8/2
1.8 Tan F sand, som M sand, Tr C sand,
Tr gravel, wet, no odor
24-28' @ 1001 PID 0.2 ppm
1.8/2
1.8 Tan F sand, some M sand, Tr C sand,
Tr gravel, wet, no odor
28-32' @ 1015 PID 0.3 ppm
2/4
2.3 - Tan F sand, little M sand, Tr C sand, wet
0.2 - Tan F sand, some M sand, little C sand, Tr gravel wet

DEC-E farmingdale 6/16/14

G-17 cont

45' Tan F sand, little M sand, Tr C sand Tr gravel, wet

- CDI break while I called IH

32-36' @ 1044 PID 0.2

2.5/4

0.4 - Tan F sand, some M, little C sand, Tr gravel, wet

0.2 - Tan F sand, some M sand, wet no odor

1.9 Tan F sand, some M sand, little C sand, Tr gravel, wet

36-40' @ 1056 PID 0.4ppm

2.2/4

1.2 Tan F sand, some M sand, some C sand. Wet, no odor

1.0 Tan F sand some M sand, some C sand, Tr gravel, wet, no odor

- CDI break while I called IH

40-44' @ 1136 PID 0.3 ppm

1.9/2

1.9 Tan F+M sand, little C Sand, Tr gravel, wet, no odor

44-48 @ 1154 PID 0.3 ppm

2.5/4

DEC-E farmingdale 6/16/14

G-17 cont

1.0 Tan F sand, some M sand, Tr C sand wet no odor

0.6 - Tan F+M sand, some C Sand, Tr gravel wet no odor

0.8 - Tan F Sand, some M Sand, little C Sand wet, no odor

48-52' ~~CDI~~ @ 1215 PID 0.6 ppm

Well is screened from 50-40' bg by pre packed 0.01 slot screen

Well collapse from 50~20 bg, brought to grade w/ native fill & 5' bentonite seal from ~18-13' bg

- As per plan, well riser is ~3' above grade & capped w/ a lock

Walked to G-12 w/ JH to look @ tomorrows site

6/16/14 AEC - E Farmingdale JH 1/2

0730 on site

check wind direction with
smoke tube
E to W 0-5 mph

0820 set up downwind DR D549

initialize & zero instrument

conc 4.4
TWA 5.8

0930 set up upwind DAD
DR
initialize & zero DR

conc 3.3
TWA 4.9

6/16/14 AEC - E Farmingdale JH 2/2

- Called Aine Env. regarding discrepancies with picarro's
- Truck Holland routine problems

1020 Weather
Sunny
83°
wind ESE 3-8

1315 start breaking down
Comm Equip

1400 Secure site
lock gate
leave site

Community Air Monitoring Plan (CAMP)

Site: DEC - East Farmingdale
Part. Monitor ID:
Date: 6/16/14
PID ID:
Station: Up wind
Activity: Soil boring / well install

Particulate Monitor (ug/m^3)

Clock Time	Unit Time	Elasped	Conc.	TWA/15 min
0929			4.3	3.7
1000			2.5	5.0
1003			1.9	3.8
1019			2.3	3.6
1038			2.8	3.1
1057			2.4	3.5
1137			4.6	3.4
1148			3.6	3.4
1217			3.7	3.3
1237			5.4	3.4
1312			2.5	3.3

PID (ppm)

Clock Time	Unit Time	Elapsed	STEL/15 min	Peak	TWA/8 hours
0925				1.0	.04
1000				2.6	0.0
1003				3.6	0.4
1019			.03	3.8	0.5
1029			1.4	3.8	0.2
1057			0.0	3.8	0.2
1137			0.0	3.8	0.2
1148			0.0	3.8	0.2
1217			0.0	3.8	0.2
1237			0.0	3.8	0.1
			0.0	3.8	0.2

Conc. - Instantanous Concentration
Particulate Monitor TWA - Time Weighted Average (run time of 15 minutes)
PID TWA - Time Weighted Average (current sum/8 hours if less than 8 hours of data recorded)
STEL - Short Term Exposure Limit (15 minute moving average)

Community Air Monitoring Plan (CAMP)

Site: DEC - East Farmingdale | Part. Monitor ID:

Date: 6/16/14 | PID ID:

Station: Down gradient | Activity: soil boring / well install

Particulate Monitor (ug/m^3)

Clock Time	Unit Time	Elasped	Conc.	TWA/15 min
0922			3.6	5.0
0930			4.9	0.0
0941			4.2	1.3
1000			2.5	5.0
1022			7.7	5.0
1036			3.6	5.0
1102			7.9	5.0
1134			3.1	5.0
1151			6.7	5.1
1215			6.3	5.1
1241			2.9	5.2
1314			4.6	5.3

PID (ppm) ppm

Clock Time	Unit Time	Elapsed	STEL/15 min	Peak	TWA/8 hours
~~0927~~				~~1.0~~	~~.8~~
0930				0.0	0.0
0941				0.0	0.0
1000				0.0	0.0
1022				0.0	0.0
1036				0.0	0.0
1102				0.0	0.0
1134				0.0	0.0
1151				0.0	0.0
1215				0.0	0.0
1241				0.0	0.0
1319				0.0	0.0

PID for 1

Conc. - Instantanous Concentration
Particulate Monitor TWA - Time Weighted Average (run time of 15 minutes)
PID TWA - Time Weighted Average (current sum/8 hours if less than 8 hours of data recorded)
STEL - Short Term Exposure Limit (15 minute moving average)

DEC- E farmingdale

Purpose: Install MW on site

Equip: 075, PID #06

On site: JPL (Geo) RJP (CAMP) DCV/BV (CDI)

Weather: overcast, ~70's

Notes:

arrive on site w/ RJP @ 0800

CDI on site ~ 815

work table set up upwind of drill area

PID calibration checked prior to use.

CDI Rod bent while advancing the 20-24' section (@ ~ 0948). Found Shard of metal @ Bottom of lead rod.

DEC on site ~ 1245

G-12

Surf @ 0856 PID 1.3 ppm

Brown F Sand, Some M, Trc, Trg

0-1' @ 0859 PID 0.3 ppm

Brown F Sand, Som M, Trc, Trg

0-4' @ 0905 PID 0.1 ppm

4/4

3 Brown F Sand, Some M Sand, little C Sand, tr gravel, dry

0.3 - Concrete

0.3 Brown F Sand, Some M Sand, little C Sand, tr gravel, dry

0.2 - Concrete

0.3 - Brown F Sand, Some M Sand, little C Sand, tr gravel, dry

4-8' @ 0911 PID 0.2

2.5/4

0.8/1 Brown F Sand, Some M Sand, little C Sand, tr gravel, dry

1.2 dark brown F Sand, Some M Sand, little C Sand, tr gravel, dry

0.5 light brown F Sand, Some M Sand, little C Sand, tr gravel, dry

DEC: East farmingdale

8-12' @ 0916 PID 0.1 ppm

1.8/4

0.6 - brown F Sand, some M Sand, little C Sand, dry

0.6 - Dark brown F Sand, little M Sand, tr C Sand, tr gravel, moist

0.6 - Tan/light brown F+M Sand, little C Sand Tr gravel, moist

12-16 @ 0925 PID

3.4/4

0.6 - Brown F Sand, some M Sand, little C Sand, tr gravel dry

0.6 Tan F+M Sand, little C Sand, tr gravel, moist

0.8 Dark brown/tan F+M Sand, moist

0.4 - Concrete

1.5 Dark brown/Tan F Sand, some M Sand, little C Sand

16-20' @ 0935 PID

3.3/4

1.3 brown F Sand, little M Sand, Tr C Sand, Tr gravel moist

0.5 Concrete

G-12 Cont

1.5 grey/brown F+M Sand, some C Sand, little gravel, wet

20-24' @ 0958 PID 0.3 ppm

1.2/4

1.2 dark grey M Sand, some F Sand, some little C Sand. wet

24-28' @ 1015 PID 1.1 ppm

2/4 - too wet to measure

Dark grey/black F+M Sand, little C Sand Tr gravel. Wet. Organics (wood) faint odor (petrol?)

28-32' @ 1029 PID 0.9 ppm

1.5/4

1.5 dark grey/black M Sand, some F Sand some C Sand. wet faint odor (Petrol?)

AS discussed w/ IH (who spoke w/ BG) well set from 29'-19' bg w/ 5' bentonite from 18'-13' bg & filled in w/ native. Riser comes ~3' above grade

DEC East farmingdale 6/17/14

Well #3

0-4' @ 1201 PID
3.5/4
1.5 Light brown F Sand, little M Sand, Tr C Sand, Tr gravel dry, no odor
0.5 Brown F+M Sand, tr C Sand + gravel, dry
1.5 - Tan F Sand, little M Sand, tr C Sand tr gravel, dry
4-8' 1206 PID 0.1ppm
3.2/4
1.1 Tan M+F Sand, little C Sand, tr gravel, dry, no odor
0.3 Brown M+F Sand little C sand tr gravel dry, no odor
0.8 Tan M Sand, some F Sand, little C Sand, tr gravel, dry
8-12 @ 1211 PID
3.8/4
0.8 Tan F Sand, some M Sand, ~~little~~ Tr C Sand, Tr gravel dry, no odor
3.0 Brown F Sand, little M Sand, TrC Sand

DEC East farmingdale 6/17/14

Well #3 cont

12-16' @ 1224 PID 0.2 ppm
3.5/4
0.5 Light Brown F Sand, some M Sand, tr C Sand Tr gravel, moist
3.0 Brown, F+M Sand, little C Sand, Tr gravel wet, no odor
16-20' @ 1230 PID 0.3ppm
4.9/4
1.8 Brown F Sand, little M Sand Tr C Sand Tr gravel wet
2.9 Tan/grey F Sand, some M Sand Tr C Sand, Tr gravel, wet odor?
20-24' @ 1241 PID 0.1ppm
1.7/4
1.2 Tan M+C Sand, some F Sand, little gravel, wet
0.5 Tan M Sand, some F Sand, little C Sand Tr gravel wet
24-28' @ 1254 PID 0.2
4.4/4
4.4 Tan F Sand, some M Sand, tr C Sand tr gravel, wet

Well #3 cont.

28-32' @ B05 PID 0.3 ppm
1.5/4
Pan 1.5 Tan M+C Sand, some F Sand little gravel, wet, no odor

BG (DEC) says to go to 40' bg

32-36 @ BH4 PID 0.3 ppm
2.9/4
0.2 Tan F sand, some M Sand, ~~trace~~ little C sand, Tr gravel, wet
0.6 Tan F sand, some M sand Tr C Sand wet, no odor
0.5 Tan F Sand, some M Sand, Little C Sand, tr gravel, wet, no odor
0.6 Tan F sand, some M Sand, Tr C Sand wet no odor
36-40' @ B5& PID
2.3/4
.5 Tan F+M sand, Some C Sand, tr gravel wet no odor
.5 Tan M+C Sand, little F Sand, little gravel wet
0.5 Tan M+F Sand, some C Sand tr gravel wet, no odor

DEC-East farmingdale 6/17/14

0.3 Tan M+C Sand, Some gravel, tr F Sand wet
0.9 Tan F+M Sand, some C Sand, tr gravel wet

AS discussed w/ BG (DEC) hole will be left & well installed on 6/18/14.

06-17-14 DEC-EAST FARMINGDALE

OBJECTIVE: COMMUNITY AIR MONITORING PROGRAM (CAMP)

PERSONNEL

EAR (1) John P. Lahm
(2) Robert Peralta

CDI (3) Dennis Viglietta
(4) Bruce Viglietta

PM: (1) Tom Hofmann

CONDITIONS

Weather: Bright & sunny
Small cloud cover
Temp = 71°F @ 9:00
Wind: 3 MPH SSW
actual @ 9:00 SSW
some accuracy concern
actual observed via smoke tube

Location:
- open area
- in field
- nearby: East RT 110 & undeveloped
South: Kitchen & Bath Vanity
North: field long distance
a building ~2 miles.

west; fed.

06-17-14 DEC-EAST FARMINGDALE

CALIBRATION

(1) PID 02035

cal gas: 100 ppm isobutylene
zero cal: ambient air
cal check: 120.9 ppm @ 8:55
$\frac{|100 - 120.9|}{100} \times 100 = 20.9\%$ RSD
fail

calibrated cal check: 98.4 ppm @ 9:00
$\frac{|100 - 98.4|}{100} \times 100 = 1.6\%$ RSD

cal passes @ RSD < 20%

Data RAM 2242
zero cal: ambient air
cal: 100 ppm isobutylene Time Span

PID & Data RAM used optimal

(2) PID R12235
cal gas: 100 ppm isobutylene
zero cal: ambient air
cal check: 104.9 ppm @ 8:45
$\frac{|100 - 104.9|}{100} \times 100 = 4.9\%$ RSD
cal passes @ RSD < 20%

06-17-14 DEC-EAST FARMINGDALE

CALIBRATION:

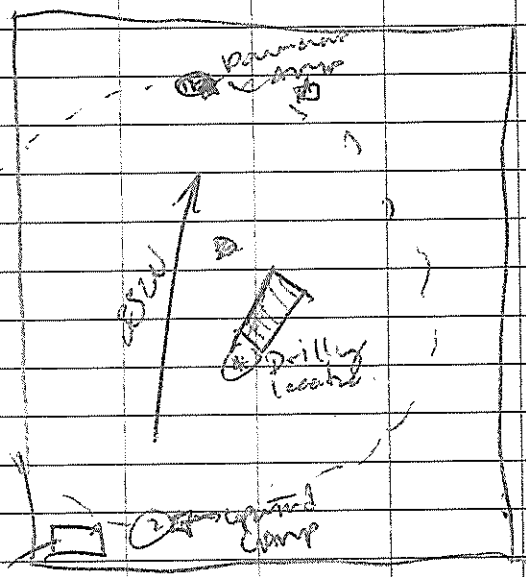
② Data RAM 006333
Cart 1 Normal
Cart 2 Normal
Time: 1 min
Zero air ambient air

PID + Battery use downwind

SKETCH

① Work location
-175 ft perimeter

1M



3 of 6

06-17-14 DEC-EAST FARMINGDALE

Datalog of upwind + downwind stations are from on CAMP Datasheet.

Initial

① Initial upwind 1 min for particulates

② Initial downwind radiation, high @ 30 mg/m³

LAPSE

① After a time interval downwind station values decreased + stabilized @ 22 - 30 mg/m³

② Upwind PID battery fails. Replaced battery. Re-calibrated cal check = 100.1 ppm 100 ± 10.1 ppm, 100 ± 1.5%. RSD < 10% encompasses as RSD ≤ 2%.
Datasheet note with * at 09:30
wind direction SSE @ 11.0 s

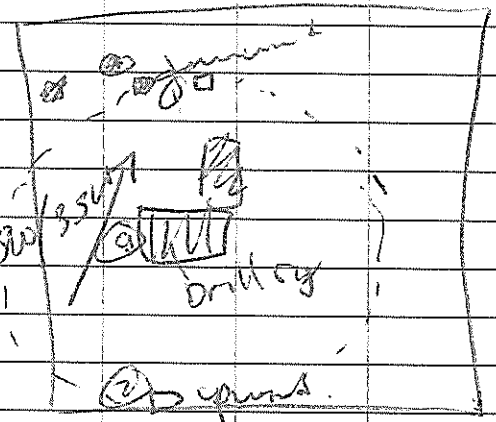
4 of 6

06-07-14 DEC-EAST FARMINGDALE

LOCATION

② Change location ~82 feet perimeter.

7 N



wind direction. SW/SSW

Data logged in data sheet labeled Calibration.

CALIBRATION

cal check for PID.

① PID R12237

cal check = 92.6 ppm @1416

$\frac{|100 - 92.6|}{100} \times 100 = 7.4\%$ RSD

cal passed as RSD ≤ 20% RSD.

5 of 6

RJP

06-17-14 DEC-EAST FARMINGDALE

④ PID 02035

cal check = 94.5 ppm @1423

$\frac{|100 - 94.5|}{100} \times 100 = 5.5\%$ RSD

cal passed as RSD ≤ 20% RSD

wind direction. SE @1430

6 of 6

RJP

Community Air Monitoring Plan (CAMP)

Site: DEC-EAST FARMINGDALE
Part. Monitor ID: 7242
Date: 01-17-14
PID ID: 020-35
Station: UPWIND
Activity: CAMP

Particulate Monitor (ug/m^3)

	Clock Time	Unit Time	Elasped	Conc.	TWA/15 min
Loc 1	09:03	09:04	0	1.5	1.0
	09:19	09:19	15	1.0	1.3
	09:34	09:35	31	0.7	1.4
	09:52	09:53	49	1.9	1.4
	10:05	10:06	1:02	1.6	1.4
	10:20	10:21	1:17	2.0	1.4
	10:34	10:35	91	1.7	1.4
	10:49	10:50	106	0.3	1.4
	11:03	11:04	120	1.5	1.4
	11:19	11:20	136	1.0	1.3
	11:33	11:34	150	1.6	1.3
Loc 2	1206	1207	0	5.5	5.2
	1221	1222	15	4.5	3.2
	1234	1235	30	2.5	2.9
	1251	1252	45	4.7	2.8
	1306	1307	60	3.5	2.6
	1322	1323	75	1.7	2.5
	1337	1338	90	3.5	2.5
	1352	1353	105	2.7	2.5
	1408	1408	120	3.4	2.6
	1415	1416	128	1.6	2.7

PID (ppm)

Clock Time	Unit Time	Elapsed	STEL/15 min	Peak	TWA/8 hours
09:03	09:03	0	9.1	0.0	0.6
09:19	09:19	16	0.0	0.0	0.6
*09:34	09:34	30	←	0.1	0.0
09:52	09:52	49	0.0	0.2	0.0
10:05	10:05	1:02	0.0	0.2	0.0
10:20	10:20	1:17	0.0	0.2	0.0
10:34	10:34	91	0.0	0.2	0.0
10:49	10:49	106	0.0	0.2	0.0
11:03	11:03	120	0.0	0.2	0.0
11:19	11:19	136	0.0	0.2	0.0
11:33	11:33	150	0.0	0.2	0.0
1206	1206	0	←	0.0	0.0
1221	1221	15	0.0	0.0	0.0
1234	1234	30	0.0	0.0	0.0
1251	1251	45	0.0	0.0	0.0
1306	1306	60	0.0	0.0	0.0
1322	1322	75	0.0	0.0	0.0
1337	1337	90	0.0	0.0	0.0
1352	1352	105	0.0	0.0	0.0
1408	1407	120	0.0	0.0	0.0
1415	1415	128	0.0	0.0	0.0

Conc. - Instantanous Concentration
Particulate Monitor TWA - Time Weighted Average (run time of 15 minutes)
PID TWA - Time Weighted Average (current sum/8 hours if less than 8 hours of data recorded)
STEL - Short Term Exposure Limit (15 minute moving average)

* Battery change Re-calibrated as instrument gave negative value. Newcal @ 9:32

Community Air Monitoring Plan (CAMP)

06-17-14

Site: DEC - EAST FARMINGDALE
Part. Monitor ID: ~~R12237~~ 006335
Date: 06-17-14
PID ID: R12237
Station: Downwind
Activity: CAMP

Particulate Monitor (ug/m^3)

Clock Time	Unit Time	Elasped	Conc.	TWA/15 min
9:16	09.15	0	22.5	9.7.7
09:28	9:28	13	22.8	33.3
0944	0945	29	26.1	29.4
09:59	10:00	45	25.9	27.6
10:15	10:16	60	23.5	27.0
10 30	1031	75	26.4	26.3
10.44	10:45	89	22.9	25.6
10:59	11:00	105	19.6	25.0
1115	1116	121	20.4	24.4
1129	1130	135	19.4	22.9
1143	1,44	149	19.2	21.2
1204	1205	0	21.2	22.9
1218	1219	14	20.1	20.1
1233	1234	30	18.6	19.8
1248	1249	45	18.7	19.7
1303	1304	60	19.9	19.7
1318	1319	75	20.1	19.8
1333	1334	90	24.6	20.2
1348	1349	105	21.6	20.6
1403	1404	120	24.8	21.0
1409	1410	126	24.4	21.2

PID (ppm)

Clock Time	Unit Time	Elapsed	STEL/15 min	Peak	TWA/8 hours
9:16	9:15	0	0.0	0.0	0.2
09:28	09:28	13	0.0	0.0	0.2
09:44	09:44	29	0.0	0.0	0.2
09:59	09:59	44	0.0	0.0	0.2
10:15	10:15	60	0.0	0.0	0.2
10:30	10:30	75	0.0	0.0	0.2
10:44	10:44	89	0.0	0.0	0.2
10:59	10:59	104	0.0	0.0	0.2
1115	1115	120	0.0	0.0	0.2
1129	1129	134	0.0	0.0	0.2
1143	1143	148	0.0	0.0	0.2
1204	1204	0		0.0	0.0
1218	1218	14	0.0	0.0	0.0
1233	1233	30	0.0	0.0	0.0
1248	1248	45	0.0	0.0	0.0
1303	1303	60	0.0	0.0	0.0
1318	1318	75	0.0	0.0	0.0
1333	1333	90	0.0	0.0	0.0
1348	1348	105	0.0	0.0	0.0
1403	1403	120	0.0	0.0	0.0
1409	1410	126	0.0	0.0	0.0

Conc. - Instantanous Concentration
Particulate Monitor TWA - Time Weighted Average (run time of 15 minutes)
PID TWA - Time Weighted Average (current sum/8 hours if less than 8 hours of data recorded)
STEL - Short Term Exposure Limit (15 minute moving average)

DEC - East Farmingdale 6/18/14

Purpose: Install monitoring wells

onsite: JPL (Geo), DCV/BV (CDI)

Equip: PID #06, 075

Weather: Sunny 80's - 90's.

Start-ass on 0630 off 1200 1145 End 1245

Notes:

BC (DEC) on site @ ~0730

JH on site ~630, Helped to set up CAMP off site @ ~700

BC off site 850-910.

BC left site ~1135

CDI off ~1186

CR-11

Surf @ 0737 PID 0.3 Grab

Brown F sand, some M, tr C, tr gravel, dry

0-1' @ 0738 PID 0.5 Grab

Brown F sand, some M, tr C, tr gravel, dry

0-4' @ 0745 PID 1.5 ppm MC

2-3/4

2.3 Brown F sand, some M sand, tr C sand, tr gravel, dry

4-8' @ 0756 PID

3-3/4

3.3 Brown F sand, some M sand, tr C sand tr gravel, dry

8-12 @ 802 PID 0.8 ppm

3.1/4

3.6 Brown F sand, little M sand, tr C sand tr gravel, dry

2.5 Tan F sand, little M sand, tr C sand tr gravel, moist

12-16 @ 0810 PID

25/4

1.0 Tan F+M sand, some C sand tr gravel moist

1.5 Tan F+M sand, some C sand, tr gravel wet

DEC - East farmingdale
CR-11 cont

16-20 @ 0814 PID 1.1 ppm
1/4
Tan F+M Sand, some C Sand, tr gravel wet

20-24 @ 0823 PID 1.3 ppm
1/4
0.4 Tan F+M sand, tr C sand, tr gravel wet
0.3 Black F+M sand, tr C Sand, tr gravel wet
0.3 Tan F Sand, some M sand, tr C Sand, tr gravel, wet

24-28 @ 0833 PID 1.4 ppm
3.5/4
0.2 Tan F+M sand, some C sand, tr gravel wet
0.2 Black Clay, little F, little M, wet
2.4 Tan F+M Sand, some C Sand, tr gravel wet
0.2 Black clay, some F Sand little C Sand tr gravel, wet
0.8 Tan F+M Sand, little C Sand, tr gravel wet
0.7 Black Clay w/ little F Sand

DEC-EAST FARMINGDALE
CR-11 cont

28-32 @ 0846 PID 0.6
1.9/4
0.1 Black clay, some F Sand, tr M sand, wet
1.8 Tan F+M Sand, little C Sand, tr gravel wet

(DEC)
AS Discussed w/ BC well set from 32-22' bg. start @ ~920
Interval sampled 24-29' bg
well collapse from 32 - 12.5'. Bentonite from 12.5' -> 7.5', brought to grade w/ native fill

Well #3
Screened interval set @ 30-20' bg
Collapse from 30 - 13.5' bg
Bentonite seal 13.5 — 7' bg
brought to grade w/ native fill

AS Discussed w/ BC (DEC)
will start on PCB area tomorrow

CAMP 6/15/14

Upwind

Conc. 0.0 ug/m3

L TWA 0.4 ug/m3

Run time 3.09

Downwind

Conc 1.2

TWA 1.2

PID

TWA 0

Stel 0

Peak 0

Run time 2 hrs

5 of 5 96 JPL

CAMP 6/18/14

Upwind

Conc. 0.0 ug/m3

L TWA 0.4 ug/m3

Run tim 3.09

Downwind PID

Conc 1.2 TWA 0

TWA 1.2 Stel 0

Peak 0

Run time 2 hrs

DEC - East farmingdale 6/19/14

Start 0530 on 0630 off 1345 End

Purpose: soil boring investigation

Equip: PID #6, 075, CAMP

on site: JPL (660) AD, BV (COI)

weather: ~ lo's 70's, overcast, light drizzle

notes:

COI on site ~ 0700

BG on site ~ 0800

off site ~ 1100

All boring locations returned to grade w/ native fill

Sampled intervals:

P-31: 4-8, 8-12, 12-16, 28-32

P-29: 4-8, 8-12, 12-16, 16-20, 28-32

P-28: 4-8, 8-12, 12-16, 16-20, 28-32

P-31

0-4' @ 0735 PID 0.3 ppm

2.9/4

2.9 Brown F Sand, some M sand, tr C Sand, tr gravel, dry

4-8' @ 0739 PID 0.3 ppm

3.1/4

1.5 Brown F Sand, some M sand, tr C sand, tr gravel, dry

0.3 - Red brick

0.5 - Brown F Sand, some M sand, tr C sand tr gravel, dry

0.4 - concrete

0.3 - Red brick

8-12' @ 745 PID 0.4

1.2/4

0.3 - Brown F Sand, some M Sand, tr C Sand tr gravel, dry

0.2 - Red brick

0.4 - Brown F Sand, some M sand, tr C sand, tr gravel, moist

0.3 - Black F Sand, some M sand, tr C, tr gravel moist

P-31 cont

12-16 @ 0751 PID 0.4

3.5

1.2 - Brown F Sand, tr M Sand, tr gravel moist

2.3 - Tan F+M Sand, some C Sand, tr gravel wet

16-20 @ 800 PID 0.4 ppm

1/4

1 Tan F+M sand, little C Sand, tr gravel wet

20-24' @ 0812 PID 0.3

1.5/4

1.5 - Tan M+C sand, some F sand, tr gravel wet

24-28' @ 0824 PID 0.5

1.7/4

1.7 Tan M+C Sand, some F Sand, tr gravel wet

28-32' @ 0839 PID

1.2/4

1.2 Tan M+C Sand, little F Sand, tr gravel wet

DEC E farmington 6/19/14

P-2 cont

0-4' @ 0927 PID 0.2 ppm

3.4/4

0.5 Brown F Sand, Som M sand, tr C, tr G, dry

1.3 Dark brown F Sand, Som M Sand, tr C Sand, tr Gravel, dry

0.8 Brown F Sand, some M Sand, tr C Sand tr concrete

0.8 – Concrete & Red brick

4-8' @ 0933 PID 0.2 ppm

1.8

2.6 Brown F Sand, some M Sand, tr C Sand dry

0.6 Concrete & Red brick

0.6 Brown F Sand, some M Sand, tr C Sand tr gravel, dry

8-12 @ 0940 PID

3.6/4

1.8 Brown F Sand, Some M Sand, tr C Sand, tr gravel/red brick, Mo.st

0.6 Concrete

1.2 Brown F Sand, some M Sand, tr C Sand tr gravel, moist

4 of 10 100 JPL

P-2 cont

12-16' @ 0944 PID 0.1 ppm

3.9/4

1.6 - Brown F Sand, Some M, tr C, tr gravel moist Tr red brick

0.2 pulverized cement

1.2 Tan F+M Sand, little C Sand, tr gravel

2.0 ~~light brown~~ Tan M+C Sand, Some F Sand tr gravel, wet

16-20' @ 0952 PID 0.4

1.7/2

2.5 - Tan M Sand, Some F Sand, little C Sand tr gravel, wet

2.3 Tan F Sand, some M Sand, tr C Sand, tr gravel, wet

0.4 Tan M Sand, Some F Sand, little C Sand tr gravel, wet

2.5 Tan F Sand, Some M Sand, tr C Sand tr gravel, wet

20-24' @ 1004 PID 0.4 ppm

1.7/4

2.2 grey M+C Sand, Some F Sand wet

2.5 Tan M+C Sand, Some F Sand, tr gravel, wet

5 of 10 101 JPL

DEC-E Farmingdale 6/19/14

P-29 cont

0.5 Tan F Sand, some M sand, tr C sand wet

0.5 Tan M+C sand, some F sand, tr gravel wet

24-28' @ 1020 PID 0.6 ppm

0.7/4

0.7 - Tan M+C sand, some F Sand, tr gravel wet

28-32 @ 1033 PID

1.7/4

0.9 Tan F+M sand, tr C Sand, tr gravel wet

0.3 Tan M+C sand, little F sand, tr gravel wet

0.5 Tan F Sand, some M sand, tr C Sand wet

6 of 10 102 JPL

P-28

0-4' @ 1116

3.2/4

2.0 Brown F sand, little M sand, tr C Sand, dry

0.5 Tan F Sand, some M Sand, little C Sand tr gravel dry

0.7 Brown F sand, little M Sand, tr C Sand

4-8 @ 1121 PID

3.5/4

2.8 Brown F Sand, little M Sand, tr C Sand, tr gravel, tr concrete dry

0.3 Concrete

0.4 Brown F Sand, little M Sand, tr C Sand, dry

8-12' @ 1128 PID 0.2 ppm

2.9/4

2.5 Brown F Sand, some M Sand, tr C Sand, moist

0.3 ~~light brown~~ Tan F Sand, some M Sand, tr C Sand, moist

0.2 concrete

0.3 Brown F Sand, some M Sand tr C Sand moist

7 of 10 103 JPL

DEC - E farmingdale 6/19/14

P-28 cont

1.8 concrete w/ Brown F sand, little M sand moist

12-16 @ 1135 PID 0.3 ppm

2.4/4

0.3 Brown F sand, little M sand, tr C sand, moist

0.4 concrete

0.9 light brown F+M sand, little C sand tr gravel wet

0.7 Tan F+M sand, little C sand, tr gravel wet

16-20' @ 1145 PID 0.5

2.5/4

1.3 grey F+M sand, little C sand, tr gravel wet

1.2 Tan M+C sand some F sand, tr gravel wet

20-24 @ 1150 PID 0.4

1.5/4

1.5 Tan F+M sand, little C sand tr gravel, wet

P-28 cont

24-28 @ 1159 PID 0.2

2.2/4

2.2 Tan F+M sand, little C sand tr gravel, wet

28-32 @ 1215 PID

1.4/4

1.4 Tan F+M sand, little C sand, tr gravel, wet

DEC-E farmingdale 6/19/14

CAMP 6/19/14

Upwind

PID			DataRam
TWA	0.1	Conc	0.0
STEL	0.0	TWA	0.5 ug/m³
Peak	0.4		
		Run	5.27

Downwind

PID			DataRam
TWA	0.7	Conc	5.5
STEL	0.0	TWA	6.8
Peak	7.7		
		Run	5.55

10 of 10 JPL

DEC - East Farmingdale 6/20/14

P-23 cont

12-16 @ 1000 PID 0.5 ppm

3.8/4

1.1 Brown F sand, Some M Sand, tr C Sand, tr gravel, moist

0.1 Tan F Sand, little M Sand, tr C Sand, tr gravel, moist

0.5 Brown F Sand, Some M Sand, tr C Sand, tr red brick, moist

2.1 Tan F Sand, Some M Sand, tr C sand, tr gravel, moist

16-20 @ 1009 PID 0.4

3.8/4

0.4 Tan F+M Sand, Some C Sand, tr gravel, moist

0.8 Brown F Sand, little M Sand, tr C Sand, tr red brick

2.6 Tan F Sand, Some M sand, little C Sand, tr gravel, wet

20-24 @ 1017 PID 0.4 ppm

2.1/4

2.1 Tan F Sand, Some M Sand, little C Sand, tr gravel, wet

24-28 @ 1026 PID 0.4 ppm

2.0/4

2.0 Tan F+M Sand, little C Sand, tr gravel, wet

28-32 @ 1038 PID 0.8 ppm

2/4

1.0 Tan F+M Sand, tr C Sand, tr gravel, wet

Camp

Upwind

TWA 0.0 ug/m3 0.0 ppm

Downwind 0.

TWA 0.0 ug/m3 0.0 ppm

Scale: 1 square =

DEC EAST farming date 4/20/14

Start: 0530 on: 0645 off: End:

Purpose: Advance soil borings in PCB zone
on site: JPL (Geo), BV/DCV (CDI) Joe (Raw)
Equip: 07 Sprinter, PID #06, CAMP Equip
weather: Sunny

notes
CDI on site ~0700
Joe on site ~0715, off ~0830, back ~0930
Hit refusal twice on P-27, location moved ~3ft
Pin clogged w/ Dirt, Drill stopped to clean it (P-27 2@24 ~@825

P-27
0-4' @0740 PID 5.3
3.1/4
2.2 Brown F sand, little M sand, tr C sand, tr gravel & concrete, dry
0.5 - concrete
0.4 - Brown F sand, little M sand, tr C sand, tr gravel, dry
4-8 @ 0750 PID 0.2
3.5
1.2 Brown F sand, little M Sand, tr C Sand, tr gravel
0.6 concrete
0.7 Tan ~~F~~ Sand, some M Sand, little C sand, tr gravel, moist
1.0 Brown F sand, ~~little~~ tr M Sand, moist
8-12 @ 0755 PID 1.2
2.9/4
2.4 - F Sand, little M sand, tr C sand, tr gravel, moist
05 - Concrete
12-16 @ 0801 PID 0.4
1.8/4
0.4 Brown F sand, some M sand, tr C sand, tr gravel, moist
0.5 Concrete
0.9 Tan F Sand, some M sand, tr C sand, tr gravel, moist

Scale: 1 square =

DEC - East Farmingdale
P-27 cont
16-20' @ 0809 PID 0.8 ppm
2.6/4
0.8 Brown F Sand, little M Sand tr C Sand, tr gravel, dry
1.8 Tan F+M Sand, little C Sand, tr gravel, moist
20-24' @ 0836 PID 0.4 ppm
2/4
1.5 Tan F Sand, some M Sand, tr C Sand, wet
0.5 Tan M Sand, some F Sand, little C Sand, tr gravel, wet
24-28 @ 0848 PID 0.1 ppm
2.1/4
2.1 Tan, M+C Sand, some F Sand, ~~tr~~ tr gravel, wet
28-32 @ 0900 PID 0.3 ppm
1/4
2.0 Tan M+C Sand, some F Sand, little gravel wet

Boring returned to grade w/ native fill

~~P-23 @ 0943 PID~~
~~2.8/4~~
P-23
0-4 @ 0943 PID 1.8 ppm
2.8/4
0.6 Brown F Sand, little M Sand, tr C Sand tr gravel, dry
0.8 - Black F Sand, little M Sand, little C Sand moist
1.4 Brown F Sand, little M Sand, tr C Sand, tr gravel, dry
4-8 @ 0950 PID 0.6
2.2/4
0.3 Black F Sand, little M Sand, little C Sand, moist
0.6 brown F Sand, little M Sand, tr C Sand, tr gravel moist
0.5 Concrete
0.2 Brown F Sand, some M Sand, tr C Sand, tr gravel, moist
0.5 Concrete
0.1 Brown F Sand, some M Sand, tr C Sand, moist
8-12 @ 0954 PID 0.5
1.3/4
0.3 brown F Sand, some M Sand, tr C Sand, tr gravel, dry
0.2 Black F Sand, some M Sand, tr C Sand, tr gravel, moist
0.8 light brown F Sand, tr M Sand

Scale: 1 square =

DEC-E farmingdale 6/19/14

CAMP 6/19/14

Upwind

PID		DataRun	
TWA	0.1	conc	0.0
STEL	0.0	TWA	0.5 ug/m3
Peak	0.4		
		Run	5.27

Downwind

PID		DataRun	
TWA	0.7	conc	5.5
STEL	0.0	TWA	6.8
Peak	7.7		
		Run	5.55

10 of 10 JPL

DEC-E farmingdale 6/23/14

Start: 0530 on: 0645 off End

Purpose

on site: JPL (Geo) DCV/BV (CDI)

Equip: OTS, PID #06, Camp Equip

Weather:

notes

CDI on site @ 0700

Camp set up before start of work

PIDs calibrations checked

Hit refusal on the 4-8' interval of P-2H due to too much concrete. location moves ~6'

CDI developed issue w/ Rig (Screw loose/Stripped hole) they coordinated w/ PM IH to rent a rig for tomorrow

1 of 8 JPL

DEC- East Farmingdale 6/23/14

P-21

0-4 @ 0751 PID 0.2 ppm

1.4/4

0.4 light brown F sand, tr M, tr C, tr gravel, dry. Tarp @ bottom

1.0. Brown F sand, tr M sand, tr C sand, tr gravel, dry

4-8 @ 757 PID 0.1

2.7

0.1 - concrete

0.7 - Brown F Sand, little M sand, tr C sand, tr gravel

0.4 - concrete

2.2 - Brown F sand, little M sand tr C, tr gravel, dry

0.4 - concrete

0.4 - Brown F sand, little M sand, tr C sand, tr gravel, dry

0.3 - red brick

0.2 Brown F sand, little M sand, tr C sand, tr gravel, dry

8-12' @ 0803 PID 0.8

2.8/4

0.4 - Brown F sand, little M, tr C, tr gravel, dry

0.8 - concrete

1.9 - Black [illegible] F clay, sheen, odor (?)

0.5, Brown F sand, little M sand, tr C sand, tr gravel, moist

P-21 cont

12-16 @ 0810 PID 0.6 ppm

4/4

1.7 Brown F sand, little M sand, tr C sand, tr gravel, moist

2.3 Tan F sand, some M sand, tr C sand, tr gravel, moist

16-20 @ 0817 PID 0.8 ppm

4/4

0.1 black clay

0.3 Tan F sand, some M sand, tr C sand, tr gravel, moist

1.1 - Brown F sand, some M sand, tr C sand tr gravel, moist

2.5 Tan F sand, some M sand, tr C sand wet

20-24' @ 0827 PID 0.6 ppm

1.8/4

1.8 Tan F-M sand, tr C sand, tr gravel, wet

24-28 @ 0839 PID

0.9/4

0.9 Tan F-M sand, tr C sand, tr gravel wet

28-32 @ 0850 PID 0.4 ppm

0.8/4

0.8 Tan Med Sand, little F sand, tr gravel, moist

DEC - East Farmingdale 6/23/14

P-11

0-4' @ 0939 PID 35.0

2.9/4

0.2 Brown F sand, tr M sand, tr C sand, dry

0.1 concrete

2.6 Dark brown F sand, little M sand, tr C sand tr gravel, tr concrete, dry

4-8 @ 0945 PID 0.9

2.8

0.3 Black F sand, tr M sand

2.7 - Brown F sand, little M sand, tr C sand, tr gravel, dry

0.3 concrete

0.5 - Brown F sand, little M sand, tr C sand, tr Gravel, moist

8-12 @ 0951 PID 2.7

2.0/4

2.0 Brown F sand, little M sand, tr C sand moist

0.9 - Brown F sand, little M sand, tr C sand, tr gravel, moist

0.2 Red brick

12-16 @ 0955 PID 3.1

0.8/4

0.6 Brown F sand, little M sand, dry

0.2 concrete

16-20 @ 1002 PID 6.7

3.8/4

2.2 Brown F sand, some M sand, tr C sand moist

1.1 Black clay/Petrol Jelly

2.5 Tan M sand, some F sand, some C sand tr gravel, wet

20-24 @ 1012 PID 0.9

2.0/4

2.0 Tan F+M sand, some C sand, tr gravel wet

24-28 @ 1022 PID 0.7 ppm

1.9/4

1.9 Tan F+M sand, little C sand, tr gravel, wet

28-32 @ 1034 PID

2 /4

2 Tan F+M sand, some C sand wet

DEC - East farming dale 6/23/14

P-24

0-4 @ 1108 PID 0.3

2.7

2.0 Brown F sand, little M sand, tr C sand, tr gravel dry

0.5 concrete

0.2 Brown F sand, little M sand, tr C sand dry

4-8' @ 1126 PID 1.1

2.1/4

0.5 - Brown F sand, little M sand, tr C sand dry

1.1 - concrete

0.5 - Brown F sand, tr M sand, tr C sand dry

8-12' @ 1130 PID 0.4

1.6/4

1.6 - Brown F sand, little M sand, tr C sand tr concrete, tr gravel

12-16' @ 1140 PID 0.8 ppm

3.9

1.8 - Brown F sand, little M sand, tr C sand tr gravel, mo. St

2.1 - Tan F + M sand, little C sand, tr gravel wet

6 of 8 112 JPL

P-21, P11

borings retained to grade using native fill

P-24 left open to be completed tomorrow

7 of 8 113 JPL

DEC East Farming dale
CAMP 6/23/14

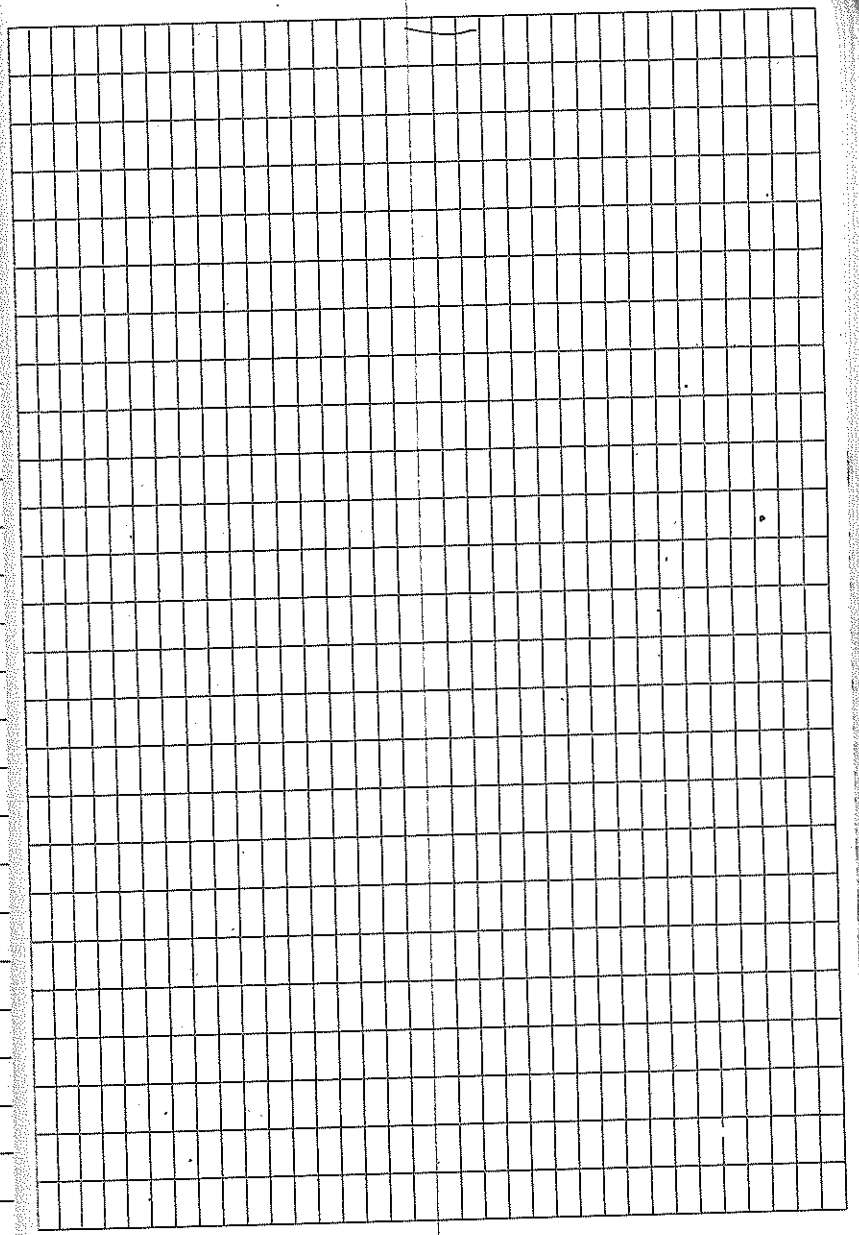
Up wind

TWA 0.0ppm, 2.5 ug/m³

Down wind

TWA 0.0ppm, 0.3 ug/m³

8 of 8 114 JPL



~~DEC-Eastfarmingdale~~
CAMP 6/23/14

Up wind

TWA 0.0ppm, 2.5 ug/m³

Down wind

TWA 0.0ppm, 0.3 ug/m³.

6 of 8 114 JPL

DEC-Eastfarmingdale 6/24/14

Start: 0600 on: 0730 Off End

Purpose: Advance soil borings

Equip: 07s, PID #506

on site: JPL (Geo) DCV/BV (CDI)

weather: ~80, Partly Cloudy

notes

Dennis on site ~0700

Bruce on site w/ rig ~0730 #two

* Hit refusal on P-07 4 times, one rod bent

As discussed w/ PM IH (who spoke w/ DEC) on site hours will be extended to ~8hrs to increase # of borings per day.

1 of 115 JPL

DEC-East farmingdale 6/24/14

P-24 Day 2

16-20' @ 805 PID 0.7 ppm

1/4

0.2 grey F+M Sand, some M Sand, little C Sand, tr gravel, wet

0.8 Tan F sand, some M sand, little C sand, tr gravel, wet

20-24' @ 0818 PID 0.3 ppm

1.8/4

1.8 Tan F+M sand, little C sand wet

24-28' @ 0831 PID 0.5 ppm

2/4

0.2 Tan M+C sand, little F Sand, tr gravel wet

0.6 Tan F sand, some M Sand, little C Sand, tr gravel wet

1.2 Tan M sand, some C Sand, little F sand, tr gravel wet.

28-32' @ 0844 PID 0.4 ppm

1.9/4

1.9 Tan M sand, some F sand, some C Sand, tr gravel wet

DEC

P-25

0-4 @ 0916 PID 0.3

2.9/4

1.6 - Brown F sand, tr M sand, tr C Sand dry

0.6 Brown stiff clay

0.3 Brown F sand, tr M sand, tr C Sand, dry

4-8' @ 0928 PID 0.6

1.1/4

0.6 Brown F Sand little M Sand, tr C Sand dry

0.5 Brown clay wet

8-12 @ 0925 PID 6.2

2/4

0.4 Brown clay, moist

0.3 Brown f Sand little M Sand, tr C Sand, dry

1.3 Black Clay, petrol odor w/ some Brown F Sand, tr Brown M Sand

12-16 @ 0932 PID 0.7

2.2/4 some clay

2.2 F Brown Sand, little M Sand, tr C Sand tr gravel, moist

26-20 @ 0939 PID 1.9

1.1/4

DEC-East Farmingdale 6/24/14

P-08 Cont

1.1 Brown F sand, little Clay, little M sand, tr C sand moist

20-24 @ 0950 PID 0.4ppm

2.7

0.5 Brown F sand, little M sand, tr C sand moist

1.4 Brown Clay, some F Sand, little M Sand, tr C sand wet

0.8 Brown F Sand, little M sand, tr clay, tr C sand wet

24-28 @0958 PID 0.7ppm

0.7/4

0.7 Brown F sand, little M sand, tr C Sand, tr gravel, wet

28-32' @1013 PID 0.7 ppm

0.9/4

0.4 Brown/black F sand, some M Sand, tr C Sand wet

0.5 Tan F sand, some M sand, little C sand, tr gravel wet

P-07

0-4' @ 1112 PID

3.5/4

2.5 - Brown F sand, tr M sand, tr gravel dry

2.4 - Red brick

0.3 Brown F sand, little M, tr C dry

0.3 - concrete

0.5 - Brown F, little M, tr C, tr gravel, red brick, dry

0.4 - concrete

0.3 - Brown F sand, little M, tr C, tr gravel, dry

0.8 concrete

4-8 @ PID

3.4

0.2 Concrete

0.6 - Brown F sand, little M sand, tr gravel

0.5 - concrete

2.1 - Brown Fine sand, little M sand, tr C sand, tr gravel, dry

CAMP

Upwind

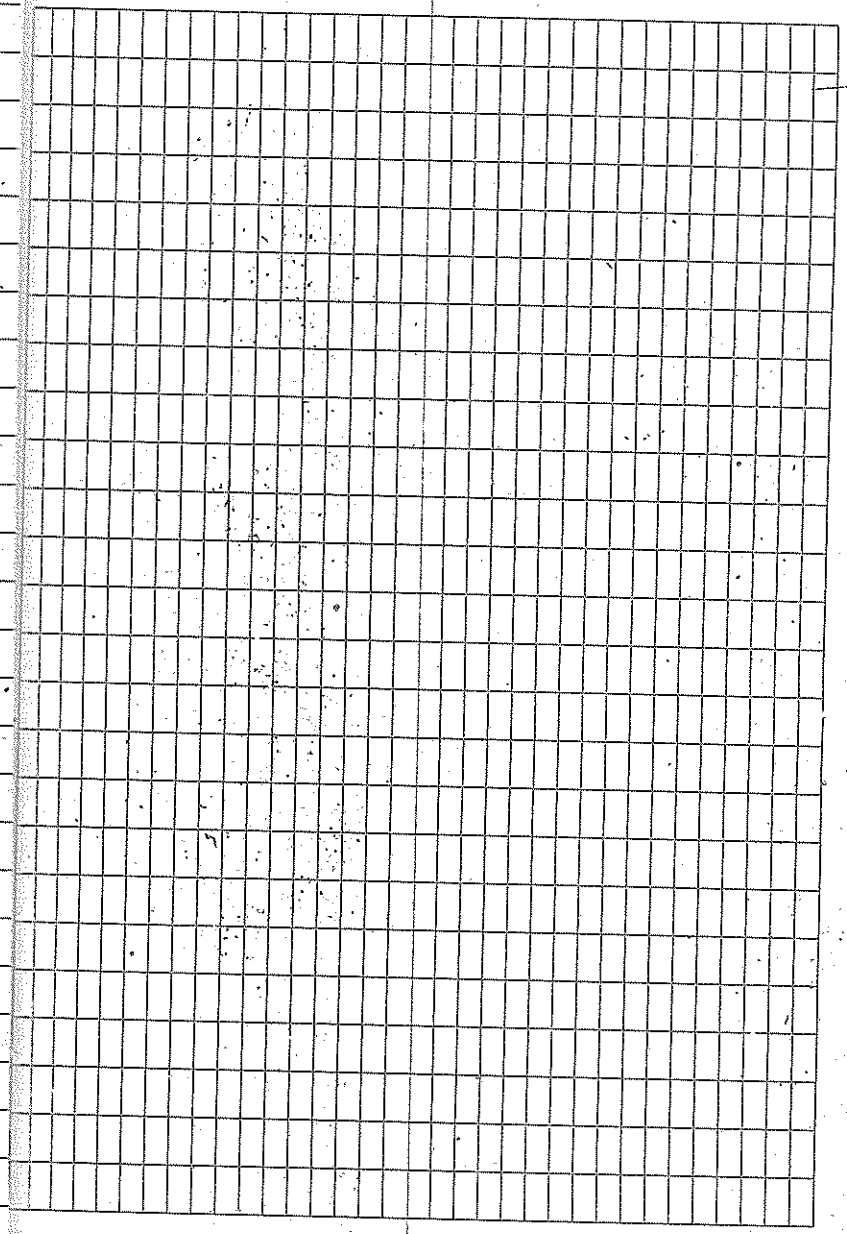
TWA 1.8 ug/m³ , — ppm
PID shut off during the day

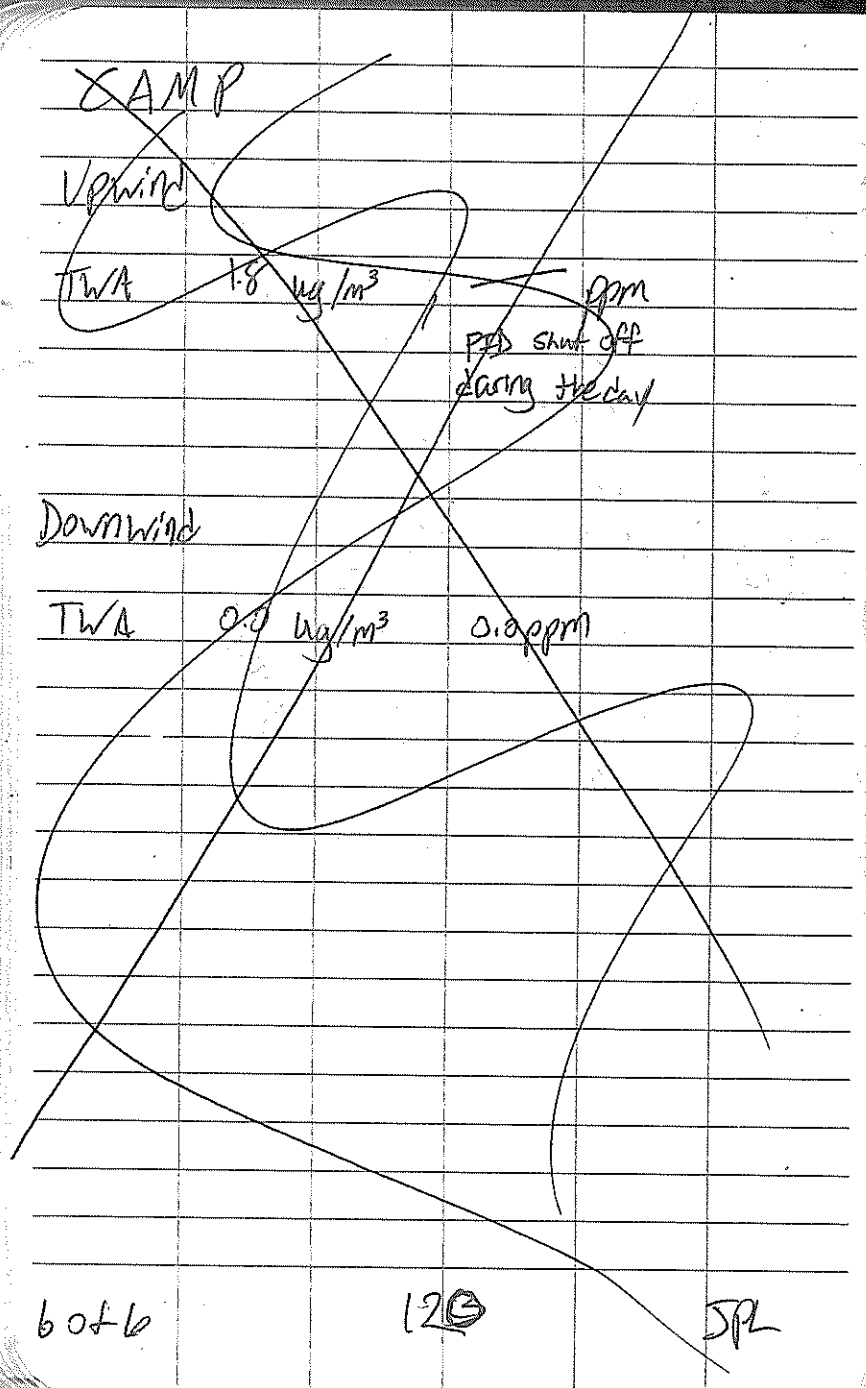
Downwind

TWA 0.0 ug/m³ 0.0 ppm

9

6 of 6 120 SPL





6 of 6 126 JPL

DEC - Eastfarmingdale 6/25/14

Start: 0630 on: 0630 off: End:

Purpose:

Equip: O7s, PID #06, camp equip

On Site: JPL (Geo) BV/DCV (CDI)

Weather:

Notes:

CDI on site ~0645

AS discussed w/ IH who spoke w/ DEC & DV PPE lowered to booties & gloves (no Tyvek or Respirator) in response to bv sample reading & to lengthen work day.

AS discussed w/ IH for P-07 we moved ~5' S of proposed location to try to avoid rejection

* kept hitting refusal (~5 times) got permission from IH to move ~5' away, try 2 & move on if still hitting refusal.

Hit refusal 2 more times, got the go ahead from IH to move to P-14

1 of 10 121 JPL

DEC-Eastfarmingdale 6/25/14

P-07 Day 2

8-12 @ ~ 0716 PID 0.3

2/4

1.6 Brown F Sand, little M sand, tr C sand tr gravel moist

0.4 - black clay

12-16 @ ~ 1725 PID 0.3

2.6/4

2.6 Brown F Sand, little M Sand, tr C Sand moist

16-20 @ ~ 0738 PID 0.1

4/4

1.7 Dark brown F Sand, little M sand, tr C Sand, wet

2.3 Brown F Sand, little M Sand, tr C Sand tr gravel, wet

20-24 @ 0750 PID 0.5

1.9/4

1.9 Brown F Sand, little M Sand, tr C Sand, tr Clay wet

24-28 @ 0808 PID 0.6

0.7/4

0.7 Tan F+M Sand, tr C Sand wet

P-07 cont

28-32 @ 0820 PID 0.6

2.6/4

0.6 Brown F Sand, little M Sand, tr C Sand wet

2.0 Dark brown F Sand, tr M Sand, tr C Sand wet

P-06

0.4' @ 0856 PID 0.3

2.5/4

1.4 - Brown F Sand, little M Sand, tr C gravel Sand dry

0.5 - Red brick

0.3 - concrete

0.3 - Brown F Sand, little M Sand, tr C Sand dry

4-8 @ 0900 PID 0.9 ppm

3.7/4

0.2 Brown F Sand, little M sand, tr gravel, dry

0.5 - concrete

0.2 - Brown F Sand, little M Sand, tr C Sand, dry

0.3 - Red brick

0.4 - Brown F Sand, little M Sand, tr C Sand, dry

2.1 - Black F Sand, little M Sand, tr C Sand, dry

8-12 @ 0912 PID 0.3

?/4 - Core emptied directly to bag, could not be removed whole from rod

DEC - Eastfarmingdale 6/25/14

P-06 cont

Concrete & Red brick, little F sand, tr wood

12-16 @ — PID —

P-14

0-4' @1012 PID 0.3 ppm

2.2/4

2.2 - Brown F sand, little M sand, tr C sand, dry

4-8 @1016 PID 0.5 ppm

2.7/4

0.3 Brown F sand, little M sand, little C sand

0.2 Red brick

1.2 Brown F sand, little M sand, little C sand dry

1.0 concrete

8-12' @1022 PID 0.5

2.3/4

0.7 Brown F sand, little M sand, little C sand, moist

0.3 - concrete

1.2 Brown F sand, little M sand, tr C sand moist

0.1 Black F sand, little M sand, tr C sand, moist

tr P-14 cont

12-16 @1030 PID 1.0

2.4/4

0.3 Brown F sand, little M sand, tr C sand, tr gravel, wet moist

0.5 - Brown F sand, little M sand, tr C sand, tr gravel, dry

0.9 - Brown F sand, little M sand, tr C sand, tr gravel, moist

0.7 - Brown F sand, little black clay, little M sand, tr C sand, wet

16-20 @1038 PID 1.7 ppm

2.5/4

0.3 - Black clay wet

0.3 - Brown F sand, little M sand, little C sand tr gravel, wet

1.5 - Black clay, tr F+M sand, wet

0.4 - Brown F sand, tr M, tr C, tr gravel, wet

20-24 @1046 PID 0.6

0.5/4

0.5 Tan M sand, little F sand, little C sand, tr gravel, wet

24-28 @1059 PID 0.5 ppm

0.8/4

0.8 - Tan F sand, little M sand, tr C sand, wet

DEC - East Farmingdale 6/25/14

P-14 cont

28-32 @ 1112 PID 0.6 ppm

2.4/4

0.3 black clay wet

1.8 Tan F sand, some M sand, tr C sand, tr gravel, wet

0.3 - black clay wet

P-17

0-4' @ 1200 PID 2.1 ppm

1.7/4

1.7 Brown F sand, little M sand, tr C sand, tr gravel dry

4-8' @ 1204 PID 1.3 ppm

1.8/4

1.0 Brown F sand, tr M sand, tr C sand dry

0.8 Brown F sand, little M sand, tr C sand dry

8-12' @ 1207 PID 1.0 ppm

1.9/4

1.4 Brown F sand, little gravel, tr M sand, tr C sand, dry

0.5 Brown F sand, little M sand, tr C sand tr gravel, moist

P-17 cont

12-16 @ 1212 PID 0.9 ppm

1.5/4

0.4 - Brown F sand, little M sand, little gravel tr C sand, dry

0.6 - Brown F sand, little gravel, tr M sand, tr C sand

0.5 - Brown F sand, little M sand, tr C sand tr gravel dry

16-20 @ 1214 PID 0.5 ppm

0.9/4 - Bar

0.4 - Tan F sand, some M sand, little C sand wet

0.5 - Brown F sand, little M sand, tr C sand, dry

20-24 @ 1226 PID 0.8

0.9/4

0.7 Brown F sand, little M sand, tr C sand moist

0.2 - grey - F sand, some M sand, tr C sand, wet

24-28 @ 1235 PID 0.3

0.9/4

0.9 - gray F sand, some M sand, little C sand wet

DEC - Eastfarmingdale 6/25/14

P-17 cont

28-32' @ 1246 PID 0.9 ppm

2/4

0.4 grey F sand, little M sand, tr C sand tr gravel

0.8 - Brown Clay, some F sand, little M Sand wet

1.0 - grey F sand, some M sand, tr C sand tr gravel. wet

P-33

0-4' @ 1310 PID 1.1 ppm

2.2/4

0.9 Brown F sand, little M sand, tr C Sand dry

0.7 Red brick

0.6 - Brown F Sand, little M sand, little gravel, tr C Sand, dry

4-8 @ 1313 PID 2.0

2.6/4

1.7 Brown F Sand, little M sand, little gravel tr C Sand, dry

0.2 - Concrete

0.4 Brown F sand, little M Sand, little gravel, dry

0.3 Red brick

P-33 Cont

8-12 @ 1316 PID 0.9

2.3/4

2.3 Brown F Sand, little M sand, little C Sand, tr gravel dry

12-16 @ 1321 PID 0.7

2.8/4

1.2 Brown F Sand, little C Sand, tr M sand, Tr gravel, Tr red brick, moist

1.6 grey F sand, some M sand, little C Sand tr gravel, wet

16-20 @ 1330 PID 1.1

2.2/4

0.9 - Brown F Sand, little M, little C, tr gravel, dry

0.5 Brown/grey F sand, some M sand, little C sand, wet

0.8 Black F Sand, some M sand, little Clay tr C sand, tr gravel wet

20-24 @ 1339 PID 0.4

1.9/4

0.1 grey F+M Sand, little C Sand wet

0.3 Brown F sand, little M Sand, tr Clay tr C Sand

1.5 Black Clay

DEC Eastfarmingdale

P-33 cont

24-28 @ 1350 PID 0.6 ppm

?/4 - loose, deposited directly to bag

? grey f+M Sand, some C Sand, tr gravel, wet

28-32 @ 1410 PID 0.4 ppm

1.5/4

1.5 Tan/grey F Sand, some M Sand, some little C Sand, tr gravel, wet

All borings returned to grade w/ native fill, excess fill scattered around surrounding area

CAMP 6/25/14

Upwind

TWA 13.1 ug/m³ no PID

Downwind 0.0 ug/m³ no PID

TWA →

DEC: Eastfarmingdale 6/26/14

Start: 0530 on: 0645 off End

Purpose

on site

Equip PID #05

Weather 70s-80s, partly cloudy

notes: CDI on site @ ~0700

- Starting w/ 1 Bud in center of P.I.E. As discussed w/ IH, only 1st point will be logged, other two will just be sampled @ selected intervals

- After Discussion w/ IH (who spoke w/ BC @ DEC) sample intervals set @ 14-18 & 18-22 for all BUD locations

DEC Eastfarmingdale

B-33 cont

24-26 @ 1350 PID 0.6 ppm

?/4 - loose, deposited directly to bag

? grey f+M Sand, some C Sand, tr gravel, wet

28-30 @ 1410 PID 0.4 ppm

1.5/9

1.5 Tan/grey F sand, some M sand, little C sand, tr gravel, wet

All borings returned to grade w/ native fill, excess fill scattered around surrounding area

CAMP 6/25/14

Upwind

TWA 13.1 ug/m³ no PID

Downwind 0.0 ug/m³ no PID

TWA →

DEC. Eastfarmingdale 6/26/14

Start: 0530 on: 0645 off End

Purpose

on site

Equip 97V, PID #05

Weather 70s-80s, partly cloudy

notes: CDI on site @ ~0700

- Starting w/ 13 BUDS in center of Pile. As discussed w/ IH, only 1st point will be logged, other two will just be sampled @ selected intervals
- After Discussion w/ IH (who spoke w/ BC @ DEC) sample intervals set @ 14-18 & 18-22 for all BUD locations

DEC-Eastfarmingdale 6/26/14

BUD-02

0-4 - no lithology logged

4-8' @ 0747 PID 21.3 ppm

2.7

2.7 Brown/black F Sand, some C Sand, tr C sand tr gravel, tr red brick dry, odor

8-12 @ 0756 PID 25.8 ppm

2.2/4

2.2 - Brown/black F sand, some M sand, tr C Sand, tr gravel, dry, odor

12-16' @ 0804 PID 23.2

3/4

1.7 black. F Sand, some M sand, tr C sand tr gravel, dry odor

1.0 concrete, little brown F sand, tr M sand dry

0.3 Tan F Sand, some M Sand, little C sand tr gravel dry, no odor

16-20 @ 0809 PID 40.4 & 0.5 ppm

2.4/4

0.5 black F Sand, some M sand, tr C sand dry odor

0.9 Brown FSand some M Sand, little C sand dry no odor

1.5 Tan F Sand, some M Sand, little C Sand, tr gravel dry no odor

20-22' @ 0819 PID 2.1

0.9

2.0 Brown F Sand, some M sand, little C Sand, dry

0.3 concrete

BUD-02

0-14 no lithology logged

2.7/4 14-18 @ 0913 PID 25.1 ppm

0.4 - black F sand, little M sand, dry odor

2.6 - Tan FSand, some M sand, some C sand, tr gravel dry odor

18-22 @ 0925 PID 1.4 ppm

2.0/4

0.9 - Tan F Sand, some M Sand, tr C Sand tr gravel dry

BUD-03

0-14 no lithology logged

14-18' @ 0945 PID 15.9

2.5/4

2.5 Brown F Sand, some M Sand, little C Sand tr gravel

18-22 @ 0953 PID 10.3

1.7/4

2.3 black clay, some F sand, some M Sand moist

DEC - Eastfarmingdale 6/26/14

BUD - 03

1.1 Tan F sand, some M sand, little C sand, tr gravel, moist

0.3 - black clay

22-26 @ 1022 PID 0.8

2.1/4

2.1 Tan F+M Sand, little C Sand, tr gravel, moist

After BUDS CAMP was moved to PCB area, along w/ rental rig & Geo station

P-32

0-4 @ 1112 PID 0.8 ppm

2.2/4

1.1 - Brown F Sand, little M Sand, tr C Sand dry

0.2 Concrete

2.1 Red brick

0.8 Brown F Sand, little M sand, tr C sand, tr gravel, dry

4-8 @ 1126 PID 2.6

1.8/4

2.2 Red brick

1.6 brown F Sand, little M Sand, tr C Sand, tr gravel, dry

8-12 @ 1130 PID 2.8

3/4

2.4 Brown F Sand, little M Sand, tr C Sand, tr gravel dry

0.6 Tan F Sand little C Sand, tr M Sand, tr gravel dry

12-16 @ 1137 PID 0.7 ppm

3.5/4

1.3 - Brown F Sand, little M sand, little C Sand tr gravel dry

2.2 Tan F Sand, some C Sand, little M Sand, tr gravel, wet

16-20 @ 1144 PID 0.8

1.5/2

1.8 Tan F Sand, little M Sand, little C Sand, tr gravel, wet

20-24 @ 1153 PID 0.5

2/4

24-28 @ 1201 PID 0.5 ppm

2.1/4

2.1 Tan F+M Sand, tr C Sand tr gravel, wet

28-32 @ 1214 PID 0.3 ppm

2.1/4

1.4 Tan M Sand, Some F Sand, little C Sand, tr gravel, wet

DEC- EastFarmingdale 6/26/14

P-32 Cont

0.3 Tan F Sand, tr M sand

0.4 Tan M Sand, some F Sand, some C Sand tr gravel, wet

P-30

0-4 @ 1255 PID 0.3 ppm

2.2/4

1 Brown F Sand, little Clay, little M Sand, tr C sand, moist

0.9 - Brown F Sand, little M Sand, tr C Sand dry

0.3 - concrete

4-6 @ 1259 PID 0.5 ppm

1.5/2

.4 cement, tr F Sand

.3 Red brick, little F Sand, tr M Sand

.8 - cement, some F Sand, little M Sand, tr C Sand

.1 Brown F Sand, little M Sand, tr C Sand

6-16 @ 1304 PID 0.3

1.7

0.4 Brown F Sand, some M Sand, tr C Sand tr gravel dry

1.0 - Concrete

0.3 Brown F Sand, some M, tr C, dry

P-30 cont

12-16' @ 1309 PID 0.4

2.3/4

1.1 Brown F Sand, some M Sand, tr C Sand tr gravel, dry

1.2 Tan F Sand, some M Sand, little C Sand tr gravel, moist

16-20' @ 1315 PID 0.3

2.1/4

0.7 Brown F Sand, little M Sand, tr C Sand, tr gravel moist

1.4 Tan F Sand, some M Sand, little C Sand, tr gravel wet

20-24 @ 1324 PID 1.0

2.1/4

2.1 Tan F Sand, some M Sand, some C Sand tr gravel, wet

24-28 @ 1332 PID 1.1

1.8/2

1.8 Tan M Sand, some F, some C, little gravel wet

28-32' @ 1345 PID 1.7

1.4/4

1.4 Tan F Sand, some M Sand, little C Sand tr gravel, wet

DEC-East farmingdale 6/26/14

Camp

Upwind

TWA	0.0 ug/m3	0.0 ppm

Downwind

TWA	4.8 ug/m3	0.0 ppm

DEC-East farmingdale 6/27/14

Start 0545 on 0815 off End

Purpose: Advance soil borings

onsite: JPL (Geo), BV/DCV (CDI)

Equip: 07s, PID#06, camp equipment

Weather: ↑70s - ↓80s, partly cloudy

Notes

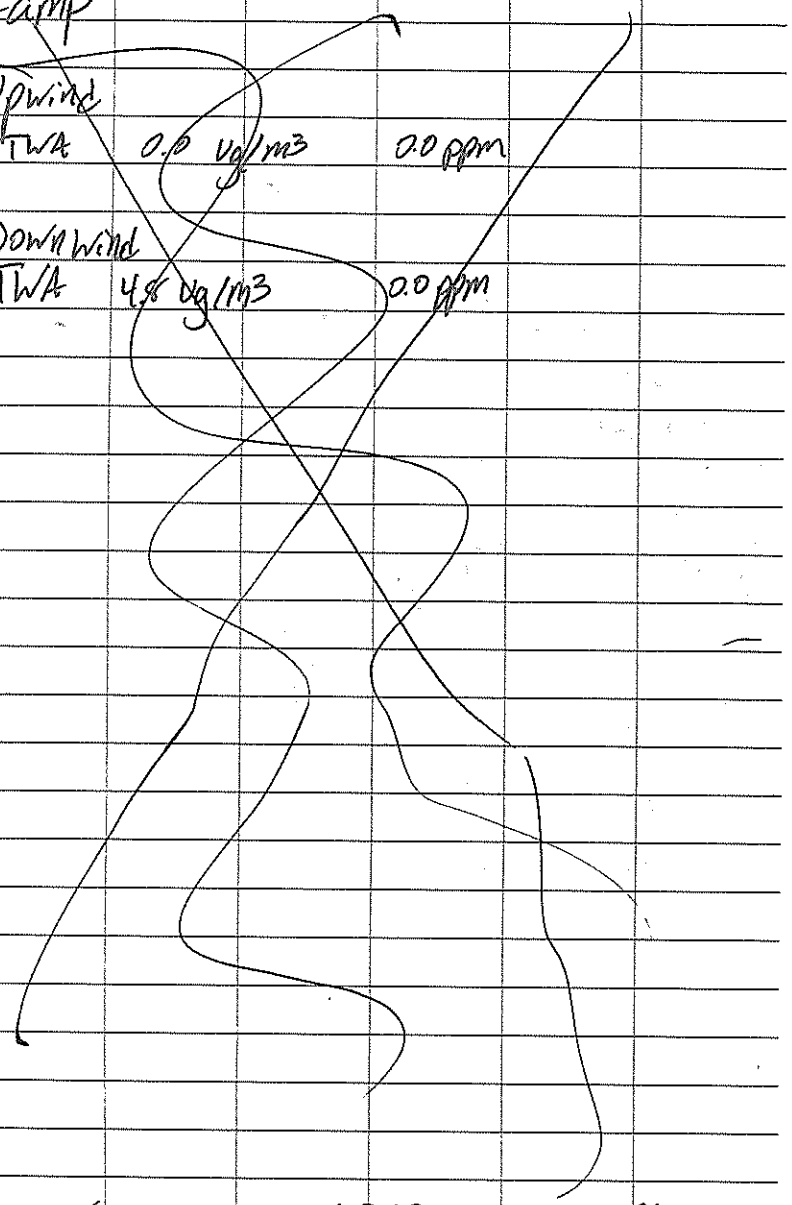
- 97 van had flat tire @ start of the day, had to wait for 07s to return from inspection before leaving EAR to on site
- ~~Reco 2nd attempt~~
- P-13 (16-20) had recovery too small for PCB Lab analysis, after talking to IH ~~interval~~ was removed from testing. Only 4 samples from P-13 sent for testing
- 2nd attempt @ P206 made, refusal ~ 8'-10' from original location, after 8 refusals IH said to move ~ 20' SW & try there. (location is centered in the square formed by points P-07, P-13, & P14)
- observers from Roux on site

DEC-East farmingdale 6/26/14

Camp

Upwind
TWA 0.0 ug/m3 0.0 ppm

Downwind
TWA 4.8 ug/m3 0.0 ppm



8 of 8 138 JPL

DEC-East farmingdale 6/27/14

Start 0545 on 0615 off End

Purpose: Advance soil borings

onsite: JPL (Geo), BV/DCV (CDI)

Equip: 07s, PID #06, camp equipment

Weather: ↑70s - ↓50's, partly cloudy

notes

- 97 van had flat tire @ start of the day, had to wait for 07S to return from inspection before leaving EAR to on site
- ~~Prior 2nd letter~~
- P-13 (16-20) had recovery too small for PCB Lab analysis, after talking to IH interval was removed from testing only 4 samples from P-13 sent for testing
- 2nd attempt @ P-06 made, radiating ~ 8-10' from original location, after 8 refusals IH said to move ~ 20' SW & try there. (location is centered in the square formed by points P-07, P-08, P-13 & P14)
- observers from Roux on site

139

DEC - Eastfarmingdale 6/27/14

P-20

0-4 @ 0834 PID 0.3 ppm

2.3/4

1.2 Brown F sand, little M sand, little C sand, tr gravel, dry

0.4 concrete

0.7 - Brown F sand, little M sand, tr C sand dry

4-8' @ 0839 PID 1.1 ppm

0.8/4

0.2 Brown F sand, little M sand, tr C sand dry

0.2 - Concrete

0.4 Brown F sand, little M sand, tr C sand, tr gravel dry

8-12 @ 0843 PID 0.8 ppm

1.7/4

1.0 - Brown F sand, little M sand, tr C sand tr gravel, dry

0.2 concrete

0.2 - Brown F sand, tr C sand, tr Red brick dry

0.3 Tan F sand, little M sand, little C sand tr gravel dry

12-16 @ 0849 PID 2.4 ppm

2.9/4

P-20 Cont

2.7 - Brown F sand, some M sand, little C sand, tr gravel moist

1.2 - Tan F sand, some M sand, little C sand tr gravel moist

1.0 Tan M sand, some F sand, little C sand, tr gravel moist

16-20 @ 0855 PID 0.6 ppm

3.8

0.2 Tan F sand, some M sand, some C sand, moist

0.6 Brown F sand, some M sand, little C sand, moist

3.0 Tan F+M sand, some C sand, tr gravel wet

20-24 @ 0901 PID 2.9 ppm

2/4

2 Tan F+M sand, little C sand, tr gravel wet

24-28 @ 0912 PID 1.9 ppm

1.7/4

1.7 Tan F sand, some M sand, tr C sand, tr gravel

28-32 @ 0925 PID 2.6 ppm

1.9

1.9 Tan M sand, some F sand, little C sand, tr gravel

DEC Eastfarmingdale 6/27/14

P-12

0-4 @ 0948 PID 0.4 ppm

2.5/4

2.5 - Brown F sand, little M sand, little C sand, tr gravel, dry

4-8 @ 0952 PID 0.9 ppm

1.9/4

1.9 - Brown F Sand, little M Sand, tr C sand dry

8-12 @ 0956 PID 0.9 ppm

1.9/4

1.9 - Brown F sand, some M sand, tr C sand, tr gravel, tr asphalt @ ~ 1.4'

12-16 @ 1000 PID 0.8 ppm

1.5/4

1.3 Brown F sand, little M sand, tr C sand, tr clay, moist

0.2 Black clay

16-20 @ 1006 PID ~~@~~ 1.2 ppm

1.7/4

0.2 - Black clay, some F, some M, tr C, wet odor

0.4 - Brown F Sand, some M, some C, tr gravel, wet

1.1 Black/grey F+M sand, little C sand, tr gravel, wet

P-12 cont

20-24 @ 1012 PID 2.5 ppm

1.9/4

1.9 Tan F+M Sand, little C Sand, tr gravel wet

24-28 @ 1020 PID 0.9 ppm

1.7/4

1.7 tan F+M Sand, some F Sand, ~~Sa~~ little C Sand, tr gravel, wet

28-32 @ 1032 PID 0.7 ppm

2.1/4

2.1 Tan M Sand, some C sand, little F Sand, tr gravel, wet

P-13

0-4 @ 1047 PID 1.8 ppm

2.3

1.1 Brown F Sand, little M Sand, tr C Sand, dry

0.7 - Brown f sand, little M Sand, tr C Sand tr concrete, dry

0.5 Dark brown F Sand, some M Sand, tr C Sand Tr Red brick, dry

4-8 @ 1053 PID 2.3

1.4/4

0.2 Brown F Sand, little M sand, little red clay

0.8 black clay, little F Sand, tr M Sand

DEC-East farmingdale 6/27/14

P13 cont

0.2 Red brick

0.2 Brown F Sand, some C Sand, little M Sand moist

8-12 @ 1056 PID 8.8

2.1/4

0.3 black Clay

0.15 Brown F Sand, little M Sand, little C Sand tr gravel dry

0.7 Brown F Sand, little M, little C, tr gravel, moist

0.2 Black Clay wet

0.4 Brown F Sand, little M Sand, little C, tr gravel, wet

12-16 @ 1102 PID 15.2

1.7/4

0.4 Brown Clay, little F Sand, little M Sand wet

0.6 Brown F+M Sand, little C Sand, tr gravel wet

0.7 Black clay

16-20 @ 1108 PID 6.5

7/4 low recovery, right to bag

- Black Clay w/ some F Sand, tr M Sand moist

P13 cont

20-24 @ 1115 PID 9.3 ppm

1.2/4

1.0 - Black clay

0.2 Black clay, tr M, tr C Sand

24-28 @ 1125 PID 3.0 ppm

1.1/4

1.1 Brown F Sand, some M Sand, little clay tr C Sand, tr gravel, wet

28-32 @ 1138 PID 6.1

1.1/4

0.1 black M Sand, some F Sand, tr C Sand wet

1.0 Brown F Sand, some M Sand, tr C Sand tr gravel, wet

P-06

2/4

0-4 @ 1308 PID 0.5

2/4

1.8 - Brown F Sand, little M Sand, tr C Sand, tr gravel, dry

0.2 Red brick

4-8 @ 1312 PID 0.7

2.4/4

2.4 - Brown F Sand, some M Sand, little C Sand, tr gravel, tr Red brick, tr cement, dry

DEC - Eastfarmingdale 6/27/14

Rob cont.

6-12 @ 1319 PID 0.7

2.2/4

0.2 Brown f sand, some M sand, trC sand tr gravel, dry

0.3 - red brick

0.2 Concrete, some f sand, little M sand

1.5 Brown F Sand, some M sand, little C Sand, tr gravel

12-16 @ 1326 PID 1.0 ppm

2.3/4

2.3 Brown F sand some C sand, little M Sand, tr gravel, dry

1.0 Black F Sand, some M sand, little C sand tr gravel, moist

16-20 @ 1332 PID 4.9

1.3/4

0.9 Brown F sand, little M sand, tr C sand, dry

0.2 - Red brick

0.2 - Black F sand, little M sand, moist

20-24 @ 1342 PID 0.2

0.3/4

0.3 Red brick, some F brown Sand

21

24 - 26 @ 1354 PID 12.1

1.5

0.4 Black clay

0.2 - Red Brick, wet

0.9 - Tan F sand, some M sand, little C Sand, tr gravel, wet

28-32 @ 1406 PID 1.4

0.6/4

0.6 Tan F+M sand, little C sand, & wet

CAMP

Up wind

TWA 0.0 ug/m3 0.0 PID

Down wind

TWA 4.3 ug/m3 0.0 PID

DEC - Eastfarmingdale 6/30/14

Start: 0530 on: 0645 off: End

Purpose: Advance Soil borings See work order

Equip: 07s, PID #06 CAMP Equip

on site: JPL (Geo), DCV/BV (CDI)

weather: ↑70s - ↓80s, Partly Cloudy

Notes

CAMP set up prior to soil investigation

PID #06 zeroed & span calibrated prior to use

called RA (EAI) after P-19, who spoke w/ BL (DEC), said to move on to P-16 & P-15

- native fill returned to borings post completion

P-18

0-4 @ 0728 PID 0.4 ppm

2.2/4

2.2 Brown F Sand, little M Sand, little C Sand, tr gravel, tr red brick, dry

4-8 @ 0733 PID 0.2 ppm

~~0.9~~ 2/4

0.9 Brown F sand, little M sand, little C Sand, tr gravel dry

0.2 concrete

0.9 Brn F Sand, little clay, little M Sand, tr C Sand, tr gravel, moist

8-12 @ 0737 PID 0.3

1.4/4

0.3 Brown/black clay, some F Sand, little C Sand, tr M Sand, moist

0.6 Brown F+M Sand, little C Sand, dry

0.5 Brown Clay, some F sand, little M Sand, tr C Sand, moist

12-16 @ 0743 PID 0.2 ppm

0.8/4

0.5 Brown F Sand, little M Sand, tr C Sand dry

0.3 Brown Clay, F Sand, some clay, little M Sand, wet

DEC-Eastfarmingdale 6/30/14

P-18 cont

16-20 @ 0750 PID 2.1 ppm

2.1/4

0.5 Brown F Sand, Some Clay, trM Sand, trC Sand wet

1.6 Black Clay, trF Sand, trM Sand, wet, odor

20-24 @ 0757 PID 0.6 ppm

1.7/4

1.5 - Black -> Tan F Sand, Some M Sand, little C Sand, wet slight odor

0.2 Tan F Sand, little C Sand, trM Sand, tr gravel, wet

24-28 @ 0805 PID 0.2 ppm

1.7/4

1.7 Tan F Sand, Some M Sand, little C Sand, tr gravel, wet

28-32 @ 0820 PID 0.3 ppm

1/4

1 - Tan F+M Sand, little C Sand, tr gravel wet

P-19

0-4 @ 0852 PID 0.3 ppm

2.2/4

1.7 Brown F Sand, Some C Sand, trM Sand, tr gravel, dry

0.1 Concrete

0.4 Brown F Sand, little C Sand, trM Sand, dry

4-8 @ 0856 PID 0.2 ppm

2.1/4

2.1 Brown F Sand, little M Sand, little C Sand, tr asphalt, tr red brick, dry

8-12 @ 0901 PID 1.3

2.6

1.2 Brown F Sand, little M Sand, little C Sand, tr gravel, dry

0.3 Brown F Sand, Some Clay, little M Sand, little C Sand, moist

0.1 asphalt

0.3 Red brick

0.2 cement

0.5 Tan F Sand, Some M Sand, trC Sand, moist

12-16 @ 0907 PID 0.6 ppm

3.5/4

1.5 Brown F Sand, little M Sand, little C Sand dry

DEC-Eastchester 6/30/14

P-19 cont

2 Tan F Sand, Some M Sand, little C sand, tr gravel, wet

16-20 @ 0914 PID 0.3

1.9/4

1.9 Tan F Sand, some M sand, little C Sand tr gravel wet

20-24 @ 0927 PID 0.4

1.5/4

1.5 Tan F Sand, Some M Sand, little C Sand tr gravel, wet

24-28 @ 0937 PID 0.3ppm

1.6/4

1.6 Tan F Sand, some M sand, little C Sand tr gravel, wet

28-32 @ 0948 PID 0.3ppm

1.6/4

1.6 Tan F Sand, some M sand, some C sand, tr gravel, wet

P-16

0-4 @ 1025 PID 0.7 ppm

2.8/4

2.5 Brown F Sand, little M Sand, little C Sand, tr gravel, tr concrete, dry

0.1 Red brick

0.2 Brown F Sand, little M sand, tr C Sand, dry

4-8 @ 1029 PID 0.8 ppm

2/4

0.8 Brown/Black F Sand, little M Sand, tr C Sand tr red brick, dry

0.5 Concrete

0.7 Brown F Sand, little M Sand, tr C Sand, tr red brick, tr cement, dry

8-12 @ 1035 PID 2.1 ppm

2.5

0.4 Brown F Sand, little C Sand, tr M Sand tr red brick, tr cement, dry

0.2 Black C Sand, little M Sand, tr C Sand dry

1.9 Brown F Sand, little M Sand, little C Sand tr cement, tr gravel, dry

12-16 @ 1041 PID 0.7

0.6/4

0.6 Brown F Sand, little M Sand, tr C Sand, tr concrete dry

DEC-Eastfarmingdale 6/30/14

P-16 cont

16-20 @ 1048 PID 0.8 ppm

0.7/4

0.7 Brown clay some F sand, little M sand little C sand, wet

20-24 @ 1056 PID

1.1/4

0.5 black M sand, some C sand, little F sand wet

0.5 Black/brown clay some F sand, tr M sand tr wood, wet

0.1 Black clay, little F sand, tr M sand, tr wood wet

24-28 @ 1108 PID —

?/4 low recovery

few scraps of wood coated black

28-32 @ 1117 PID 0.9

1.2/4

1.2/Black clay some F sand, some M sand, tr C sand, tr wood, wet

Upwind

TWA 2.0 ug/m3 0.0 ppm

Downwind

TWA 2.8 ug/m3 0.0 ppm

Continued in rain notebook

7 of 8

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CURVE TABLES

HOW TO USE CURVE TABLES

Table I. contains Tangents and Externals to a 1° curve. Tan. and Ext. to any other radius may be found nearly enough, by dividing the Tan. or Ext. opposite the given Central Angle by the given degree of curve.

To find Deg. of Curve, having the Central Angle and Tangent: Divide Tan. opposite the given Central Angle by the given Tangent.

To find Deg. of Curve, having the Central Angle and External: Divide Ext. opposite the given Central Angle by the given External.

To find Nat. Tan. and Nat. Ex. Sec. for any angle by Table I.: Tan. or Ext. of twice the given angle divided by the radius of a 1° curve will be the Nat. Tan. or Nat. Ex. Sec.

EXAMPLE

Wanted a Curve with an Ext. of about 12 ft. Angle of Intersection or I. P. = 23° 20′ to the R. at Station 542 + 72.

Ext. in Tab. I opposite 23° 20′ = 120.87
120.87 ÷ 12 = 10.07. Say a 10° Curve.

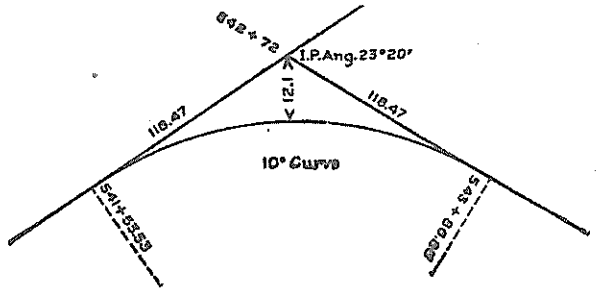
Tan. in Tab. I opp. 23° 20′ = 1183.1
1183.1 ÷ 10 = 118.31.

Correction for A. 23° 20′ for a 10° Cur. = 0.16
118.31 + 0.16 = 118.47 = corrected Tangent.

(If corrected Ext. is required find in same way)
Ang. 23° 20′ = 23.33° ÷ 10 = 2.3333 = L. C.

2° 19½′ = def. for sta.	542	I. P. = sta.	542 + 72
4° 49½′ = " " "	+ 50	Tan. =	1 .18.47
7° 19½′ = " " "	543	B. C. = sta.	541 + 53.53
9° 49½′ = " " "	+ 50	L. C. =	2 .33.33
11° 40′ = " " "	543 + 86.86	E. C. = Sta.	543 + 86.86

100 − 53.53 = 46.47 × 3′ (def. for 1 ft. of 10° Cur.) = 139.41′ = 2° 19½′ = def. for sta. 542.
Def. for 50 ft. = 2° 30′ for a 10° Curve.
Def. for 36.86 ft. = 1° 50½′ for a 10° Curve.



DEC-Eastfarmingdale 6/30/14

Continued from field book pg 154

P-15

0-4 @ 1152 PID 0.7 ppm

2/4

1.6 Brown F Sand, little M Sand, little C Sand, tr gravel, tr asphalt, tr red brick, dry

0.4 Concrete

4-8 @ 1156 PID 0.8 ppm

2.1/4

0.4 Brown F Sand, little M Sand, tr C Sand dry

0.1 cement

0.8 - Black F Sand, little M Sand, tr C Sand, dry

0.5 cement

0.3 Black F Sand, little M Sand, tr C Sand, tr Red brick, dry

8-12 @ 1201 PID 0.8 ppm

2.5

0.2 Concrete

1.8 Brown F Sand, little M Sand, little C Sand, tr concrete, dry

0.4 Blank F Sand, Some Red brick, little M Sand, tr C Sand, dry

12-16 @ 1207 PID 0.9 ppm

1.9/4

5 Brown F Sand, some C Sand, little M Sand, little concrete, dry

3 - Red brick

1.1 - Black F Sand, some Red brick, little M Sand, tr little C Sand, dry

16-20 @ 1216 PID 4.7 ppm

0.8/4

0.4 Brown F Sand, little M Sand, tr C Sand, moist

0.4 Black F Sand, some M Sand, some wood, little C Sand, wet

20-24 @ 1230 PID 4.1

1.7/4

1.7 Black clay, some F Sand, little M Sand, tr C Sand, tr gravel, tr wood

24-28 @ 1242 PID 0.8

0.9/4

0.9

25-32 @ 1255 PID 0.5

1.4/4

1.4 - Black F Sand, some M Sand, little C Sand - piece of scrap metal

1152
1156
1201
1207
1216

JPL

Scale: 1 square =

DEC-Eastfarmingdale 7/01/14

Start 0630 on 0745 off End

Purpose: advance soil borings see work order

Equip: 07S, PID#06

Weather: 170s → 180's, part cloudy

onsite: JPL (Geo), BC (DEC), BV/Dar (CDI) Rowe

notes

- BC (DEC) & Rowe waiting by gates upon arrival
- CDI on site ~0800
- Rowe off site ~0800 isl
- BC (DEC) off site @ 1215
- Advanced 4 soil borings, excess native fill returned to borings after completion

P-50

0-4 @ 0827 PID 0.0

2.1/4

0.8 - Brown F Sand, little M Sand, tr C Sand, dry

1.1 Brown Clay, little F, little M, chunk of wood, moist

0.2 - Brown F Sand, little M Sand, tr C Sand, dry

4-8 @ 0834 PID 0.4

1.7/4

0.2 Brown F Sand, little M, tr C, dry

0.1 - concrete

0.3 Brown F Sand, little M Sand, tr C Sand, dry

1.1 - Brown/Black clay, tr F Sand, chunk concrete, moist

8-12 @ 0839 PID 2.5

1.8/4

0.3 Brown clay, little F, little M, moist

1.0 - Brown F Sand, little M, little C, tr B clay, moist

0.5 - Brown F Sand, little M Sand, little C Sand

12-16 @ 0843 PID 0.8

4/4

1.2 Black clay, some F Sand, little M Sand, moist

2.8 - Brown F Sand, some M Sand, little C Sand, wet

16-20 @ 0852 PID

1.2/4

1.2 Brown F Sand, some C, little M, trgravel, wet

DEC-Eastfarmingdale 7/01/14

P-50 cont

20-24 @0900 PID 0.8 ppm

1/4'

1 - Grey-tan F+M Sand, little C sand, ~~wet~~ 0.05' band of black F+M in middle, wet

24-28 @0911 PID 0.7 ppm

1.9/4

1. - Tan F+M Sand, some C sand, tr gravel, wet

0.9 Tan F sand, little M, little C, tr gravel, wet

28-32 @0922 PID 0.3 ppm

1.8'/4'

1.8 - Tan F Sand, some M sand, little C sand, tr gravel wet

P-51

0-4 @0956 PID 0.1 ppm

1.5/4

1.5 Brown F Sand, little M sand, tr C sand, tr concrete dry

4-8 @1000 PID 0.5 ppm

2.3/4

0.1 Brown F Sand, little M, tr C, dry

0.6 Concrete

1.6 Brown F Sand, Some M, tr C, tr gravel, dry

8-12 @1007 PID 0.6 ppm

2.1/4

P-51 cont

0.5 Brown F Sand, little M, little C, tr gravel, dry

0.3 Concrete

1.3 Brown F Sand, some C, little M, tr gravel, moist

12-16 @1012 PID 0.8 ppm

1.8/4'

1.0 - Brown F Sand, little C Sand, tr M Sand, tr gravel, dry, tr concrete

0.8 Brown M Sand, some F Sand, tr C Sand, tr gravel, wet

16-20 @1021 PID 0.2 ppm

1/4

1.9 - Brown F Sand, little C Sand, tr M Sand, tr gravel, tr Red brick, dry

20-24 @1025 PID 0.5 ppm

1.5/4

1.5 - Brown F Sand, some M Sand, little C Sand, tr gravel wet

24-28 @1039 PID 1.0 ppm

1.9/4

0.95 Brown/black F Sand, some M sand, little C Sand, wet

0.8 Black asphalt

0.9 - Brown F Sand, some M Sand, little C Sand, tr gravel wet

DEC Eastfarmingdale 7/01/14

P-51 cont

28-32 @ 1051 PID 13.8 ppm

2.1/4

1.1 Brown F sand, little M sand, tr C sand, tr gravel wet

0.5 Black clay, little F sand, tr M sand, wet

0.5 Tan F sand, some M sand, some C sand, wet

P-52

0-4 @ 1121 PID 0.4 ppm

2/4

1.2 Brown F sand, little M sand, little C sand, dry

0.2 Concrete

0.6 Brown F sand, little C sand, tr M sand, dry

4-8 @ 1126 PID 1.1 ppm

1.1/4

1.1 Brown F sand, little M sand, little C sand, dry

8-12 @ 1129 PID 1.7 ppm

1.5/4

1.5 Brown F Sand, little M, little C, tr gravel tr red brick, tr asphalt

12-16 @ 1135 PID 3.1

1.4/5

0.4 Brown F sand some M, little C sand, dry

1.0 Brown F sand, some clay, little M, little C sand wet

P-52 cont

16-20 @ 1141 PID 14.2

1.3/4

1.1 Brown F sand, some clay, some C sand, little M sand, wet

0.5 Black clay, tr F sand, tr M sand, wet

20-24 @ 1148 PID 1.7 ppm

1.7/4

0.2 Black clay, tr F sand, tr M sand, wet

1.5 Brown F sand, some M, little clay, little C sand, tr gravel wet

24-28 @ 1157 PID 3.2 ppm

1.5/4

0.4 Brown F sand, some C sand, little M sand, wet

0.4 Concrete

0.6 - Brown F sand, some M, some C sand, tr gravel wet

28-32 @ 1207 PID 1.4 ppm

1.3/4

1.3 Tan/grey Brown F sand, some M sand, little C sand tr gravel, 0.05' band of black clay @ 0.1' & 1.1'

DEC-Eastfarmingdale 7/01/14

P-54

0-4 @ 1335 PID 2.3

1.9/4

1.3 Brown F Sand, little M, little C, tr gravel, dry

0.5 Red brick

0.1 ~~Tan F Sand~~ Powdered cement

4-8 @ 1339 PID 1.1

2.8/4

0.1 Red brick

0.1 Concrete

2.4 Brown F Sand, little M Sand, little C Sand, tr concrete, tr asphalt, tr red brick, dry

0.2 cement.

8-12 @ 1345 PID 0.9

2.2/4'

1.1 Brown F Sand, little M, little C sand, tr gravel tr cement

0.6 cement

0.5 Brown F Sand, some C Sand, little M Sand, dry

12-16 @ 1351 PID 1.0 ppm

2.6/4'

1.9 - Brown F sand, little M, little C sand, tr gravel, tr red brick, tr cement, dry

0.7 Brown F Sand, little M, little C, tr gravel, wet

7 of 9 - Star Trek 07 JPL

P-54 cont

16-20 @ 1357 PID 0.5

2.6/4

1.3 Brown F Sand, some C Sand, little M Sand, tr gravel, tr red brick, moist

0.8 Brown F sand, little M sand, little C Sand, little clay tr gravel, wet

0.5 Black clay, some F sand, little M Sand, wet

20-24 @ 1404 PID 2.5 ppm

1.7/4

1.2 Brown/black clay, tr f sand, tr M Sand

0.5 ~~Tan~~ gray clay, M+F Sand, little C Sand, tr gravel

24-28 @ 1414 PID 1.8

2/4

0.3 Black clay, some F Sand, little M Sand, tr C Sand, wet Grey

1.7 ~~Tan~~ Grey Brown F+M sand, little C Sand, tr gravel, wet

28-32 @ 1426 PID 1.7

1.7/4

1.7 Grey F+M Sand, little C Sand, tr gravel wet

8 of 9 08 JPL

DEC-Eastfarmingdale 7/01/14

CAMP

Upwind:

TWA 0.4 ug/m³, 0.0ppm

Downwind:

TWA 6.2 ug/m³ 0.0 ppm

DEC-Eastfarmingdale 7/03/14

Start: 0530 on: 0700 off End:

Purpose:

Equip: DRS, PID #96, see work order

on site: JPL (GEO) AD/DW/BV (CDI)

Weather: ~~[illegible]~~ ↑80s, Partly cloudy, humid, ↓90s

notes:

- Part of Rt 109 closed by police, delayed on site time by ~ 15 min
- CDI on site ~ 0700, off ~ 1245
- CAMP set up prior to begining of work
- Borings returned to grade w/ native fill after completion

DEC-Eastfarmingdale 7/01/14

CAMP

Upwind:

TWA 0.4 ug/m³, 0.0ppm

Downwind:

TWA 6.2 ug/m³ 0.0 ppm

DEC - Eastfarmingdale 7/03/14

Start: 0530 on: 0700 off End

Purpose

Equip: 07S, PID #06, see work order

on site: JPL (GEO) AD/DW/BV (CDI)

Weather: ~~Hot~~ ↑80s, Partly cloudy, humid, ↓90's

notes:

- Part of Rt 109 closed by police, delayed on site time by ~ 15 min
- CDI on site ~ 0700, off ~ 1245
- CAMP set up prior to beginning of work
- Borings returned to grade w/ native fill after completion

DEC - Eastfarmingdale 7/03/14

P-60

0-4 @0720 PID 0.2 ppm

2.9/4

1.9 Brown F Sand, little M Sand, little C Sand, tr gravel, tr Red brick, dry

4-8 @ 0725 PID 0.3 ppm

2/4

2 Brown F Sand, some M sand, little C Sand, tr gravel, dry

8-12 @ 0729 PID 1.0 ppm

1.1/4

1.1 Brown F Sand, some Clay, little C Sand, tr M Sand, moist

12-16 @ 0735 PID 3.2 ppm

1.9

0.1 Brown F Sand, some Clay, some M, little C wet

0.2 Black Clay, tr F Sand, tr M Sand, wet

1.6 Brown F Sand, some M Sand, little clay, little C Sand, wet

16-20 @ 0742 PID 3.8 ppm

3.2/4

0.5 Black Clay, little F Sand, little M Sand, wet

1.6 Brown F Sand, some M, little C sand, tr Clay tr gravel, wet

P-60 cont

1.1 Black clay, little F Sand, tr M Sand, wet

20-24 @ 0744 PID 5.3 ppm

0.7/4

0.4 Black F Sand, little clay, little M, little C Sand, wet

0.3 Brown F-M Sand, little clay, little C Sand wet

24-28 @ 0759 PID 6.8 ppm

2/4

0.2 Black Clay, little F Sand, tr M Sand, wet

0.7 Grey M Sand, some F Sand, some C Sand wet

1.1 Tan F Sand, some M Sand, tr C Sand, wet

28-32 @ 808 PID 0.5 ppm

1.9/4

1.9 Tan F Sand, some M Sand, little C Sand, tr gravel, wet

P-61

2-4 @ 0839 PID 3.9 ppm

2/4

1.1 Brown F Sand, little M, little C Sand, tr gravel dry

0.2 Red brick

0.7 Brown F Sand, little M Sand, little C Sand, dry Tr gravel

DEC-Eastfarmingdale 7/03/14

P-61 cont

4-8 @ 0814 PID 0.8

1.1/4

1.1 Brown F sand, little M sand, little C sand, tr C sand, dry.

8-12 @ 0852 PID 1.1ppm

1.5/4

0.6 - Brown F sand, little M sand, little C sand, tr Red brick, ~~most~~ dry

0.9 - Brown F sand some M sand, little C sand, tr gravel, wet.

12-16 0859 PID 4.2ppm

2.2/4

0.7 Brown F sand, little M sand, little C sand moist

0.5 Brown F sand, some C sand, little clay, little M sand tr gravel, wet

0.3 Black clay, tr F sand wet

0.8 Brown F sand, little M sand, little C sand, tr gravel, wet

16-20 @ 0907 PID 0.7ppm

1.3/4

1.3 - Brown F sand, some M sand, little C sand, tr gravel, tr asphalt, wet

~~20-24~~ P-61 cont

20-24 @ 0914 PID 4.1ppm

1.1/4

0.2 Black F sand, some M sand, some C sand wet

0.1 Black clay, tr F sand, wet

0.8 Brown F sand, some M sand, some C sand, tr gravel wet

24-28 @ 0941 PID 9.3ppm

2.9/4

0.7 Brown F sand, some M sand, little C sand, tr gravel wet

0.2 Black clay tr F sand, wet

28-32 @ 0949 PID 8.2 ppm

2.3/4

1.7 brown/black F sand, some M sand, little C sand tr gravel, wet

0.4 Black clay, tr F sand, wet

0.2 Tan F+M sand, little C sand, wet

P-62

0-4 @ 1027 PID 0.7

1.8/4

0.2 Brown F+M sand, little C sand, most

0.2 Concrete concrete

1.4 Brown F sand, little M sand, little C sand, tr cement tr Red brick, dry

DEC Eastfarmingdale 7/03/14

B-62 cont

4-8 @ 1032 PID 1.2 ppm

3.8/4

2.5 Brown F Sand, some c sand, little M Sand, tr gravel, tr concrete, tr redbrick, tr asphalt, dry

0.7 - Cement Concrete

0.6 Brown F Sand, little M sand, little C sand dry

8-12 @ 1036 PID 1.1

3.1/4

0.1 Brown F sand, little M Sand, tr C sand

1.8 - Concrete

0.6 Black Clay

0.6 Brown F Sand, some M, little C, tr gravel, dry

12-16 @ 1040 PID 0.9

2.5

0.1 Concrete

2.1 Brown F Sand, some M, little C Sand, tr gravel, tr concrete, tr Redbrick, dry

0.3 Brown F+M Sand, little C Sand, tr gravel moist

16-20 @ 1045 PID 0.3 ppm

1.2/4

0.4 Brown F sand, little M sand, tr C sand, dry

0.8 Brown F Sand, some M Sand, little C Sand, tr gravel, wet

B-62 cont

20-24 @ 1054 PID /

no recovery, Bruce says it was too soft

24-28 @ 1103 PID 13.1

2.1/4

0.7 Brown/Grey F Sand, some M Sand, little C Sand, wet

1.4 Black Clay, tr F Sand, moist

28-32 @ 1112 PID 9.8 ppm

2.5/4

1.2 Black Clay, tr F Sand, wet

0.7 Brown F Sand, some clay, little M Sand, little C Sand, tr gravel, wet

0.6 ~~Brown~~/Grey F Sand, some M Sand, little C Sand tr gravel, wet

B-70

0-4 @ 1147 PID 1.0 ppm

2.4/4

2.4 Brown F Sand, some C Sand, little M Sand tr gravel, dry.

4-8 @ 1152 PID 0.6 ppm

1.8/4

1.8 Brown F Sand, some M, some C Sand, tr gravel, tr asphalt, dry

8-12 @ 1156 PID

3.2/4

DEC-Eastfarmingdale 07/03/14

P-7o cont

2.4 - Brown F Sand Some m sand, some C sand, tr gravel, dry

1.1 Tan F Sand, Some M Sand, little C Sand, tr gravel, moist

12-16 @ 1159 PID 0.9 ppm

2.8

0.6 Brown F Sand, Some M, little C Sand tr gravel ~~wet~~ dry

2.2 Tan F Sand, Some M Sand, little, tr gravel, moist

16-20 @ 1204 PID 0.4 ppm

3.1/4

1.2 Brown F Sand, Some M Sand, little C Sand tr gravel, moist

1.9 Tan F Sand, Some M, little C, tr gravel moist

20-24 @ 1212 PID 0.2 ppm

2.3/4

2.3 Tan F Sand, little M Sand, little C Sand, tr gravel, wet.

24-28 @ 1221 PID

1.9/4

1.9 Tan F Sand, Some M Sand, little C Sand, tr gravel

8 of 9 17 JPL

P-7o cont

28-32 @ 1228 PID 0.7 ppm

1.7/4

1.7 Tan F Sand, little M Sand, little C Sand, wet

CAMP

Upwind

TWA 0.1 ug/m³ 0.0 ppm

Downwind

TWA 7.7 ug/m³ 0.0 ppm

9 of 9 18 JPL

DEC - East farmingdale 7/07/14

Start: 0530 on: 0630 off End

Purpose: Advance Soil borings

Equip: 07S, PID #06, CAMP equip

on site: JPL (Geo) BV/AD (CDI)

weather: ↑80's, Sunny, MoSquitoes

notes

- CDI (BV) on site @ 0700
- AD arrived on site w/ JPL
- CAMP set up prior to boring
- ~~Initially labeled P-70 & P-71 as~~ P-71 & P-72 respectivly, I have fixed this in my notes/labels/chains, but couldn't edit the photos, so they reflect this error. The actual P-71's & P-72's have a ✱ on them (only for photos) to denote which are real & which are misslabed (only in photograph).
- ~~DEC BC on site @~~
- originall number was correct, location 71, 72, 73, 74 & 75 were completed. All Samples were double checked for labling. photos are are messed up numbering wise though.
- Currier - met w/ @ main office

P-~~71~~ 72

0-4 @ 0723 PID 0.4 ppm

1.7/4

1.7 Brown F Sand, little M Sand, tr C Sand, tr gravel, dry

4-8 @ 0727 PID 0.6 ppm

2.5/4

1.8 - Brown F Sand, little M Sand, tr C Sand, tr gravel, dry

0.2 light Brown F Sand, tr M Sand, moist

0.6 - Brown F Sand, little M Sand, tr C Sand, tr gravel, tr asphalt, moist

0.2 - Concrete

8-12 @ 0731 PID 0.5 ppm

3.1/4

0.4 Brown F Sand, little M Sand, tr C Sand, tr gravel, dry

0.1 grey F Sand, Some M Sand, little Concrete moist

0.8 brown/black F Sand, Some clay, little M Sand tr C Sand, tr gravel, moist, odor

12-16 @ 0736 PID 0.4 ppm

0.9/4

0.3 - Brown F Sand, little M Sand, tr C Sand, tr gravel, wet

DEC-Eastfarmingdale 7/07/14

P-71 Cont

0.2 Brown F Sand, tr M Sand, tr C Sand, tr gravel, dry

0.4 Brown F Sand, some M Sand, tr C Sand tr gravel, wet

16-20 @ 0740 PID 2.1 ppm

2/4

2 Black Clay, tr F Sand, tr M Sand, wet

20-24 @ 0748 PID 0.3 ppm

1.1/4

0.7 Grey F Sand, some M Sand, tr C Sand wet

0.4 Tan F Sand, some M Sand, tr C Sand, tr gravel, wet

24-28 @ 0758 PID 0.2 ppm

1.7/4

1.7 Tan F Sand, little M Sand, tr C Sand, tr gravel wet

28-32 @ 0811 PID 0.1 ppm

1.5/4

1.4 Tan F Sand, little M Sand, tr C Sand, wet

0.1 Grey F Sand, little M Sand, tr C Sand, wet

P-72

0-4 @ 0842 PID 0.8

2.4

0.6 Brown F Sand, little M Sand, tr C Sand dry

0.7 Concrete

1.1 Brown F Sand, little M Sand, tr C Sand, tr gravel, dry

4-8 @ 0846 PID 0.4

2.1/4

0.6 Brown F Sand, little M Sand, tr C Sand, tr Concrete, dry

1.5 Brown F Sand little M Sand, tr C Sand, tr gravel dry

8-12 @ 0849 PID 0.3 ppm

0.7

0.2 Brown F Sand, little M Sand, tr C Sand moist

0.5 Brown F Sand, little M Sand, tr C Sand tr gravel, dry

12-16 @ 0853 PID 0.4

2.4/4

2.4 Brown/black clay, some F Sand, tr M Sand, tr C Sand, wet

DEC - Eastfarmingdale 7/07/14

P-72 cont.

16-20 @ 0859 PID 0.3 ppm

2.1/4

2.1 Brown F Sand, some M Sand, little Clay, tr C sand, wet

20-24 @ 0908 PID 0.3 ppm

0.9/4

0.4 Black/Grey F sand, little M Sand, tr C Sand, wet

0.3 Brown F sand, little M Sand, tr C Sand wet

0.2 Black Clay wet

24-28 @ 0919 PID 0.4 ppm

?/4 - low recovery, bagged directly from sampler - Black F Sand, little M Sand, tr C Sand, wet

28-32 @ 0930 PID 1.2 ppm

0.7/4

0.7 Black/Grey F sand, Some M Sand, little C Sand wet

P-73

0-4 @ 0958 PID 0.4 ppm

2/4

2 Brown F Sand, little M Sand, tr C Sand, tr gravel, dry

P-73 cont

4-8 @ 1005 PID 0.2 ppm

2.2/4

2.2 Brown F Sand, little M Sand, little C Sand, tr asphalt, tr red brick, dry

8-12 @ 1009 PID 0.3 ppm

1.2/4

1.0 Brown F Sand, little M Sand, tr C Sand, moist

0.2 light brown F Sand, little M Sand, little C Sand moist

12-16 @ 1014 PID 1.5 ppm

2.4/4

2 Brown F Sand, Some M Sand, little C Sand, tr gravel, wet

0.4 Black Clay

16-20 @ 1020 PID 0.3 ppm

0.8/4

0.8 Brown/black F Sand, little M Sand, tr C Sand, wet

20-24 @ 1029 PID

1.5/4

1.3 Brown F Sand, little M Sand, tr C Sand wet

0.1 black F Sand little M Sand, tr C Sand wet

0.1 Brown F Sand, little M Sand, tr C Sand, wet.

DEC - Eastfarmingdale 7/07/14

P-72 cont

24-28 @ 1039 PID 0.6 ppm

1.2/4

1.2 brown/Grey F Sand, little M sand, tr C sand tr gravel, wet

28-32 @ 1051 PID 3.9 ppm

2.1/4

1.5 Black clay, tr F sand, tr M sand, wet

0.6 Grey F Sand, little M sand, tr C Sand, tr gravel wet

P-73

0-4 @ 1131 PID 0.4 ppm

1.9/4

1.9 Brown F Sand, tr M sand, tr C sand, tr concrete, dry

4-8 @ 1134 PID 0.2 ppm

2/4

2 Brown F Sand, little M Sand, tr C Sand, tr Concrete, tr asphalt, dry

8-12 @ 1138 PID 0.4 ppm

2.2/4

2.2 Brown F Sand, little M Sand, tr C Sand dry

P-73 Cont

12-16 @ 1144 PID 0.6

2.5/4

1.5 Brown F Sand, little M Sand, tr C Sand, tr gravel dry

0.6 Tan/brown F Sand, little M Sand, tr C Sand wet

0.2 black clay

0.2 Grey/brown F Sand, some M sand, tr C Sand wet

16-20 @ 1150 PID 1.1 ppm

3.9/4

0.7 Brown F Sand, little M Sand, tr C Sand, dry

1.1 Brown F Sand, some M sand, tr C Sand, wet

1.1 Black clay, some F Sand, tr M sand, tr C Sand wet, odor

1.0 Brown F Sand, little M Sand, tr C Sand, tr gravel wet

20-24 @ 1158 PID 0.2

0.4/4

0.4 Brown F Sand, little M Sand, tr C Sand, tr gravel, wet

DEC-East farmingdale 7/07/14

P-74 cont

24-28 @ — PID —

no recovery

28-32 @ 1220 PID

2.6/4

2.3 - Black Clay, trF Sand, trM sand

wet

0.3 Grey/tan F sand, some M sand, tr C sand, tr gravel

wet

P-75

0-4 @ 1249 PID 1.1 ppm

2.3/4

1.1 Brown F sand, little M sand, tr C Sand

tr concrete, dry

0.4 Concrete

0.9 Brown F Sand, little M sand, tr C sand,

tr asphalt, tr redbrick, dry

4-8 @ 1255 PID 0.7

1.5/4

0.3 Brown F sand, little M sand, tr C sand, tr

concrete dry

0.4 Concret

0.8 Brown/[illegible] F sand, little M sand, tr C sand

tr asphalt, tr red brick, dry

[illegible]9 of 11 27 JPL

P-75 cont

8-12 @ 1301 PID 1.0 ppm

2.4/4

2.4 Brown/black F Sand, little M sand, tr C Sand

tr asphalt, tr concrete dry

12-16 @ 1306 PID 1.5 ppm

2.5/4

2+ Dark brown F Sand, little M Sand, tr C

sand, tr concrete, tr asphalt dry

0.6 - Tan/Grey F Sand, some M sand, tr C Sand

wet

16-20 @ 1313 PID 0.7 ppm

2.1/4

0.8 Brown F sand, little M Sand, tr C sand, tr

concrete, dry

1.3 Grey F Sand, some M sand, tr C Sand, tr

gravel, wet

20-24 @ 1321 PID 0.8 ppm

1.6/4

all concrete

0.5 Dark brown F Sand, little M Sand, tr C Sand

tr red brick, tr asphalt dry

1.0 - Grey F [illegible], some M Sand, tr C

Sand, wet

10 of 11 28 JPL

DEC-East farm rig date 7/07/14

P-75 cont'd

24-28 @ 1331 PID 0.7 ppm

1.5/4

1.5 Grey/black F sand, some M sand, tr C sand, tr gravel, wet

28-32 @ 1343 PID 1.0

1.5/4

1.2 Grey/black F sand, some M sand, tr C sand, wet

0.3 Tan F sand, little M sand, tr C sand wet

CAMP

Upwind

TWA 0.3 ug/m³, 0.0 ppm

Down wind

TWA 11.4 ug/m³, 0.0 ppm

DEC-Eastfarmingdale 7/07/14

P-75 Cont

24-28 @ 1331 PID 0.7 ppm

1.5/4

1.5 Grey/blk FSand, some M Sand, tr C Sand, tr gravel, wet

28-32 @ 1343 PID 1.0

1.5/4

1.2 Grey/blk FSand, some M Sand, tr C Sand, wet

0.3 Tan FSand, little M Sand, tr C Sand wet

CAMP

Upwind

TWA 0.3 ug/m³, 0.0ppm

Down wind

TWA 11.4 ug/m³, 0.0ppm

DEC-Eastfarmingdale 7/08/14

Start: 0530 on: 0630 off: End

Purpose Advance soil borings in PCB zone

Equip OTS PID #ob, CAMP Equip

On site JPL (Geo), BV/AD (CDI)

Weather ↑80's, Sunny,

notes

- PCP left @ main office,
  - no Photos of todays samples
- CDI on site @ ~655
- BC (DEC) on site @ ~0815
- Hit rejection on P-55 9 times, AS discussed w/ BC (DEC) P-55 will no longer be attempted
- BC added 7 new points P-80→82 & P-90→93 & requested P-26 be done (if able)
- fin. sted points P-80, 81, 82 & started P-90 (stopped @ 16' bgs

DEC-East farmingdale 7/08/14

P-55 (second attempt)

0-4 @ 0716 PID 0.3

2.1/4 Radius from original poin (ROP) ~3'

1.4 Brown F Sand, little M sand, tr C Sand, tr concrete, dry

0.1 Red brick

0.3 concrete

0.2 Brown F Sand, little M Sand, tr C Sand, tr concret tr Red brick, dry

0.1 Red brick

4-8 @ ____ PID

Hit rejection 9 times, new ROP ~ 10'

AS discussed w/ BC (DEC) P-55 will not be attempted again

P-56

0-4 @ 0844 PID 0.8

2.1/4

2.1 Brown F Sand, little M Sand, tr C Sand, tr asphalt, tr concrete, dry

4-8 @ 0846 PID 0.6

2.2

0.8 Dark brown F sand, little M sand, tr C Sand, tr concrete dry

1.4 light Brown F sand, little C sand, tr asphalt, dry

P-56 cont

8-12 @ 0850 PID 1.9 ppm

2.9/4

1.8 - Brown F Sand, little M sand, tr C Sand, dry

1.1 Brown/Tan F Sand, little M sand, tr C Sand moist

12-16 @ 0856 PID 1.0

3.7

0.8 Brown F Sand, little M Sand, tr C Sand, moist

1.0 Tan/Dark brown F Sand, little M Sand, little M Sand tr C sand, moist

1.5 Tan F Sand, little M sand, tr C Sand moist

0.9 Tan M Sand, some F Sand, little C Sand, tr gravel, wet

16-20 @ 0903 PID 0.8 ppm

3.9/4

1.3 Brown F Sand, tr M Sand, tr C Sand dry moist

2.6 brown/Tan M Sand, some F Sand, tr C Sand wet

20-24 @ 0911 PID 0.7 ppm

2.1/4

1.6 Tan F Sand, some M sand, tr C Sand, wet

0.6 Tan M Sand, some C Sand, little F sand, tr gravel wet

DEC-Eastfarmingdale 7/08/14

B-80 cont

24-28 @0922 PID 0.6 ppm

1.9/4

0.9 Tan M sand, Some F sand, little C sand wet

1.0 Tan F Sand, little M sand, little C sand wet

28-32 @0935 PID 0.7 ppm

0.7/4

0.2 Tan F sand, Some M sand, little C sand, tr gravel, wet

0.4 Tan F Sand, little M sand, tr C sand, wet

0.1 Tan F sand, little M sand, tr C sand, wet

P-81

0-4 @ 1009 PID 3.1 ppm

1.7/4

1.7 Brown F sand, little M sand, tr C sand, tr gravel, tr Red brick, tr cement, dry

4-8 @ 1013 PID 3.2 ppm

1.2/4

0.2 Brown F Sand, tr M Sand, tr C Sand, dry

0.7 Tan F Sand, little M Sand, tr C sand, dry

0.3 Brown F Sand, tr M Sand, tr C Sand, dry

P-81 cont

8-12 @ 1017 PID 4.3 ppm

1.7/4

1.4 Brown F sand, little M sand, tr C sand, tr gravel dry

0.1 band black clay

0.2 Brown F Sand, little M Sand, tr C Sand, moist

12-16 @ 1021 PID 5.3 ppm

2.5

2.4 Brown F Sand, little M Sand, tr C Sand mo. st

0.5 Black Clay, wet

1.6 Brown F Sand little M Sand, little C sand, tr gravel, wet

16-20 @ 1028 PID 3.4 ppm

2.1/4

0.3 Brown F sand, little M, tr C sand, dry

0.9 Black clay, some F Sand, tr M Sand, tr C sand mo. st

0.9 Brown/Grey F Sand, Some M sand, little C Sand moist

20-24 @ —

no recovery, too soft

DEC-Eastfarmingdale 7/28/14

P-81 cont

24-28 @ 1045 PID 11.5 ppm

0.4/4

0.4 Black clay, little F sand, tr M sand wet

28-32 @ 1057 PID 2.5 ppm

1.4

0.2 Grey F sand, little M sand, wet

1.2 Tan F sand, little M sand, tr C sand wet

P-82

0-4 @ 1134 PID 2.5 ppm

2.5/4

2.1 Brown F Sand, little M Sand, tr C Sand, tr concrete, tr Red brick, dry

0.4 ~~Black~~ Dark brown F Sand, little asphalt, little M Sand, tr C Sand, dry

4-8 @ 1149 PID 3.0 ppm

3/4

0.5 Dark brown F Sand, little M Sand, little C Sand, tr gravel, tr red brick, dry

2.5 Brown F Sand, little M Sand, tr C sand, tr gravel, tr red brick, dry

P-82 cont

8-12 @ 1154 PID 2.5 ppm

2.5/4

0.2 Brown F Sand, little M Sand, tr C Sand, dry

0.2 Red brick

1.6 Brown F Sand, little M Sand, little C sand, tr gravel, dry

0.5 Black F Sand, little M Sand, tr C Sand, tr asphalt, moist

12-16 @ 1201 PID 4.5 ppm

3.3

2.4 Brown F Sand, little M sand, little C Sand, tr gravel, tr red brick, moist

0.9 Brown/Grey F Sand, little M Sand, tr C Sand wet

16-20 @ 1207 PID 2.1 ppm

3.5/4

1.1 Brown F Sand, little M Sand, tr C Sand, dry

2.4 Brown/Grey F Sand, little M Sand, little C Sand, tr gravel, wet

20-24 @ 1217 PID 4.6 ppm

1.2/4

1.2 Dark grey F Sand, some little M Sand, little C Sand, tr gravel, wet

DEC - Eastfarmingdale 7/08/14

P-82 cont

24-28 @ 1228 PID 2.3 ppm

1.9/4

0.9 Dark Grey F sand, little M sand, little C sand, tr gravel, wet

1.0 Grey F sand, little M sand, tr C sand, tr gravel, wet

28-32 @ 1240 PID 3.5 ppm

2.4/4

2.1 Grey F sand, little M sand, tr C sand, tr gravel, wet

0.3 Black Clay

0.2 Grey/Tan F sand, little M sand, tr C sand wet

P-90

0-4 @ 1310 PID 5.5

2.4

1.2 Brown F sand, little M sand, tr C sand, tr concrete dry

0.5 concrete

0.4 Brown F sand, little M sand, tr C sand, tr concrete dry

0.3 concrete

P-90 cont

4-8 @ 1313 PID 4.3 ppm

1.9/4

0.2 concrete

1.7 Brown F sand, little M sand, tr concrete tr asphalt, dry

8-12 @ 1318 PID 5.1 ppm

3.2

2.6 Brown F sand, little M sand, tr C sand, tr concrete, tr Red brick, tr wood (@ 11.7'), dry

0.6 Tan F sand, tr M sand, tr C sand, dry

12-16 @ 1328 PID 2.5

3.6/4

1.1 Brown F sand, little M sand, tr C sand, tr asphalt, dry

2.0 Tan F sand, tr M sand, tr C sand, dry

0.5 Tan F sand, little M sand, little C sand, moist

CAMP

Upwind

TWA 0.3 ug/m³ 0.0 ppm

Downwind

TWA 26.4 ug/m³ 0.0 ppm

DEC - East farming dale 07/09/14

Start 0580 on 0630 off 1315 End 1430

Purpose complete soil borings in PCB area

Equip: 07S, PID #06

on site: JPL (Geo) BC/AD (CDI)

weather:

notes

- AD arrived & left w/ JPL
- CDI on site @ 0700
- Completed P-90, 91, 92, 93. Field blank collected (for 8082A only). MS/MSD collected @ P-91 (12-16)
- PCB area complete
- Attempted to do P-26, but location is on top of a hill that would require CDI to bring a different rig.

P-90 (Day 2)

16-20 @ 0727 PID 1.0 ppm

1.8/4

0.2 Grey F Sand, Some M Sand, tr C Sand wet

1.6 Tan F Sand, Little M Sand, tr C Sand, wet

20-24 @ 0737 PID 1.1 ppm

2.4/4

0.1 Grey F Sand, Little M Sand, tr C Sand, wet

1.1 Tan F Sand, Little M Sand, tr C Sand, wet

0.5 Tan F Sand, tr M Sand, tr C Sand, wet

0.3 Tan F Sand, Little M Sand, tr C Sand, wet

24-28 @ 0748 PID 1.8 ppm

2.1/4

0.1 Grey F Sand, Little M Sand, tr C Sand, wet

2 Tan F Sand, Little M Sand, tr C Sand, wet

28-32 @ 0801 PID 1.2 ppm

2/4

2 Tan F Sand, Little M Sand, tr C Sand, tr gravel, wet

P-91

0-4 @ 0814 PID 0.8

2/4

0.8 Brown F Sand, Little M Sand, tr C Sand, dry

0.1 concrete

0.3 Brown F Sand, Little M Sand, tr C Sand, dry

DEC-Eastfarmingdale 7/09/14

P-91 cont

0.8 Dark brown F Sand, little M sand, tr C Sand, tr asphalt, dry

4-8 @ 0818 PID 0.7 ppm

1.8/4

0.1 Dark brown F sand, little M sand, tr C Sand, dry

1.7 Brown F Sand, tr M Sand, tr C Sand, dry

8-12 @ 822 PID 1.1 ppm

2.6/4

0.3 Brown F Sand, tr M Sand, tr C Sand, dry

0.4 Dark brown F Sand, little M Sand, tr C Sand, dry

0.3 Brown F Sand, little M Sand, tr C Sand

0.7 Black/brown F Sand, tr M Sand, tr C Sand, tr gravel moist

0.6 Brown F Sand, tr M, tr C, tr gravel, moist

0.3 Tan F Sand, little M Sand, tr C Sand, tr gravel moist

12-16 @ 0828 PID 1.4

3.5

1.4 Dark brown F Sand, little M Sand, tr C Sand tr gravel, moist

0.7 Tan F Sand, tr M Sand, tr C Sand, moist

1.4 Tan F Sand, little M Sand, tr C Sand, tr gravel wet

P-91 cont

16-20 @ 0832 PID 0.7 ppm

3.3/4

0.7 Brown F Sand, little M Sand, tr C Sand, tr gravel, dry

1.0 Tan F Sand, little M Sand, tr C Sand, wet

0.9 Light Grey F Sand, little M Sand, tr C Sand wet

0.7 Tan F Sand, tr M Sand, tr C Sand, wet

20-24 @ 0840 PID 1.8 ppm

1.5/4

1.5 Tan F Sand, little M Sand, tr C Sand, wet

24-28 @ 0850 PID 1.6 ppm

2.3/4

1.1 Tan F Sand, some M Sand, little C Sand, t

1.2 Tan F Sand, tr M Sand, tr C Sand, wet

28-32 @ 0902 PID 1.7 ppm

1.5/4

0.5 Tan F Sand, little M Sand, tr C Sand, wet

0.3 Tan M Sand, some F Sand, little C Sand, wet

0.7 Tan F Sand, little M Sand, tr C Sand, wet

P-92

0-4 @ 0940 PID 0.9 ppm

3.5

0.9 Brown F Sand, tr M Sand, tr C Sand, tr gravel dry

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P-92 cont

0.7 Red brick

1 Brown F Sand, little Red brick, trM sand, trc Sand, dry

0.4 Red brick

0.5 Brown F Sand, trM Sand, trC sand, tr Red brick, dry

4-8 @ 0944 PID 2.1

2/4

0.1 Brown F Sand, trM sand, trC Sand, dry

0.3 Red brick

1.6 Brown F Sand, trM Sand, trC Sand, tr gravel dry

8-12 @ 0949 PID

2.5/4

1.3 Brown F Sand, little M Sand, trC Sand, tr Red brick

0.1 Dark brown F sand, trM sand

0.7 Brown F sand, little M sand, trC Sand dry

0.4 Dark brown F Sand, trM Sand, trC Sand, moist

12-16 @ 0954 PID 4.1

1.6/4

1 Brown F Sand, little M Sand, little Red brick, trC Sand dry

0.2 Brown-Tan F Sand little M Sand, trC Sand wet-moist

P-92 cont

2.4 Grey-Black F Sand, little M Sand, trC Sand, wet

16-20 @ 1001 PID 5.8 ppm

3.2/4

1 Brown F Sand, little M Sand, little Red brick trC Sand, dry

1.4 Brown F Sand, some clay, little M Sand, trC Sand wet

0.8 Black clay trF Sand, trM Sand, Piece of wood

20-24 @ 1009 PID 3.1 ppm

0.9/4

0.9 Grey F-M Sand, little C Sand, tr gravel, wet

24-28 @ 1020 PID 4.2

1.4/4

1.4 Tan F Sand, little M Sand, trC Sand, tr gravel, wet

28-32 @ 1032 PID

1.9/4

0.5 Tan F Sand, little M Sand, trC Sand, wet

0.5 Tan F Sand, some M Sand, little C Sand, wet

0.4 Tan F Sand, trM Sand wet

0.5 Tan F Sand, little M Sand, trC Sand, wet

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P-93

0-4 @ 1111 PID 3.4 ppm

1.9/4

1.5 Brown F sand, tr M sand, tr C sand, tr red brick, dry

0.4 concrete

4-8 @ 1116 PID 2.7 ppm

2.1/4

2.1 Brown F sand, little M sand, little concrete tr C sand, tr gravel, dry

8-12 @ 1121 PID 3.0 ppm

1.4/4

0.5 Brown F sand, little M sand, tr C sand, dry

0.4 light brown F sand, little M sand, tr C sand dry

0.5 light brown F sand, little M sand, tr C sand tr gravel, moist

12-16 @ 1126 PID 2.1

2/4

1.3 Brown F sand, little M sand, tr C sand dry

0.1 asphalt

0.2 Brown F sand, little clay, little M sand, tr C sand moist

0.4 Grey F sand, little M sand, tr C sand, wet

P-93 cont

16-20 @ 1132 PID 1.0

3.7/4

1.4 Brown F sand, little M sand, tr C sand, tr gravel dry

0.3 Grey ~~to Black~~ F sand, little M sand, tr C sand wet

1.6 Black F sand, little M sand, tr C sand, wet

20-24 @ 1143 PID 2.4 ppm

1.9/2

1.9 Grey to ~~Black~~ dark Grey F sand, little M sand, tr C sand, wet

24-28 @ 1152 PID 1.8 ppm

0.7/4

0.7 Black/Grey F sand, little M sand, tr C sand, piece of wood, wet

28-32 @ 1203 PID 0.8

2.2/4

2.1 Grey F sand, little M sand, tr C sand, tr gravel wet

0.1 Gray/Tan F sand, little M sand, tr C sand, wet

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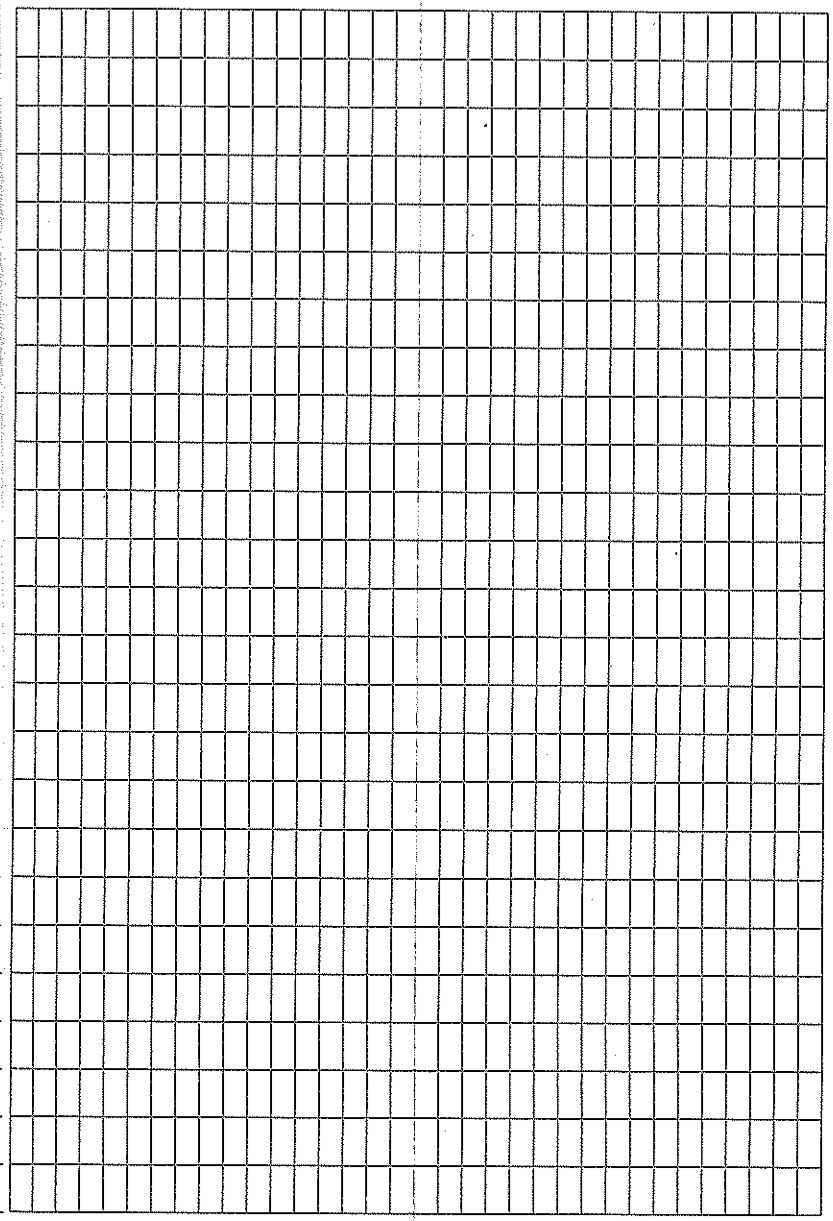
CAMP

Upwind

TWA 0.3 ug/m³ 0.0ppm

Downwind

TWA 0.0 ug/m³ 0.0ppm



Groundwater Sampling Sheet: Stabilization Purge Method

Site: DEC-Eastfoamingdale

Date: 7/10/14

Techs: JR/BC

Start Time: 0630

End Time:

Equipment: 07S, WP-#2, 2000' Generator WLM-Geo Tech 200', YSI PE/S Turbidimeter

WELL ID	Well Size (inches)	Total Well Depth (ft)	Depth to Water (ft)	Length of Column (ft)	One Standing Water Well Volume	Total Gallons Purged	Time ~~Sampled~~	DO (mg/L)	Temp. °C	pH	ORP	Specific Conductance	~~Notes~~ Turbidity (NTU)
MW-1	0.75	52.74'	16.13	36.61	1.0	~3.5	0815	3.47	15.34	5.57	164.6	0.275	9.03'
						~7	0830	3.24	15.36	5.94	144.5	0.274	3.49
						~10.5	0845	3.19	15.34	5.86	151.2	0.274	3.14
MW-1A	1.5	29.16	13.12	16.04	1.6	4	0915	0.90	16.03	6.65	-36.6	0.340	33.0
						8	0930	0.78	16.00	6.67	-42.1	0.337	18.6
						11.5	0945	0.93	15.97	6.62	-43.8	0337	14.8
						15	1000	0.97	15.82	6.67	-46.5	0.338	18.6
						18	1015	0.93	15.99	6.66	-47.0	0335	13.6
						22	1030	0.89	15.93	6.63	-44.8	0.331	12.3
						25	1045	0.88	15.92	6.65	-46.7	0.334	9.62
						28	1100	0.89	15.89	6.64	-45.1	0.331	8.48
						32	1115	0.85	16.03	6.62	-44.4	0.334	8.04
						35	1130	0.90	16.06	6.67	-46.1	0.334	8.75
						38	1145	0.88	15.95	6.65	-45.3	0.333	5.91
						42	1200	0.86	16.07	6.64	-44.6	0333	5.55
						45	1215	0.87	16.07	6.65	-46.1	0.334	7.85
						48	1230	0.85	16.03	6.65	-44.7	0333	7.60
						52	1245	0.86	16.01	6.62	-43.2	0.332	5.74

Well Size (inches)		0.5	0.75	1	1.5	2	4	6	8
Multiplier based on 4 well volumes		0.06	0.11	0.18	0.42	0.7	2.65	6	10.4
Multiplier based on 1 well volume		0.015	0.0275	0.045	0.105	0.175	0.663	1.5	2.6

Purge a minimum of 1 well volume & then wait for stabilization

Tolerance for stability:

Specific Conductance (3%)
temperature (3%)
pH +/- 0.1 units

Record DO & ORP but do not use for stability

Guidelines for Field Screening Values:

pH = 5 - 9

Temperature = 10 - 19 (except for VERY warm days - please try to keep purge container cool)

DO = less than 12 (unless very close to a sparge well)

MW-1 - Started a little redish, quickly Cleared

MW-1A - Started black, mostly cleared up by end still a little murky

If readings are not in this range please try to recalibrate (except for temp, which cannot be calibrated). If they remain out of range, please do not write the value on the sheet - it is an equipment error.

PLEASE CONTACT THE PMs IF THERE IS A PROBLEM. THIS DATA IS IMPORTANT AND INCORRECT DATA IS WORSE THAN NO DATA. WE REALLY APPRECIATE YOUR WORK TO KEEP E.A.R. A TOP COMPANY IN THE FIELD

Groundwater Sampling Sheet: Stabilization Purge Method

Site: DEC-Eastfarmingdale

Date: 7/10/14

Techs: JPL/BC

Start Time: 0630

End Time:

Equipment:

WELL ID	Well Size (inches)	Total Well Depth (ft)	Depth to Water (ft)	Length of Column (ft)	One Standing Water Well Volume	Total Gallons Purged	Time Sampled	DO (mg/L)	Temp. °C	pH	ORP	Specific Conductance	~~Notes~~
MW-1A	1.5	29.16	13.12	16.04	1.6	55	1300	0.85	16.01	6.65	-44.4	0.333	Turbidity (NTU) 7.44
↓						58	1315	-0.01	16.18	6.66	-45.1	0.333	6.21
MW-2	0.75	31.86	20.16	11.70	0.32	1	1345	1.03	15.02	6.73	-49.8	0.794	over range
						2	1400	0.88	14.86	6.66	-47.7	0.789	1884 AV
						4	1415	1.01	14.93	6.57	-41.2	0.790	784

Well Size (inches)		0.5	0.75	1	1.5	2	4	6	8
Multiplier based on 4 well volumes		0.06	0.11	0.18	0.42	0.7	2.65	6	10.4
Multiplier based on 1 well volume		0.015	0.0275	0.045	0.105	0.175	0.663	1.5	2.6

Purge a minimum of 1 well volume & then wait for stabilization

Tolerance for stability:

Specific Conductance (3%)
temperature (3%)
pH +/- 0.1 units

Record DO & ORP but do not use for stability

Guidelines for Field Screening Values:

pH = 5 - 9

Temperature = 10 - 19 (except for VERY warm days - please try to keep purge container cool)

DO = less than 12 (unless very close to a sparge well)

MW-2 Started brown, cleared up just a little

If readings are not in this range please try to recalibrate (except for temp, which cannot be calibrated). If they remain out of range, please do not write the value on the sheet - it is an equipment error.

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Site: DEC-East farmingdale

Groundwater Sampling Sheet: Stabilization Purge Method

Start Time: 0630

Equipment: see work order

Date: 7/11/14

End Time: 1630

Techs: JPL / BV

WELL ID	Well Size (inches)	Total Well Depth (ft)	Depth to Water (ft)	Length of Column (ft)	One Standing Water Well Volume	Total Gallons Purged	Time Sampled	DO (mg/L)	Temp. °C	pH	ORP	Specific Conductance	~~Notes~~ Turbidity (NTU)
MW-3							1240	1.38	14.13	6.57	47.8	0.333	4.35
MW-4	0.75	34.23	16.18	18.05	0.49	3	1310	1.8	16.30	6.70	2.7	0.309	1244 AV
						5	1325	1.86	15.95	6.55	15	0.309	651
						8	1340	2.05	15.87	6.55	23.5	0.303	78
						11	1355	2.02	1566	6.49	24.7	0.301	87.4
						13	1410	2.01	1553	6.36	37.0	0.300	77.6
						16	1425	2.02	16.92	6.52	22.9	0.302	82.1
						19	1445	2.01	1544	6.51	27.2	0.298	57.9
						21	1455	2.01	1553	6.43	32.8	0.297	53.9
						23	1307	2.01	15.52	6.43	34.9	0.297	42
						25	1320	2.03	15.66	6.52	26.7	0.296	38

Well Size (inches)		0.5	0.75	1	1.5	2	4	6	8
Multiplier based on 4 well volumes		0.06	0.11	0.18	0.42	0.7	2.65	6	10.4
Multiplier based on 1 well volume		0.015	0.0275	0.045	0.105	0.175	0.663	1.5	2.6

Purge a minimum of 1 well volume & then wait for stabilization

Tolerance for stability:

Specific Conductance (3%)
temperature (3%)
pH +/- 0.1 units

Record DO & ORP but do not use for stability

Guidelines for Field Screening Values:

pH = 5 - 9

Temperature = 10 - 19 (except for VERY warm days - please try to keep purge container cool)

DO = less than 12 (unless very close to a sparge well)

Work only shifted from one well to another after consulting EAR PM (IH)

If readings are not in this range please try to recalibrate (except for temp, which cannot be calibrated). If they remain out of range, please do not write the value on the sheet - it is an equipment error.

PLEASE CONTACT THE PMs IF THERE IS A PROBLEM. THIS DATA IS IMPORTANT AND INCORRECT DATA IS WORSE THAN NO DATA. WE REALLY APPRECIATE YOUR WORK TO KEEP E.A.R. A TOP COMPANY IN THE FIELD

Roux observer onsite ~1115-1145

Site: DEC - East Farmingdale

Date: 7/11/14

Techs: JPL/BV

Groundwater Sampling Sheet: Stabilization Purge Method

Start Time: 0630

End Time: 1630

Equipment: See work order

WELL ID	Well Size (inches)	Total Well Depth (ft)	Depth to Water (ft)	Length of Column (ft)	One Standing Water Well Volume	Total Gallons Purged	Time Sampled	DO (mg/L)	Temp. °C	pH	ORP	Specific Conductance	~~Notes~~ Turbidity (NTU)
MW-2	0.75	30.91	20.22	10.69	0.29	2	0800	2.38	14.28	6.49	-29	0.789	1246
						5	0815	2.11	14.19	6.50	-30.5	0.782	51
						7	0830	1.94	14.12	6.56	-33.7	0.781	43
						10	0845	2.01	13.98	6.50	-27.8	0.775	40
						13	0900	2.22	14.08	6.60	-35.3	0.775	50
						15	0915	2.61	14.17	6.56	-35.6	0.772	65.4
						18	0930	2.41	14.19	6.60	-39.2	0.772	44.1
						20	0945	2.34	14.29	6.59	-37.9	0.771	33.2
						22	1000	2.56	14.79	6.72	-40.1	0.773	27.9
						25	1015	2.54	14.95	6.65	-32.7	0.773	34.5
						27	1030	2.41	14.62	6.67	-36.9	0.772	25.3
						29.5	1045	2.40	14.66	6.63	-37.3	0.770	23
						32	1100	2.12	14.39	6.64	-37.3	0.768	24.7
						35	1115	2.24	14.43	6.57	-36.5	0.766	32.1
						39	1130	2.19	14.40	6.66	-40.1	0.770	37.9
MW-3	0.75	33.64	16.42	17.22	0.47	4	1200	1.75	13.85	6.53	48.5	0.324	42.2
						8	1215	1.69	13.79	6.37	59.4	0.324	22.9
						12	1230	1.3	14.07	6.48	54.5	0.323	14

Well Size (inches)		0.5	0.75	1	1.5	2	4	6	8
Multiplier based on 4 well volumes		0.06	0.11	0.18	0.42	0.7	2.65	6	10.4
Multiplier based on 1 well volume		0.015	0.0275	0.045	0.105	0.175	0.663	1.5	2.6

Purge a minimum of 1 well volume & then wait for stabilization

Tolerance for stability:

Specific Conductance (3%)
temperature (3%)
pH +/- 0.1 units

Record DO & ORP but do not use for stability

Guidelines for Field Screening Values:

pH = 5 - 9

Temperature = 10 - 19 (except for VERY warm days - please try to keep purge container cool)

DO = less than 12 (unless very close to a sparge well)

If readings are not in this range please try to recalibrate (except for temp, which cannot be calibrated). If they remain out of range, please do not write the value on the sheet - it is an equipment error.

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DEC-Lindenhurst #269 7/14/14

MV-15R Start @ ~0755

0-15' bg Direct push, no lithology logged

Well installed - 10' of .020" slotted screen w/ 5' riser

Collapse up to ~8' bgs

Filter pack ~5-4' bgs

Bentonite ~4-1' bgs

Grout to surface with

TWD 1522' DTW 7.46'

DEC-Eastfarmingdale 7/15/14

Start: 0630 on: 0730

Purpose: Soil sampling in CR Area

on site: JPL (Tech), BV (Fab)

Equip: 07S,

Weather

Notes

- Huge mosquito population
- Test America on site @ 1240
- Sampled CR-12, CR-10 → CR-1.
- Sampling in CR area is complete
- Tomorrow will begin on General area

DEC - Eastfarmingdale 7/15/14

CR-12

Surf @ 0825 PID 0.3

Brown F sand, little M sand, trC sand, tr gravel, moist

0-1 @ 0829 PID 0.1

Brown F sand, little M sand, trC sand, tr gravel, moist

CR-11

Sampled during installation of MW-4

CR-10

Surf @ 0834 PID 0.0

Brown F sand, little M sand, trC sand, tr gravel, moist

0-1 @ 0835 PID 0.1

Brown F sand, little M sand, trC sand, tr gravel, moist

CR-9

Surf @ 0839 PID 1.0

Brown F sand, little M sand, little C sand, tr gravel, moist

0-1 @ 0841 PID 0.3

Brown F sand, little M sand, little C sand, tr gravel, moist

CR-8

Surf @ 0846 PID 0.8

Brown F sand, little M sand, little C sand, tr gravel, moist

0-1 @ 0847 PID 0.2

CR-8 cont

Brown F sand, little M sand, little C sand, tr gravel, moist

CR-7

Surf @ 0948 PID 1.4

Brown F sand, some M sand, little C sand, tr gravel, moist

0-1 @ 0949 PID 1.7

Brown F sand, some M sand, little C sand, tr gravel, moist

CR-6

Surf @ 0952 PID 0.4

Brown F sand, little M sand, little C sand, tr gravel, moist

0-1 @ 0953 PID 0.1

Brown F sand, little M sand, little C sand, tr gravel, moist

CR-5

Surf @ 0955 PID 0.2

Brown F sand, little M sand, little C sand, tr gravel, moist

0-1 @ 0956 PID 0.1

Brown F sand, little M sand, little C sand, tr gravel, moist

CR-4

Surf @ 1001 PID 2.3

Brown F sand, some C sand, little M sand, tr gravel, moist

0-1 @ 1003 PID 1.4

DEC-Eastfarmingdale 7/15/14

CR-4 cont

Brown F sand, some C sand, little M sand, tr gravel, moist

CR-3

Surf @ 1120 PID 0.4

Brown F sand, little M sand, little C sand, tr gravel, moist

0-1 @ 1121 PID 0.9

Brown F sand, little M sand, little C sand, tr C sand, moist

~~CR-2~~

CR-2

Surf @ 1124 PID 1.0

Brown F sand, some C sand, little M sand, tr gravel, moist

0-1 @ 1125 PID 0.3

Brown F sand, some C sand, little M sand, tr gravel, moist

CR-1

Surf @ 1129 PID 0.1

Brown F sand, some C sand, little M sand, tr gravel, moist

0-1 @ 1130 PID 0.1

Brown F sand, some C sand, little M sand, tr gravel, moist

CAMP

Upwind

TWA 10 ug/m³ 0.0 ppm

Downwind

TWA 6.9 ug/m³ 0.0 ppm

DEC - Eastfarmingdale 7/16/14

Start: 0630 on: 0745 off 1345 End 1445

Purpose: Soil sampling in the general area

Equip: 075, PID #06

on site: JPL (Tech) AD (Fore)

weather 70's, raining

notes;

- Heavy rain, CAMP not set up, as discussed w/ IH
- At ~ 0825 White fog descended upon lower region of site, the area South of G-12 Site was vacated & upon asking nearby businesses learned that it was a CO_2 release from a tanker after a safety guage broke. Returned to site ~ 0850
- Second CO_2 release @ ~ 0920, same area. relocated to near the entrance.
- G-15 & G-16 were skipped due to their proximity to CO_2 release & tall surrounding features.
- 9 points samples. 7 left in G area

G-18

Surf @ 0856 PID 2.0 ppm

Brown F Sand, tr M Sand, moist

0-1 @ 0857 PID 2.4 ppm

Brown F Sand, tr M Sand, tr C Sand, moist

G-14

Surf @ 0904 PID 1.2 ppm

Brown F Sand, little M Sand, tr C Sand, moist

0-1 @ 0905 PID 0.7 ppm

Brown F Sand, little M Sand, little C Sand, tr gravel, moist

G-13

Surf @ 0911 PID 0.4 ppm

Brown F Sand, little M Sand, tr C Sand, tr gravel, moist

0-1 @ 0913 PID 0.4 ppm

Brown F Sand, little M Sand, little C Sand, tr gravel, moist

G-01

Surf @ 1041 PID 0.8 ppm

Brown F Sand, little M Sand, moist

0-1 @ 1042 PID 0.9 ppm

Brown F Sand, little M Sand, tr C Sand, tr gravel, moist

DEC - East farmingdale 7/16/11

G-02

Surf @ 1046 PID 0.1 ppm

Brown F Sand, little M Sand, tr C Sand, moist

0-1 1048 PID 0.0 ppm

Brown F Sand, little M Sand, tr C Sand, tr gravel, moist

G-03

Surf @ 1051 PID 0.0 ppm

Brown F Sand, little M Sand, tr C Sand, tr gravel, moist

0-1 @ 1052 PID 0.3 ppm

Brown F Sand, little M Sand, little C Sand, tr gravel, moist

G-04

Surf @ 1057 PID 1.1 ppm

Brown F Sand, little C Sand, tr M Sand, tr gravel, moist

0-1 @ 1056 PID 0.7 ppm

Brown F Sand, little M Sand, little C Sand, tr gravel, moist

G-05

Surf @ 1220 PID 2.0 ppm

Brown F Sand, tr M Sand, tr C Sand, moist

0-1 @ 1221 PID 1.3 ppm

Brown F Sand, little M Sand, tr C Sand, tr gravel moist

G-06

Surf @ 0632 PID 1.2 ppm

Brown F Sand, little M Sand, tr C Sand, tr gravel moist

0-1 @ 0633 PID 1.0 ppm

Brown F Sand, little M Sand, little C Sand, tr gravel moist

DEC-East farmingdale 7/17/14

Start 0630 on 0900 off 1300 End 1430

Purpose soil Sampling in the General (G) Area

on site JPL (Tom) AD (Tom)

Equip ATS, hand Augers, PID

Weather Sunny, 80's

notes

- lock on front gate would not open. After discussing w/ IH (PM), returned to office & came back w/ bolt cutters & replaced the lock w/ new 3753 Masterlock

— G samples completed, this marks the end of all scheduled soil sampling for DEC-East farmingdale @ this time

G-16

Surf @ 0916 PID 0.0 ppm

Brown F Sand, some M sand, little C sand, dry

0-1 @ 0917 PID 0.6 ppm

Brown F Sand, some M Sand, little C sand, tr gravel, dry

G-15

Surf @ 0920 PID 1.4 ppm

Brown F Sand, little M Sand, tr C sand, dry

0-1 @ 0921 PID 1.1 ppm

Brown F sand, some M sand, little C Sand, tr gravel, dry

G-11

Surf @ 0927 PID 0.8 ppm

Brown F Sand, some C Sand, little M Sand, tr gravel, dry

0-1 @ 0928 PID 0.0 ppm

Brown F Sand, some M Sand, little C sand, tr gravel, dry

G-10

Surf @ 0932 PID 0.9 ppm

Brown F Sand, some C sand, little M sand, tr gravel, dry

0-1 @ 0933 PID 0.9 ppm

Brown F Sand, some M Sand, some C sand, tr gravel, dry

DEC East farmingdale 7/17/14

G-09

Surf @ 1048 PID 0.2ppm

Brown F sand, little M sand, tr C sand, tr gravel, dry

0-1 @ 1050 PID 0.3ppm

Brown F sand, little M sand, little C sand, tr gravel, dry

G-08

Surf @ 1054 PID 0.1ppm

Brown F sand, some M sand, some C sand, tr gravel, dry

0-1 @ 1055 PID 0.1ppm

Brown F sand, some M sand, some C sand, tr gravel, dry

G-07

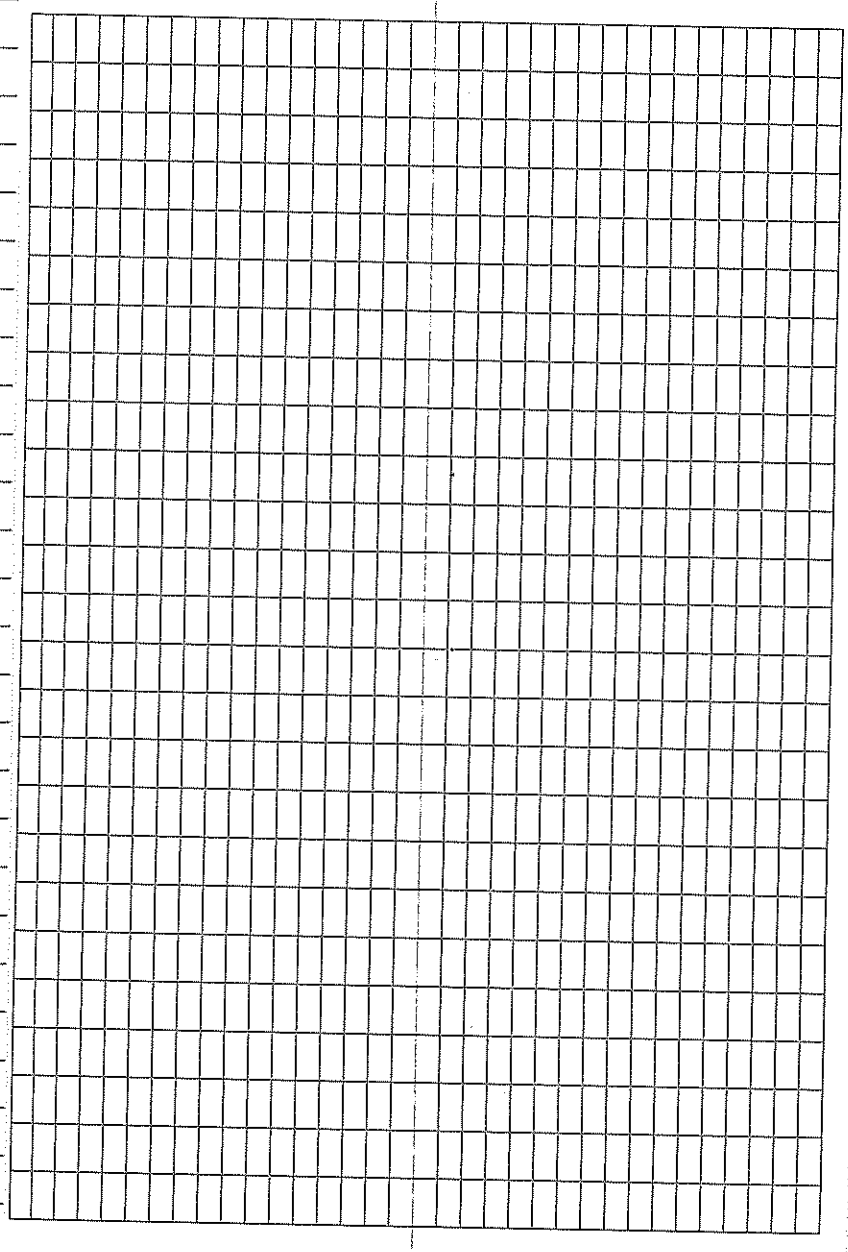
Surf @ 1058 PID 0.1ppm

Brown F sand little M sand, tr C sand, dry

0-1 @ 1059 PID 0.4ppm

Brown F sand, some C sand, little M sand, tr gravel, dry

Field blank for 8260 collected @ 1245



Groundwater Sampling Sheet: Stabilization Purge Method

Site: DEC - East Farmingdale

Date: 7/28/14

Techs: JPL/CS

Start Time: 7:15

End Time: 15:30

Equipment: 075, Honda 2000i generator
GP, 100' WLM

WELL ID	Well Size (inches)	Total Well Depth (ft)	Depth to Water (ft)	Length of Column (ft)	One Standing Water Well Volume	Total Gallons Purged	Time Sampled	DO (mg/L)	Temp. °C	pH	ORP	Specific Conductance	Turbidity (NTUs) Notes	Length of riser
MW-1	0.75	49.78	16.53	33.25	0.9	3.0	0928	4.40	16.37	5.81	216.5	275	0.12	2'10"
						3.8	0936	4.58	16.45	5.90	203.7	274	0.29	
MW-1A	1.5	29.63	16.64	12.99	1.3	2	1010	1.73	16.90	6.47	48.3	325	9.78	
						3.5	1019	1.66	17.03	6.54	144	330	5.39	
						4	1025	1.59	17.08	6.49	5.1	331	4.1	
MW-2	0.75	29.08	18.23	10.85	0.30	1	1118	1.36	16.61	7.14	-26.4	749	5.51	
						1.5	1123	1.50	16.65	7.16	-32.3	754	4.25	
MW-3	0.75	30.11	17.04	13.07	0.35	1	1207	1.69	16.07	7.04	28.9	373	3.41	
						1.5	1210	1.71	16.53	7.02	30.2	371	2.71	
MW-4	0.75	31.97	16.87	15.1	0.42	1	1250	1.87	17.31	7.37	-136.0	283	10.78	
						1.5	1255	1.50	17.52	7.24	-112.0	286	5.10	
BaW-06C	1	30.29	16.71	13.58	0.61	1	1330	4.59	17.01	7.03	45.2	300	11.51	
						1.5	1335	4.01	16.98	6.99	54.1	303	5.64	

Well Size (inches)		0.5	0.75	1	1.5	2	4	6	8
Multiplier based on 4 well volumes		0.06	0.11	0.18	0.42	0.7	2.65	6	10.4
Multiplier based on 1 well volume		0.015	0.0275	0.045	0.105	0.175	0.663	1.5	2.6

Purge a minimum of 1 well volume & then wait for stabilization

Tolerance for stability:

Specific Conductance (3%)
temperature (3%)
pH +/- 0.1 units

Record DO & ORP but do not use for stability

Guidelines for Field Screening Values:

pH = 5 - 9

Temperature = 10 - 19 (except for VERY warm days - please try to keep purge container cool)

DO = less than 12 (unless very close to a sparge well)

Bob C. (DEC PM) onsite 1230 – 1415. He spoke teenagers w/ small bonfire. He approached, they scattered & we put out the fire w/ distilled water jugs

If readings are not in this range please try to recalibrate (except for temp, which cannot be calibrated). If they remain out of range, please do not write the value on the sheet - it is an equipment error.

PLEASE CONTACT THE PMs IF THERE IS A PROBLEM. THIS DATA IS IMPORTANT AND INCORRECT DATA IS WORSE THAN NO DATA. WE REALLY APPRECIATE YOUR WORK TO KEEP E.A.R. A TOP COMPANY IN THE FIELD

Appendix C: Laboratory Analytical Reports

Due to file size, Appendix B will be submitted under separate cover

Appendix D: QA/QC Sample Summary Table

Fairchild Republic Aircraft; Old Sump
Route 110 (Broad Hollow Road)
East Farmingdale, NY
Site No. 152004

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

2014 Remedial Investigation QA/QC Sample Analytical Results (ug/L)
TestAmerica, Inc.
Methods: SW6010C, SW7470A, SW8081B, SW8082A, SW8260C, SW8270D

Location	Equipment Blank	Field Blank	Field Blank	Field Blank	Field Blank	Field Blank	Trip Blank	Trip Blank	Trip Blank
Date Collected	6/18/2014	6/20/2014	6/24/2014	7/1/2014	7/17/2014	7/28/2014	6/18/2014	6/24/2014	7/28/2014
1,1 Dichloroethane	<1	<1	<1	n/a	<1	<1	<1	<1	<1
1,1 Dichloroethene	<1	<1	<1	n/a	<1	<1	<1	<1	<1
1,1,1 Trichloroethane	<1	<1	<1	n/a	<1	<1	<1	<1	<1
1,1,2 Trichloroethane	<1	<1	<1	n/a	<1	<1	<1	<1	<1
1,1,2,2 Tetrachloroethane	<1	<1	<1	n/a	<1	<1	<1	<1	<1
1,1-Biphenyl	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
1,2 Dibromoethane	<1	<1	<1	n/a	<1	<1	<1	<1	<1
1,2 Dichlorobenzene	<1	<1	<1	n/a	<1	<1	<1	<1	<1
1,2 Dichloroethane	<1	<1	<1	n/a	<1	<1	<1	<1	<1
1,2 Dichloropropane	<1	<1	<1	n/a	<1	<1	<1	<1	<1
1,2,3 Trichlorobenzene	<1	<1	<1	n/a	<1	<1	<1	<1	<1
1,2,4 Trichlorobenzene	<1	<1	<1	n/a	<1	<1	<1	<1	<1
1,2,4,5-Tetrachlorobenzene	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
1,3 Dichlorobenzene	<1	<1	<1	n/a	<1	<1	<1	<1	<1
1,4 Dichlorobenzene	<1	<1	<1	n/a	<1	<1	<1	<1	<1
1,4-Dioxane	<50	<50	<50	n/a	<50	<50	<50	<50	<50
2,3,4,6-Tetrachlorophenol	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
2,4,5-Trichlorophenol	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
2,4,6-Trichlorophenol	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
2,4-Dichlorophenol	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
2,4-Dimethylphenol	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
2,4-Dinitrophenol	<30	<30	<30	n/a	n/a	n/a	n/a	n/a	n/a
2,4-Dinitrotoluene	<2	<2	<2	n/a	n/a	n/a	n/a	n/a	n/a
2,6-Dinitrotoluene	<2	<2	<2	n/a	n/a	n/a	n/a	n/a	n/a
2-Chloronaphthalene	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
2-Chlorophenol	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
2-Hexanone	<5	<5	<5	n/a	<5	<5	<5	<5	<5
2-Methyl-4,6-dinitrophenol	<30	<30	<30	n/a	n/a	n/a	n/a	n/a	n/a
2-Methylnaphthalene	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
2-Nitroaniline	<20	<20	<20	n/a	n/a	n/a	n/a	n/a	n/a
2-Nitrophenol	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
3,3-Dichlorobenzidine	<20	<20	<20	n/a	n/a	n/a	n/a	n/a	n/a
3-Nitroaniline	<20	<20	<20	n/a	n/a	n/a	n/a	n/a	n/a
4,4,-DDT	<0.05	<0.05	<0.05	n/a	n/a	n/a	n/a	n/a	n/a
4,4-DDD	<0.05	<0.05	<0.05	n/a	n/a	n/a	n/a	n/a	n/a
4,4-DDE	<0.05	<0.05	<0.05	n/a	n/a	n/a	n/a	n/a	n/a
4-Bromophenyl-phenylether	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
4-Chloro-3-methylphenol	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
4-Chloroaniline	<1	<1	<1	n/a	n/a	n/a	n/a	n/a	n/a
4-Chlorophenyl-phenylether	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
4-Methyl-2-Pentanone	<5	<5	<5	n/a	<5	<5	<5	<5	<5
4-Nitroaniline	<20	<20	<20	n/a	n/a	n/a	n/a	n/a	n/a
4-Nitrophenol	<30	<30	<30	n/a	n/a	n/a	n/a	n/a	n/a
a BHC	<0.05	<0.05	<0.05	n/a	n/a	n/a	n/a	n/a	n/a
Acenaphthene	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
Acenaphthylene	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
Acetone	<5	<5	<5	n/a	<5	<5	**17**	<5	<5
Acetophenone	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
Aldrin	<0.05	<0.05	<0.05	n/a	n/a	n/a	n/a	n/a	n/a
Aluminum	**129 J**	<200	<200	n/a	n/a	<200	n/a	n/a	n/a
Anthracene	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
Antimony	<20	<20	<20	n/a	n/a	<20	n/a	n/a	n/a
Aroclor 1016	<0.4	<0.4	<0.4	<0.4	n/a	<0.4	n/a	n/a	n/a
Aroclor 1221	<0.4	<0.4	<0.4	<0.4	n/a	<0.4	n/a	n/a	n/a
Aroclor 1232	<0.4	<0.4	<0.4	<0.4	n/a	<0.4	n/a	n/a	n/a
Aroclor 1242	<0.4	<0.4	<0.4	<0.4	n/a	<0.4	n/a	n/a	n/a
Aroclor 1248	<0.4	<0.4	<0.4	<0.4	n/a	<0.4	n/a	n/a	n/a
Aroclor 1254	<0.4	<0.4	<0.4	<0.4	n/a	<0.4	n/a	n/a	n/a
Aroclor 1260	<0.4	<0.4	<0.4	<0.4	n/a	<0.4	n/a	n/a	n/a
Aroclor 1262	<0.4	<0.4	<0.4	<0.4	n/a	<0.4	n/a	n/a	n/a
Aroclor 1268	<0.4	<0.4	<0.4	<0.4	n/a	<0.4	n/a	n/a	n/a
Arsenic	<15	<15	<15	n/a	n/a	<15	n/a	n/a	n/a

Fairchild Republic Aircraft; Old Sump
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TestAmerica, Inc.
Methods: SW6010C, SW7470A, SW8081B, SW8082A, SW8260C, SW8270D

Location	Equipment Blank	Field Blank	Field Blank	Field Blank	Field Blank	Field Blank	Trip Blank	Trip Blank	Trip Blank
Date Collected	6/18/2014	6/20/2014	6/24/2014	7/1/2014	7/17/2014	7/28/2014	6/18/2014	6/24/2014	7/28/2014
Atrazine	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
b BHC	<0.05	<0.05	<0.05	n/a	n/a	n/a	n/a	n/a	n/a
Barium	<200	<200	<200	n/a	n/a	<200	n/a	n/a	n/a
Benzaldehyde	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
Benzene	<1	<1	<1	n/a	<1	<1	<1	<1	<1
Benzo(a)anthracene	<1	<1	<1	n/a	n/a	n/a	n/a	n/a	n/a
Benzo(a)pyrene	<1	<1	<1	n/a	n/a	n/a	n/a	n/a	n/a
Benzo(b)fluoranthene	<1	<1	<1	n/a	n/a	n/a	n/a	n/a	n/a
Benzo(g,h,i)perylene	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
Benzo(k)fluoranthene	<1	<1	<1	n/a	n/a	n/a	n/a	n/a	n/a
Beryllium	<2	<2	<2	n/a	n/a	<2	n/a	n/a	n/a
bis(2-Chloroethoxy)methane	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
bis(2-Chloroethyl)ether	<1	<1	<1	n/a	n/a	n/a	n/a	n/a	n/a
bis(2-Chloroisopropyl)ether	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
bis(2-Ethylhexyl)phthalate	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
Bromochloromethane	<1	<1	<1	n/a	<1	<1	<1	<1	<1
Bromodichloromethane	<1	<1	<1	n/a	<1	<1	<1	<1	<1
Bromoform	<1	<1	<1	n/a	<1	<1	<1	<1	<1
Bromomethane	<1	<1	<1	n/a	<1	<1	<1	<1	<1
Butylbenzylphthalate	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
c 1,3 Dichloropropene	<1	<1	<1	n/a	<1	<1	<1	<1	<1
Cadmium	<4	<4	<4	n/a	n/a	<4	n/a	n/a	n/a
Calcium	<5000	<5000	<5000	n/a	n/a	<5000	n/a	n/a	n/a
Caprolactam	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
Carbazole	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
Carbon Disulfide	<1	<1	<1	n/a	<1	<1	<1	<1	<1
Carbon Tetrachloride	<1	<1	<1	n/a	<1	<1	<1	<1	<1
Chlordane	<0.5	<0.5	<0.5	n/a	n/a	n/a	n/a	n/a	n/a
Chlorobenzene	<1	<1	<1	n/a	<1	<1	<1	<1	<1
Chloroethane	<1	<1	<1	n/a	<1	<1	<1	<1	<1
Chloroform	<1	<1	<1	n/a	<1	<1	<1	<1	<1
Chloromethane	<1	<1	<1	n/a	<1	<1	<1	<1	<1
Chromium (total)	<10	<10	<10	n/a	n/a	<10	n/a	n/a	n/a
Chrysene	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
cis-1,2-Dichloroethene	<1	<1	<1	n/a	<1	<1	<1	<1	<1
Cobalt	<50	<50	<50	n/a	n/a	<50	n/a	n/a	n/a
Copper	<25	<25	<25	n/a	n/a	<25	n/a	n/a	n/a
Cyclohexane	<1	<1	<1	n/a	<1	<1	<1	<1	<1
Cyclohexane, methyl-	<1	<1	<1	n/a	<1	<1	<1	<1	<1
delta-BHC	<0.05	<0.05	<0.05	n/a	n/a	n/a	n/a	n/a	n/a
Dibenzo(a,h)anthracene	<1	<1	<1	n/a	n/a	n/a	n/a	n/a	n/a
Dibenzofuran	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
Dibromochloromethane	<1	<1	<1	n/a	<1	<1	<1	<1	<1
Dibromochloropropane	<1	<1	<1	n/a	<1	<1	<1	<1	<1
Dichlorodifluoromethane	<1	<1	<1	n/a	<1	<1	<1	<1	<1
Dieldrin	<0.05	<0.05	<0.05	n/a	n/a	n/a	n/a	n/a	n/a
Diethylphthalate	**1.7 J**	**1.6 J**	**1.5 J**	n/a	n/a	n/a	n/a	n/a	n/a
Dimethylphthalate	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
Di-n-butylphthalate	**1.5 J**	**1 J**	<10	n/a	n/a	n/a	n/a	n/a	n/a
Di-n-octylphthalate	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
Endosulfan I	<0.05	<0.05	<0.05	n/a	n/a	n/a	n/a	n/a	n/a
Endosulfan II	<0.05	<0.05	<0.05	n/a	n/a	n/a	n/a	n/a	n/a
Endosulfan Sulfate	<0.05	<0.05	<0.05	n/a	n/a	n/a	n/a	n/a	n/a
Endrin	<0.05	<0.05	<0.05	n/a	n/a	n/a	n/a	n/a	n/a
Endrin Aldehyde	<0.05	<0.05	<0.05	n/a	n/a	n/a	n/a	n/a	n/a
Endrin ketone	<0.05	<0.05	<0.05	n/a	n/a	n/a	n/a	n/a	n/a
Ethylbenzene	<1	<1	<1	n/a	<1	<1	<1	<1	<1
Fluoranthene	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
Fluorene	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
Freon 113	<1	<1	<1	n/a	<1	<1	<1	<1	<1
Gamma-BHC(Lindane)	<0.05	<0.05	<0.05	n/a	n/a	n/a	n/a	n/a	n/a
Heptachlor	<0.05	<0.05	<0.05	n/a	n/a	n/a	n/a	n/a	n/a

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ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

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TestAmerica, Inc.
Methods: SW6010C, SW7470A, SW8081B, SW8082A, SW8260C, SW8270D

Location	Equipment Blank	Field Blank	Field Blank	Field Blank	Field Blank	Field Blank	Trip Blank	Trip Blank	Trip Blank
Date Collected	6/18/2014	6/20/2014	6/24/2014	7/1/2014	7/17/2014	7/28/2014	6/18/2014	6/24/2014	7/28/2014
Heptachlor Epoxide	<0.05	<0.05	<0.05	n/a	n/a	n/a	n/a	n/a	n/a
Hexachlorobenzene	<1	<1	<1	n/a	n/a	n/a	n/a	n/a	n/a
Hexachlorobutadiene	<2	<2	<2	n/a	n/a	n/a	n/a	n/a	n/a
Hexachlorocyclopentadiene	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
Hexachloroethane	<1	<1	<1	n/a	n/a	n/a	n/a	n/a	n/a
Indeno(1,2,3-cd)pyrene	<1	<1	<1	n/a	n/a	n/a	n/a	n/a	n/a
Iron	<150	<150	<150	n/a	n/a	<150	n/a	n/a	n/a
Isophorone	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
Isopropylbenzene	<1	<1	<1	n/a	<1	<1	<1	<1	<1
Lead	<10	<10	<10	n/a	n/a	<10	n/a	n/a	n/a
m + p Xylene	<1	<1	<1	n/a	<1	<1	<1	<1	<1
Magnesium	<5000	<5000	<5000	n/a	n/a	<5000	n/a	n/a	n/a
Manganese	<15	<15	<15	n/a	n/a	<15	n/a	n/a	n/a
Mercury	<0.2	<0.2	<0.2	n/a	n/a	<0.2	n/a	n/a	n/a
Methoxychlor	<0.05	<0.05	<0.05	n/a	n/a	n/a	n/a	n/a	n/a
Methyl acetate	<5	<5	<5	n/a	<5	<5	<5	<5	<5
Methyl Ethyl Ketone	<5	<5	<5	n/a	<5	<5	<5	<5	<5
Methylene Chloride	<1	<1	<1	n/a	<1	<1	<1	<1	<1
Naphthalene	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
Nickel	<40	<40	<40	n/a	n/a	<40	n/a	n/a	n/a
Nitrobenzene	<1	<1	<1	n/a	n/a	n/a	n/a	n/a	n/a
N-Nitrosodi-N-Propylamine	<1	<1	<1	n/a	n/a	n/a	n/a	n/a	n/a
N-Nitrosodiphenylamine	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
o-cresol	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
o-Xylene	<1	<1	<1	n/a	<1	<1	<1	<1	<1
p-cresol	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
Pentachlorophenol	<30	<30	<30	n/a	n/a	n/a	n/a	n/a	n/a
Phenanthrene	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
Phenol (total)	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
Polybrominated biphenyls (total)	<0.4	<0.4	<0.4	<0.4	n/a	<0.4	n/a	n/a	n/a
Potassium	<5000	<5000	<5000	n/a	n/a	<5000	n/a	n/a	n/a
Pyrene	<10	<10	<10	n/a	n/a	n/a	n/a	n/a	n/a
Selenium	<20	<20	<20	n/a	n/a	<20	n/a	n/a	n/a
Silver	<10	<10	<10	n/a	n/a	<10	n/a	n/a	n/a
Sodium	<5000	<5000	<5000	n/a	n/a	<5000	n/a	n/a	n/a
Styrene	<1	<1	<1	n/a	<1	<1	<1	<1	<1
t 1,3 Dichloropropene	<1	<1	<1	n/a	<1	<1	<1	<1	<1
t butylmethylether	<1	<1	<1	n/a	<1	<1	<1	<1	<1
Tetrachloroethene	<1	<1	<1	n/a	<1	<1	<1	<1	<1
Thallium	<20	<20	<20	n/a	n/a	<20	n/a	n/a	n/a
Toluene	<1	**0.21 J**	<1	n/a	<1	<1	<1	<1	<1
Total BTEX	<5	**0.21**	<5	n/a	<5	<5	<5	<5	<5
Toxaphene	<0.5	<0.5	<0.5	n/a	n/a	n/a	n/a	n/a	n/a
trans-1,2-Dichloroethene	<1	<1	<1	n/a	<1	<1	<1	<1	<1
Trichloroethylene	<1	<1	<1	n/a	<1	<1	<1	<1	<1
Trichlorofluoromethane	<1	<1	<1	n/a	<1	<1	<1	<1	<1
Vanadium	<50	<50	<50	n/a	n/a	<50	n/a	n/a	n/a
Vinyl Chloride	<1	<1	<1	n/a	<1	<1	<1	<1	**<1**
Zinc	<30	<30	<30	n/a	n/a	<30	n/a	n/a	n/a

Notes:
J - Indicates an estimated value below laboratory reporting limits

RECORD OF DECISION

Fairchild Republic Aircraft; Old Sump
State Superfund Project
East Farmingdale, Suffolk County
Site No. 152004
March 2015



Prepared by
Division of Environmental Remediation
New York State Department of Environmental Conservation

DECLARATION STATEMENT - RECORD OF DECISION

Fairchild Republic Aircraft; Old Sump
State Superfund Project
East Farmingdale, Suffolk County
Site No. 152004
March 2015

Statement of Purpose and Basis

This document presents the remedy for the Fairchild Republic Aircraft; Old Sump site, a Class 2 inactive hazardous waste disposal site. The remedial program was chosen in accordance with the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375, and is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300), as amended.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for the Fairchild Republic Aircraft; Old Sump site and the public's input to the selected remedy presented by the Department. A listing of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Description of Selected Remedy

The elements of the selected remedy, as shown in Figure 6, are as follows:

1. Remedial Design
A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows;

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would

otherwise be considered a waste;

- Maximizing habitat value and creating habitat when possible;

- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and

- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2. Cover System
A site cover will be required to allow for commercial use of the site. The cover will consist either of the structures such as buildings, pavement and sidewalks comprising the site development or a soil cover in areas where the upper one foot of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where the soil cover is required it will be a minimum of one foot of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for commercial use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site must meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

3. Institutional Control
Imposition of an institutional control in the form of an environmental easement for the controlled property that:

- requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);

- allows the use and development of the controlled property for commercial and industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws;

- restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH; and

- requires compliance with the Department approved Site Management Plan.

4. Site Management Plan
A Site Management Plan is required, which includes the following:

a. an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: the environmental easement discussed in item 3 above.

Engineering Controls: the cover system discussed in item 2 above.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- descriptions of the provisions of the environmental easement including any land use, and groundwater use restrictions;
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification;
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls; and
- a soil management plan identifying areas of the site where digging is restricted and establishing protocols for the safe management and disposal of contaminated soil.

New York State Department of Health Acceptance

The New York State Department of Health (NYSDOH) concurs that the remedy for this site is protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

March 30, 2015
Date



Robert W. Schick, P.E., Director
Division of Environmental Remediation

RECORD OF DECISION

Fairchild Republic Aircraft; Old Sump
East Farmingdale, Suffolk County
Site No. 152004
March 2015

SECTION 1: SUMMARY AND PURPOSE

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), has selected a remedy for the above referenced site. The disposal of hazardous wastes at the site has resulted in threats to public health and the environment that would be addressed by the remedy. The disposal or release of hazardous wastes at this site, as more fully described in this document, has contaminated various environmental media. The remedy is intended to attain the remedial action objectives identified for this site for the protection of public health and the environment. This Record of Decision (ROD) identifies the selected remedy, summarizes the other alternatives considered, and discusses the reasons for selecting the remedy.

The New York State Inactive Hazardous Waste Disposal Site Remedial Program (also known as the State Superfund Program) is an enforcement program, the mission of which is to identify and characterize suspected inactive hazardous waste disposal sites and to investigate and remediate those sites found to pose a significant threat to public health and environment.

The Department has issued this document in accordance with the requirements of New York State Environmental Conservation Law and 6 NYCRR Part 375. This document is a summary of the information that can be found in the site-related reports and documents.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all remedies. A public comment period was held, during which the public was encouraged to submit comment on the proposed remedy. All comments on the remedy received during the comment period were considered by the Department in selecting a remedy for the site. Site-related reports and documents were made available for review by the public at the following document repository:

Farmingdale Public Library
Attn: Mr. Stuart Schaeffer
116 Merritts Road
Farmingdale, NY 11735
Phone: 516-249-9090

A public meeting was also conducted. At the meeting, the findings of the remedial investigation

(RI) and the feasibility study (FS) were presented along with a summary of the proposed remedy. After the presentation, a question-and-answer period was held, during which verbal or written comments were accepted on the proposed remedy.

Comments on the remedy received during the comment period are summarized and addressed in the responsiveness summary section of the ROD.

Receive Site Citizen Participation Information By Email

Please note that the Department's Division of Environmental Remediation (DER) is "going paperless" relative to citizen participation information. The ultimate goal is to distribute citizen participation information about contaminated sites electronically by way of county email listservs. Information will be distributed for all sites that are being investigated and cleaned up in a particular county under the State Superfund Program, Environmental Restoration Program, Brownfield Cleanup Program, Voluntary Cleanup Program, and Resource Conservation and Recovery Act Program. We encourage the public to sign up for one or more county listservs at http://www.dec.ny.gov/chemical/61092.html

SECTION 3: SITE DESCRIPTION AND HISTORY

Location: The Fairchild Republic Aircraft Old Sump (aka: Old Recharge Basin) Site is located near the intersection of State Route 110 (Broad Hollow Road) and Conklin Street in East Farmingdale, Suffolk County. Across Route 110 is the Airport Plaza shopping center – site of the former Fairchild Republic Main Plant Site, and Republic Airport.

Vacant property and Conklin Street lie to the north, State Route 110 to the east, East Carmens Road to the west, and industrial and commercial buildings to the south. A chain link fence completely surrounds the former Old Sump property along with a contiguous 6-acre parcel of vacant land to the north, all under the same ownership. The Brandt Airflex Superfund site (Site No. 152183) lies 500-feet north of, and hydraulically upradiant of the Old Sump site.

Site Features: The site is a 13-acre vacant sand lot. Areas of young trees and native vegetation have marginally taken hold since the basin was filled and graded in 1997-98. Approximately 25,000 cubic yards of petroleum contaminated soil, once approved for on-site use as asphalt sub-base material, are stockpiled on the site. The northern portion of the site lies in the runway protection zone of the Republic Airport and building height in the zone is restricted by local ordinance.

Current Zoning and Land Use: The site is currently inactive, comprised of five tax parcels, and is zoned G- Industry (Light). Retail development- shopping/dining is being contemplated for the property.

Historic Uses: The Old Sump is the site of a former sand mining operation that was later converted to a stormwater recharge basin and wastewater/cooling water repository. The basin was used by NYSDOT to collect storm water runoff, and by Fairchild Republic for runoff and disposal of up to 2 million gallons per day of non-contact cooling water and treated waste water

from the Fairchild Main Plant Site (Site No. 152130). Fairchild stopped discharging to the basin in 1983 when it constructed a new recharge basin on the east side of Route 110. The Fairchild Main Plant Site produced sludge from metal precipitation alodining, anodizing, chemical milling and wash water paint spray booths.

The site was first listed on the Registry of Inactive Hazardous Waste Disposal Sites (Registry) as Class 2 in August 1989. A remedial Investigation (RI), completed on the site in 1995, found that basin bottom sediments contained elevated levels of total chromium, polynuclear aromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs). In light of the fact that the site was not found to be impacting groundwater, the Record of Decision in 1996 did not require active remediation and instead selected fencing of the property and institutional controls as the remedy to prevent potential exposure to the bottom sediments. In 1997, the Department executed an Order on Consent with Fairchild, allowing Fairchild the option to fill in the recharge basin with acceptable alternative grading material and soils from demolition of their Main Plant Site. The site was delisted in 1997 with the expectation that filling the basin would result in the contamination being encapsulated approximately 30 feet below grade. The filling, completed in 1998, was problematic and created new concerns of potential exposure to contamination. Subsequent sampling by a prospective buyer indicated that the expected result from filling the recharge basin was not achieved. A review of the process revealed that the basin was not dewatered prior to filling, and the denser fill material and concrete debris displaced the contaminated bottom sediments, resulting in an apparent upwelling of PCB and metals contamination to the surface and shallow subsurface soils. Negotiations with Fairchild (in bankruptcy) seeking mitigation of the continued threat to public health and the environment failed. The site was re-listed on the Registry in April 2010 with the filling of the recharge basin resulting in a changed condition and the need for a new characterization of the site to assure remedial goals had been achieved.

Acadia Republic Farmingdale LLC, acquired title to the site in 2013 and entered into a settlement Order on Consent with the Department in July of 2014. The Department, then re-investigated the site.

Site Geology and Hydrogeology: The site is underlain by the Upper Glacial and Magothy Aquifers which are designated by the United States Environmental Protection Agency (USEPA) as sole source aquifers. Depth to groundwater ranges from 20 to 30 feet below ground surface (bgs) and flows generally to the south. Based on borings completed at the site, the native subsurface geology is comprised of fine to coarse brown sand and rounded gravel to a depth of approximately 120 feet bgs. Below this is a layer of a mottled fine to medium sand with trace silt and mica. Mixed in with this layer are silt and clay lenses. Mixed into the upper 30 feet of subsurface is solid waste from demolition of the former Main Plant Site. The solid waste is comprised primarily of heterogeneous chunks of cement, rebar and relocated soils.

A site location map is attached as Figure 1.

SECTION 4: LAND USE AND PHYSICAL SETTING

The Department may consider the current, intended, and reasonably anticipated future land use

of the site and its surroundings when evaluating a remedy for soil remediation. For this site, alternatives (or an alternative) that restrict(s) the use of the site to commercial use (which allows for industrial use) as described in Part 375-1.8(g) were/was evaluated in addition to an alternative which would allow for unrestricted use of the site.

A comparison of the results of the RI to the appropriate standards, criteria and guidance values (SCGs) for the identified land use and the unrestricted use SCGs for the site contaminants is included in the Tables for the media being evaluated in Exhibit A.

SECTION 5: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

The PRPs for the site, documented to date, include:

Fairchild Corp.

Mairoll, Inc.

Avilas, Inc.

Acadia Republic Farmingdale LLC

On July 24, 2014, the Department entered into an Order on Consent with Acadia Republic Farmingdale LLC, allowing the Department to conduct a remedial investigation of the site, and committing Acadia Republic to certain obligations relative to the site's remedial program, when selected.

The Department has determined that Volatile Organic Compound (VOC) contamination found at this site is associated with an off-site source. The extent of on-site VOC contamination, as well as associated human exposure assessments and abatement actions, will be addressed separately by the Department as part of the remedial program for the Brandt Airflex Superfund site (Site No. 152183).

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

A Remedial Investigation (RI) has been conducted. The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The field activities and findings of the investigation are described in the RI Report.

The following general activities are conducted during an RI:

- Research of historical information,

- Geophysical survey to determine the lateral extent of wastes,
- Test pits, soil borings, and monitoring well installations,
- Sampling of waste, surface and subsurface soils, groundwater, and soil vapor,
- Sampling of surface water and sediment,
- Ecological and Human Health Exposure Assessments.

The analytical data collected on this site includes data for:

- groundwater
- soil

6.1.1: Standards, Criteria, and Guidance (SCGs)

The remedy must conform to promulgated standards and criteria that are directly applicable or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, Criteria and Guidance are hereafter called SCGs.

To determine whether the contaminants identified in various media are present at levels of concern, the data from the RI were compared to media-specific SCGs. The Department has developed SCGs for groundwater, surface water, sediments, and soil. The NYSDOH has developed SCGs for drinking water and soil vapor intrusion. The tables found in Exhibit A list the applicable SCGs in the footnotes. For a full listing of all SCGs see: http://www.dec.ny.gov/regulations/61794.html

6.1.2: RI Results

The data have identified contaminants of concern. A "contaminant of concern" is a hazardous waste that is sufficiently present in frequency and concentration in the environment to require evaluation for remedial action. Not all contaminants identified on the property are contaminants of concern. The nature and extent of contamination and environmental media requiring action are summarized in Exhibit A. Additionally, the RI Report contains a full discussion of the data. The contaminant(s) of concern identified at this site is/are:

POLYCHLORINATED BIPHENYLS (PCB)
LEAD
CHROMIUM
CADMIUM
MERCURY
BENZO(A)PYRENE
BENZO(A)ANTHRACENE
BENZO(B)FLUORANTHENE
BENZO(B)FLUORANTHENE
DIBENZ[A,H]ANTHRACENE

As illustrated in Exhibit A, the contaminant(s) of concern exceed the applicable SCGs for:

- soil

6.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before issuance of the Record of Decision.

There were no IRMs performed at this site during the RI.

6.3: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts may include existing and potential future exposure pathways to fish and wildlife receptors, wetlands, groundwater resources, and surface water.

Based upon the resources and pathways identified and the toxicity of the contaminants of ecological concern at this site, a Fish and Wildlife Resources Impact Analysis (FWRIA) was deemed not necessary for OU 01.

Nature and Extent of Contamination:
Soil and groundwater samples were collected during the State-funded Remedial Investigation (RI) conducted from June-August 2014. Samples were analyzed for volatile organic compounds (VOC), semi-volatile organic compounds (SVOC), metals, polychlorinated biphenyls (PCB) and pesticides.

Groundwater: Four monitoring wells were installed in 2014 and sampled along with two previously existing wells. Groundwater was not found to be impacted by site-related contamination. NYSDEC TOGS 1.1.1 groundwater standards were marginally exceeded for one VOC in one well- tetrachloroethene (PCE) detected at 6 parts per billion (ppb) while the groundwater standard is 5 ppb. Several metals including iron, manganese and sodium also exceeded groundwater standards, however, the levels were consistent with regional conditions commonly found on Long Island and are not considered to be site related contamination. Reported concentrations for SVOCs, PCBs, or pesticides did not exceed groundwater standards.

Based on off-site investigations performed hydraulically upgradient to the site, the suspected source of VOC groundwater contamination is from the Brandt Airflex Superfund site (Site No. 152183). Further actions, if necessary, regarding this contamination will be done under the Brandt Airflex Superfund site remedial program.

Soil: Unrestricted use soil cleanup objectives (UUSCOs) were exceeded at a majority of the seventy-six sample locations across the 13-acre site for one or more of the following: polychlorinated biphenyls (PCBs); metals- lead, chromium, cadmium, mercury, silver, copper and zinc; and seven SVOCs including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene and

indeno(1,2,3-cd)pyrene. One VOC, acetone marginally exceeded UUSCO in two deep subsurface samples.

Surface soils and/or shallow subsurface soils (1 foot below ground), exceed UUSCOs for SVOC, metals or PCB at 15 of 30 sample locations. SVOCs are the most widely distributed site contaminant. They were detected in all 40 surface and shallow subsurface soil samples analyzed, exceeding UUSCO at 10 of 20 locations.

Commercial use SCOs (CUSCOs) were exceeded for four SVOCs: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and dibenzo(a,h)anthracene. The exceedances occurred in surface, shallow subsurface and deep soils at up to 11 locations. Total PCB concentrations exceeded CUSCOs at 4 locations at depths ranging from 12-32 feet bgs. PCB concentrations are below the acceptable presumptive remedy guidelines set forth in CP-51 (Commissioner Policy 51/ Soil Cleanup Guidance), for non-residential use sites, where a soil cleanup level for PCBs of 1 ppm in surface soils and 10 ppm in subsurface soils has been established. Reported concentrations for VOCs, metals and pesticides did not exceed CUSCOs.

Soil contamination is confined to the site and was not found to be impacting groundwater.

Approximately 25,000 cubic yards of petroleum contaminated soil (PCS) has been stockpiled on the site since approximately 1999. In August 2003, the Department issued a beneficial use determination (BUD) approving the on-site use of the PCS as parking lot subgrade material for an anticipated commercial redevelopment of the site. The development never materialized and the BUD and subsequent BUD extensions have since expired. Sampling in 2014 documented that the BUD material contains the four aforementioned SVOCs at levels exceeding CUSCOs, and benzo(a)pyrene exceeding Industrial use SCOs (IUSCOs).

Solid waste, in the form of hundreds of waste automobile tires and signs of illegal dumping-construction debris, wood, insulation, numerous hot tubs, etc., was noted on-site during the investigation. Large piles of broken concrete and iron rebar were also observed on-site.

6.4: Summary of Human Exposure Pathways

This human exposure assessment identifies ways in which people may be exposed to site-related contaminants. Chemicals can enter the body through three major pathways (breathing, touching or swallowing). This is referred to as *exposure.*

The site is completely fenced, which restricts public access. However, people who enter the site could contact contaminants in the soil by walking on the site, digging or otherwise disturbing the soil. Contaminated groundwater at the site is not used for drinking or other purposes and the site is served by a public water supply that obtains water from a different source not affected by this contamination. Volatile organic compounds in the groundwater and/or soil may move into the soil vapor (air spaces within the soil), which in turn may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Because the

site is vacant, the inhalation of site-related contaminants due to soil vapor intrusion does not represent a current concern.

6.5: Summary of the Remediation Objectives

The objectives for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. The goal for the remedial program is to restore the site to pre-disposal conditions to the extent feasible. At a minimum, the remedy shall eliminate or mitigate all significant threats to public health and the environment presented by the contamination identified at the site through the proper application of scientific and engineering principles.

The remedial action objectives for this site are:

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.

SECTION 7: SUMMARY OF THE SELECTED REMEDY

To be selected the remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. The remedy must also attain the remedial action objectives identified for the site, which are presented in Section 6.5. Potential remedial alternatives for the Site were identified, screened and evaluated in the feasibility study (FS) report.

A summary of the remedial alternatives that were considered for this site is presented in Exhibit B. Cost information is presented in the form of present worth, which represents the amount of money invested in the current year that would be sufficient to cover all present and future costs associated with the alternative. This enables the costs of remedial alternatives to be compared on a common basis. As a convention, a time frame of 30 years is used to evaluate present worth costs for alternatives with an indefinite duration. This does not imply that operation, maintenance, or monitoring would cease after 30 years if remediation goals are not achieved. A summary of the Remedial Alternatives Costs is included as Exhibit C.

The basis for the Department's remedy is set forth at Exhibit D.

The selected remedy is referred to as the Cover System with Site Management remedy.

The estimated present worth cost to implement the remedy is $1,100,000. The cost to construct the remedy is estimated to be $1,000,000 and the estimated average annual cost is $7,000.

The elements of the selected remedy, as shown in Figure 6, are as follows:

1. Remedial Design
A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows;

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2. Cover System
A site cover will be required to allow for commercial use of the site. The cover will consist either of the structures such as buildings, pavement and sidewalks comprising the site development or a soil cover in areas where the upper one foot of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where the soil cover is required it will be a minimum of one foot of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for commercial use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site must meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

3. Institutional Control
Imposition of an institutional control in the form of an environmental easement for the controlled property that:

- requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);

- allows the use and development of the controlled property for commercial and industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws;

- restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH; and

- requires compliance with the Department approved Site Management Plan.

4. Site Management Plan
A Site Management Plan is required, which includes the following:

a. an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: the environmental easement discussed in item 3 above.

Engineering Controls: the cover system discussed in item 2 above.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;

- descriptions of the provisions of the environmental easement including any land use, and groundwater use restrictions;

- provisions for the management and inspection of the identified engineering controls;

- maintaining site access controls and Department notification;

- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls; and

- a soil management plan identifying areas of the site where digging is restricted and establishing protocols for the safe management and disposal of contaminated soil.

Exhibit A

Nature and Extent of Contamination

This section describes the findings of the Remedial Investigation for all environmental media that were evaluated. As described in Section 6.1, samples were collected from various environmental media to characterize the nature and extent of contamination.

For each medium for which contamination was identified, a table summarizes the findings of the investigation. The tables present the range of contamination found at the site in the media and compares the data with the applicable SCGs for the site. The contaminants are arranged into four categories; volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides/polychlorinated biphenyls (PCBs), and inorganics (metals and cyanide). For comparison purposes, the SCGs are provided for each medium that allows for unrestricted use. For soil, if applicable, the Restricted Use SCGs identified in Section 4 and Section 6.1.1 are also presented.

Based on the Remedial Investigation (RI) conducted from June 2014 through August 2014, the primary environmental issues identified at the site are soil contamination from waste disposal into the former recharge basin and contaminated soil deposition from the demolition of the Fairchild Main Plant Site (MPS).

Groundwater

The groundwater sampling program consisted of the installation of four temporary monitoring wells and the utilization of two previously installed monitoring wells for a total of six sampling wells. The wells were screened at various depths between 19 feet and 50 feet below ground surface to gauge groundwater quality from the water table through the known depth of the former recharge basin. Monitoring well MW-4 was placed in the vicinity of where a 1992-93 remedial investigation reported elevated levels of total VOCs in groundwater at up to 786 ppb. Reported detections of VOC in MW-4 were all below SCGs, with total VOCs at less than 3 ppb.

Groundwater quality standards were slightly exceeded in one well for one VOC. Table 1 lists the lone VOC found to exceed SCG. Figure 2 shows the site map with monitoring well locations.

Table 1 - Groundwater

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
VOCs			
Tetrachloroethene (PCE)	ND - 6	5	1/6

a - ppb: parts per billion, which is equivalent to micrograms per liter, ug/L, in water.
b- SCG: Standard Criteria or Guidance - Ambient Water Quality Standards and Guidance Values (TOGs 1.1.1), 6 NYCRR Part 703, Surface water and Groundwater Quality Standards, and Part 5 of the New York State Sanitary Code (10 NYCRR Part 5).

No site-related groundwater contamination of concern was identified during the RI. Therefore, no remedial alternatives need to be evaluated for groundwater.

Soil

Surface and shallow subsurface soil samples were collected at 30 locations during the RI, to assess general soil contamination across the site. Surface soil samples were collected from a depth of 0-2 inches, to assess the potential for direct human exposure, while shallow subsurface soil samples were collected from a depth of 0-1 foot below ground, to evaluate the top foot of soil for eventual commercial development of the site. Deeper soil samples were collected at various depths down to 32 feet below ground to evaluate contamination impacts to groundwater. A site map with soil sample locations is shown on Figure 3.

In addition to the general sampling, focused soil sampling was conducted in three areas of concern (AOC), depicted on Figure 3. The PCB AOC is an area within the site where contaminated bottom sediments were disturbed and surfaced during the 1997-98 filling of the recharge basin ponds, resulting in an upwelling of PCB and metals contamination to the surface and shallow subsurface soils. The 2014 RI focused forty three soil borings in this area, collecting 213 samples from five depth intervals. Sample locations and results for the PCB AOC are detailed in Figure 4.

The chromium deposition AOC is an area along the western site boundary where chromium-contaminated soils from the former Fairchild Main Plant Site were deposited during the MPS demolition and remediation. Samples were collected from twelve locations.

The BUD AOC is a 25,000 cubic-yard pile of petroleum-contaminated soil that was stockpiled on-site in anticipation of its on-site use as parking lot sub-base material for a previous development project which never materialized. Samples were collected from the center and bottom of the pile at three locations.

Sample results indicate that soil contamination is widespread across the 13 acre site with the majority of the seventy six sample locations exceeding unrestricted use soil cleanup objectives (UUSCOs) for one or more of the following: PCBs ranging from non-detect (ND) to 5.4 parts per million (ND-5.4 ppm); metals- lead (ND-752 ppm), total chromium (ND-205 ppm), cadmium (ND-3.6 ppm), mercury (ND-0.48 ppm), silver (ND-15.7 ppm), copper (ND-58.7 ppm) and zinc (ND-229 ppm); and seven SVOCs- benzo(a)anthracene (ND-8.5 ppm), benzo(a)pyrene (ND-7.9 ppm), benzo(b)fluoranthene (ND-11 ppm), benzo(k)fluoranthene (ND-3.9 ppm), chrysene (ND-8.1 ppm), dibenzo(a,h)anthracene (ND-0.93 ppm) and indeno(1,2,3-cd)pyrene (ND-2.9 ppm). One VOC, acetone, marginally exceeded UUSCO in two deep subsurface samples.

Surface soils and/or shallow subsurface soils (1 foot below ground), exceed UUSCOs for SVOC, metals or PCB at 15 of 30 sample locations. SVOC are the most widely distributed site contaminant. They were detected in all 40 surface and shallow subsurface soil samples analyzed, exceeding UUSCO at 10 of 20 locations.

Commercial use SCOs (CUSCOs) were exceeded for four SVOCs: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and dibenzo(a,h)anthracene. The exceedances occurred in surface, shallow subsurface and deep soils at up to 11 locations. Total PCB concentrations exceeded CUSCOs at 4 locations in the PCB AOC at depths ranging from 12-32 feet BGS. PCB concentrations are below the acceptable presumptive remedy guidelines set forth in CP-51 (Commissioner Policy 51/ Soil Cleanup Guidance), for non-residential use sites, where a soil cleanup level for PCBs of 1 ppm in surface soils and 10 ppm in subsurface soils has been established. Reported concentrations for VOCs, metals and pesticides did not exceed CUSCOs.

Industrial Use SCOs (IUSCOs) were exceeded for one SVOC: benzo(a)pyrene, at ten locations. The exceedences occurred in surface, shallow subsurface and deep samples, down to 32 feet below ground. The IUSCO and CUSCO values for benzo(a)pyrene are nearly identical- 1.1 ppm vs. 1 ppm, respectively.

Soil contamination was not found to be impacting groundwater. The RI findings are consistent with previous investigations and, the areas of concern (AOC) resulting from basin filling operations and post-filling activities (1997-99) were found to have not substantially exacerbated the risk of human exposure to contamination, as previously believed.

Table 2 lists the range of concentrations for all soil contaminants exceeding SCGs. Figure 3 shows sample locations where surface and/or shallow subsurface soils exceed UUSCOs. Figure 4 shows the locations were soil contamination exceeds Commercial Use SCOs.

Table 2- Soil **152004**

Screening Criteria in use: 375 SOIL - COMMERCIAL USE, 375 SOIL - PROTECTION OF GROUNDWATER, 375 SOIL - UNRESTRICTED USE

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted Use SCG[b] (ppm)	Frequency Exceeding Unrestricted Use SCG	Restricted Use SCG[c] (ppm)	Frequency Exceeding Restricted Use SCG
Metals PART 375					
Chromium, Total	3.70-80.6	30	8/66	19	14/66
Copper	0-58.7	50	3/66	270	0/66
Lead	0.750-752	63	11/66	450	1/66
Mercury	0-0.700	0.18	5/66	0.73	0/66
Silver	0-2.00	2	1/66	8.3	0/66
Zinc	8.10-229	109	9/66	2480	0/66
Pesticides/PCBs PART 375					
PCB-1248 (Aroclor 1248)	0-5.40	0.1	26/214	1	3/214
PCB-1254 (Aroclor 1254)	0-0.790	0.1	5/214	1	0/214
PCB-1260 (Aroclor 1260)	0-1.00	0.1	21/214	1	2/214
Polychlorinated Biphenyl (PCBs)	0-5.40	0.1	50/214	1	5/214
SVOC PART 375					
Benzo(A)Anthracene	0-8.50	1	13/46	1	13/46
Benzo(A)Pyrene	0-7.90	1	14/46	1	14/46
Benzo(B)Fluoranthene	0-11.0	1	18/46	1.7	12/46
Benzo(K)Fluoranthene	0-3.90	0.8	11/46	1.7	4/46
Chrysene	0-8.10	1	14/46	1	14/46
Dibenz(A,H)Anthracene	0-0.930	0.33	9/46	0.56	5/46
Indeno(1,2,3-C,D)Pyrene	0-3.30	0.5	19/46	5.6	0/46
PCB-1262 (Aroclor 1262)	0-0.200	0.1	1/214	1	0/214
VOC PART 375					
Acetone	0-0.0590	0.05	2/46	0.05	1/46

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
b - SCG: Part 375-6.8(a), Unrestricted Soil Cleanup Objectives.
c - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Public Health for Commercial Use, unless otherwise noted.

The solid waste issues observed on-site will be rectified by the property owner during the course of site redevelopment and are not addressed by the remedy selection process. Dependent upon future construction plans, the elevation of final grade may require the removal of soil from the site. Being a Class 2 site, no soils, BUD material, C&D material or solid waste presently on the site may be disposed of off-site without prior characterization. No soils, BUD material, C&D material or solid waste presently on the site may be moved onto adjacent, non-site parcels to achieve desired grading elevations prior to characterization and approval of the Department.

The BUD material contains four SVOCs at levels exceeding CUSCOs, and benzo(a)pyrene exceeding IUSCOs. The material will require re-evaluation for suitability and another BUD permit before it can be used on-site, or it must be removed and disposed of off-site at a permitted landfill.

The primary soil contaminants of concern are SVOCs and metals from operations of the former Fairchild Main Plant site, and the subsequent disposal of soil and debris from the site demolition in 1997-98. Lead, chromium, mercury, copper, PCB and SVOC were detected in surface and/or shallow subsurface soils at levels above unrestricted use SCOs.

Based on the findings of the Remedial Investigation, the past disposal of hazardous waste has resulted in the contamination of soil. The site contaminants identified in soil which are considered to be the primary contaminants of concern, to be addressed by the remedy selection process are benzo(a)pyrene, dibenzo(a)pyrene, lead, chromium, mercury and copper.

Exhibit B

Description of Remedial Alternatives

The following alternatives were considered based on the remedial action objectives (see Section 6.5) to address the contaminated media identified at the site as described in Exhibit A.

Alternative 1: No Action

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. This alternative leaves the site in its present condition and does not provide any additional protection to public health and the environment.

Alternative 2: Restoration to Pre-Disposal or Unrestricted Conditions

This alternative achieves all of the SCGs discussed in Section 6.1.1 and Exhibit A and soil meets the Unrestricted Use Soil Cleanup Objectives listed in Part 375-6.8 (a). This alternative would include: excavation and off-site disposal of all waste and soil contamination above the unrestricted soil cleanup objectives. The remedy will not rely on institutional or engineering controls to prevent future exposure. There is no Site Management, no restrictions, and no periodic review. This remedy will have no annual cost, only the capital cost.

Contamination exceeding Unrestricted Use Soil Cleanup Objectives is documented in surface soils and subsurface soils down to 32 feet below ground. It is estimated that approximately 671,000 cubic yards of soil would be excavated to achieve unrestricted use of the 13 acre site. This alternative will require removal of contaminated soils from below the water table and extensive shoring of the excavation during soil removal. An equal quantity of clean soil is required to restore the site to present grade.

Capital Cost:.....$250,000,000

Alternative 3: Cover System with Site Management

This alternative would include, a cover system to allow for commercial use of the site. The cover will consist either of the structures such as buildings, pavement and sidewalks comprising future site development or a soil cover in areas where the upper one foot of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where the soil cover is required it will be a minimum of one foot of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for commercial use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d). An institutional control in the form of an environmental easement (EE) is required to restrict use of the controlled property for commercial and industrial purposes. A site management plan (SMP) is required which identifies all institutional and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the institutional and/or engineering controls remain in place and effective.

Present Worth: ….....$1,100,000
Capital Cost:.....$1,000,000
Annual Costs:.....$7,000

Exhibit C

Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
No Action	0	0	0
Restoration to Pre-Disposal or Unrestricted Conditions	$250M	$0	$250M
Cover System with Site Management	$1M	$7,000	$1.1M

SUMMARY OF THE SELECTED REMEDY

The Department has selected Alternative 3, Cover System with Site Management as the remedy for this site. Alternative 3 would achieve the remediation goals for the site by installation of a cover system to prevent human exposure to soil contamination. The elements of this remedy are described in Section 7. The selected remedy is depicted in Figure 6.

Basis for Selection

The selected remedy is based on the results of the RI and the evaluation of alternatives. The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375. A detailed discussion of the evaluation criteria and comparative analysis is included in the FS report.

The first two evaluation criteria are termed "threshold criteria" and must be satisfied in order for an alternative to be considered for selection.

1. Protection of Human Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

The selected remedy Alternative 3, Cover System with Site Management, would satisfy this criterion by preventing exposure to soil contamination by installation of a cover system. Contaminated soil will be covered by clean soil and/or by the buildings, parking lots and roadways of a future development project. Alternative 1 (No Action) does not provide any additional protection to public health and the environment and will not be evaluated further. Alternative 2, Restoration to Pre-Disposal or Unrestricted Conditions best protects human health and the environment by removing all contamination from the site.

2. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether a remedy will meet environmental laws, regulations, and other standards and criteria. In addition, this criterion includes the consideration of guidance which the Department has determined to be applicable on a case-specific basis.

Alternative 3 complies with SCGs to the extent practicable. It meets restricted use soil cleanup objectives at the surface through construction of a cover system. Alternative 2 best complies with this criterion because it removes all soils and wastes exceeding SCGs and leaves no contamination on the site.

The next six "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on-site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the engineering and/or institutional controls intended to limit the risk, and 3) the reliability of these controls.

Long-term effectiveness is best accomplished through the removal of contamination. As such, Alternative 2 best fulfills this criterion with the full excavation and removal of soil contamination. Alternative 3 leaves contamination on site and instead relies on continued maintenance of the surface cover and future owner/operator compliance with use restrictions and a site management plan in order to remain effective. Alternative 3, therefore, is somewhat less effective at meeting this criterion.

4. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

Alternative 2 best reduces the toxicity, mobility and volume of contamination on the site by removing all contaminated soil. Alternative 3 leaves the soil contamination on site and therefore does nothing to reduce its volume or toxicity. The soil contaminants- metals, PCBs and SVOCs- are relatively immobile and not impacting the groundwater. Subsurface soil contamination is not likely to migrate off-site. Through a cover system, Alternative 2 will control the mobility and toxicity of surface contamination via wind-blown dust and from direct human contact.

5. Short-term Impacts and Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

Alternative 2 will have enormous short-term impacts to the local community. Removal of approximately 670,000 cubic yards of contaminated soil is expected to take two to three years and result in thousands of trips of loaded dump trucks on local roads. Construction noise, dust and traffic are all expected nuisances which can be controlled. Sourcing 670,000 cubic yards of clean fill will be difficult and costly.

Alternative 3 will have much smaller impacts to the community as the soil requirements for a full site soil cover, estimated at 21,000 cubic yards, are significantly less. Moreover, the cover system is expected to be incorporated as part of a planned commercial/retail development of the site. If the planned retail development were to occur, much of the cover system will be comprised of commercial buildings, asphalt parking lots and roadways, significantly reducing the amount of imported clean soil. The impacts of the cover system requirement will be absorbed into the overall retail construction. Alternative 3 is significantly more effective at preparing the site for commercial development.

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction of the remedy and the ability to monitor its effectiveness. For administrative feasibility, the availability of the necessary personnel and materials is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, institutional controls, and so forth.

Alternative 2 contemplates the removal of soil from the 13 acre site down to a depth of 32 feet. This is likely not possible. Technical difficulties in implementing this alternative arise from the depth of the excavation. Extensive shoring and sheeting will need to be installed in order to get to a depth of 32 feet. Time is also a factor to consider since the removal and importation of 670,000 cubic yards of material could take over 2-3 years.

Alternative 3 is much more readily implemented. Constructing the soil cover poses no major technical difficulties other than containing potential dust emissions during construction. A cover system integrated into a planned commercial development project further enhances the implementability of Alternative 3.

7. Cost-Effectiveness. Capital costs and annual operation, maintenance, and monitoring costs are estimated for each alternative and compared on a present worth basis. Although cost-effectiveness is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the other criteria, it can be used as the basis for the final decision.

The full excavation of the site is the most effective way of removing site contamination, but due to the extreme costs associated with Alternative 2, it is not at all cost effective. Alternative 3 is much more cost effective while still satisfying the site specific RAOs.

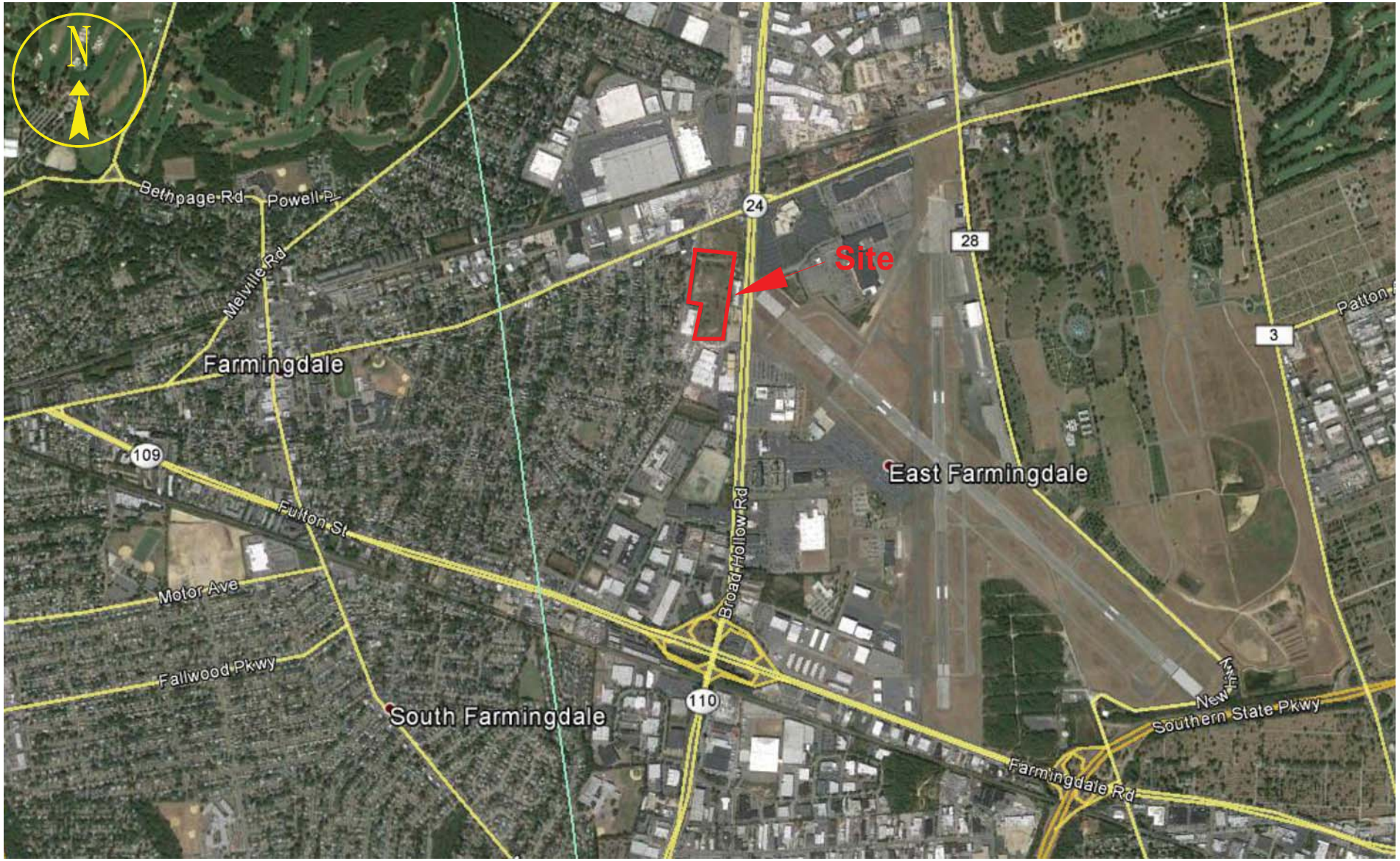
8. Land Use. When cleanup to pre-disposal conditions is determined to be infeasible, the Department may consider the current, intended, and reasonable anticipated future land use of the site and its surroundings in the selection of the soil remedy.

Since it is anticipated that this property will be developed and used for commercial purposes, Alternative 3 best fulfills this criterion. The encapsulation of the contaminated soil is easily achievable with a soil cover system or installation of buildings, parking lots and roadways. Due to the immobility of the site contamination, there is no concern for the migration of contamination, provided the surface cover is maintained with a Site Management Plan and an Environmental Easement is put in place restricting future excavation or development.

The final criterion, Community Acceptance, is considered a "modifying criterion" and is taken into account after evaluating those above. It is evaluated after public comments on the Proposed Remedial Action Plan have been received.

9. Community Acceptance. Concerns of the community regarding the investigation, the evaluation of alternatives, and the PRAP are evaluated. A responsiveness summary has been prepared that describes public comments received and the manner in which the Department will address the concerns raised.

Alternative 3 has been selected because, as described above, it satisfies the threshold criteria and provides the best balance of the balancing criterion.



Modified from 2014 Europa Technologies, Google

Not to Scale

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

Figure 1
Site Location Map

Fairchild Republic Aircraft; Old Sump
Broad Hollow Road
East Farmingdale, NY
Site No. 152004



0 175
SCALE IN FEET

Legend

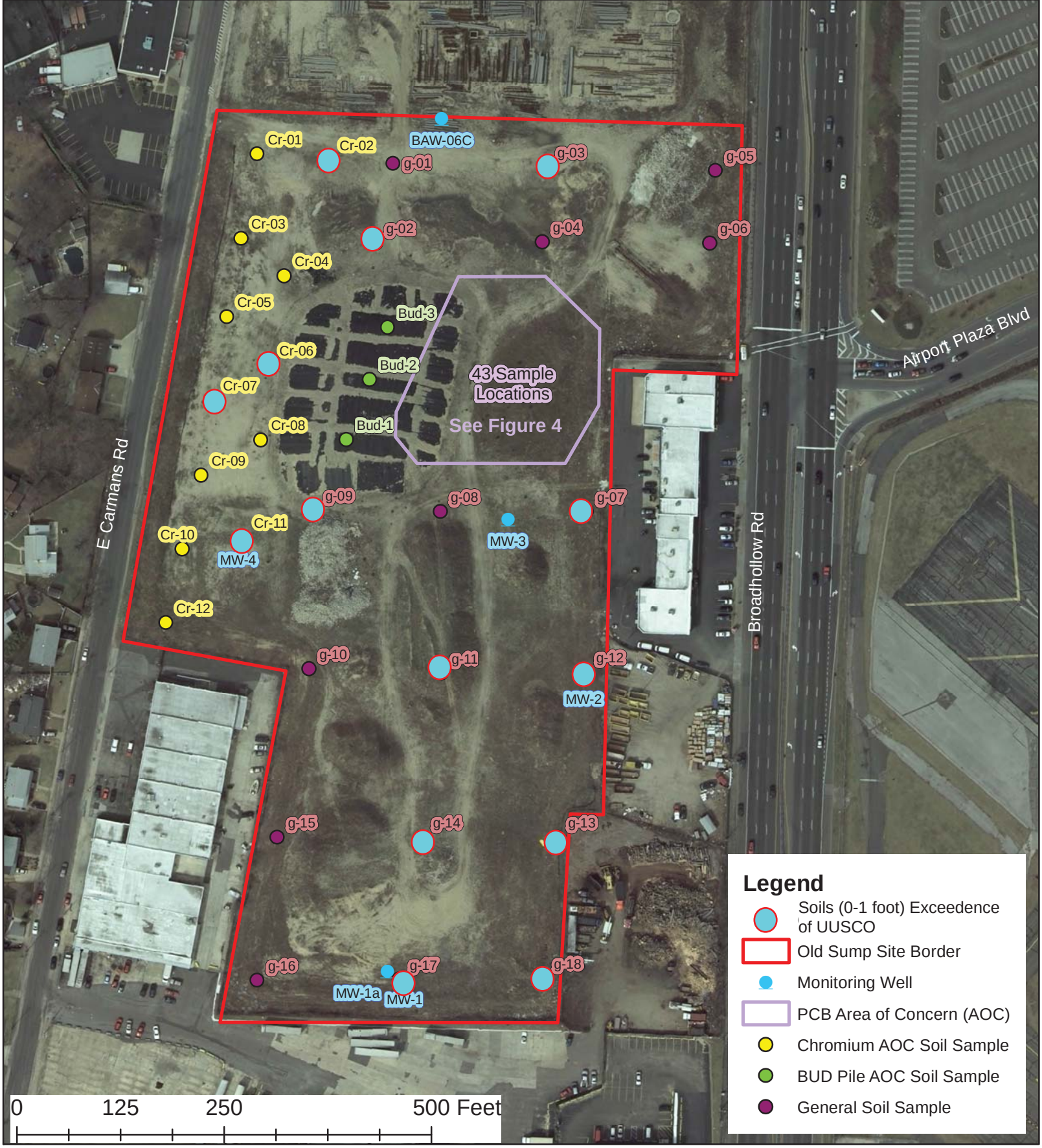
MW-1 - **Well ID Labels**

- **Surveyed Well Locations**

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS
225 Atlantic Avenue
Patchogue, New York 11772
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Fax (631) 447-6497
Email Info@Enviro-Asmnt.com
www.Enviro-Asmnt.com

Figure 2
Site Map

Fairchild Republic Aircraft; Old Sump
Broad Hollow Road
East Farmingdale, NY
Site No.152004



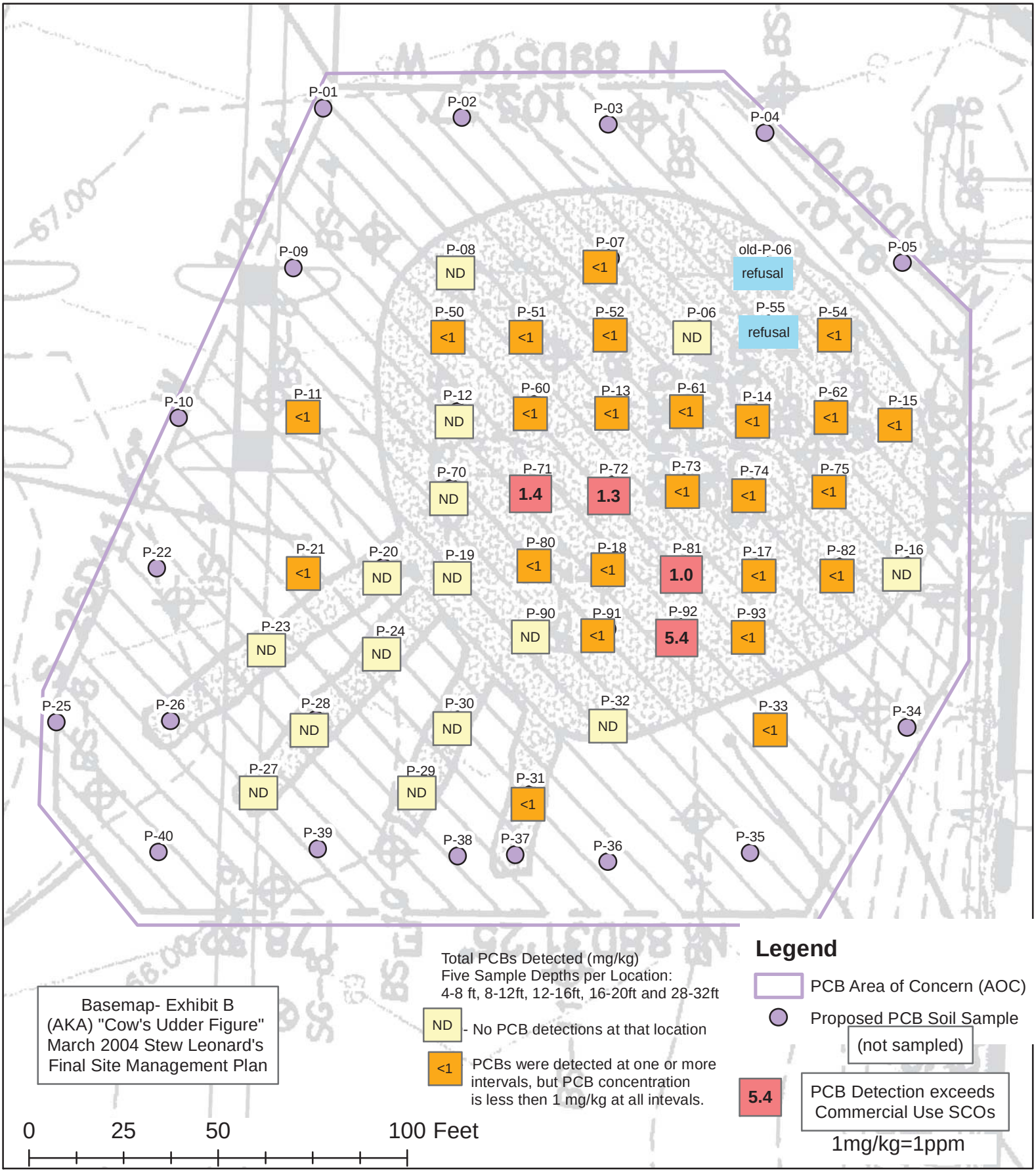
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Fairchild Old Sump Site (class 2) Site No. 152004
Broad Hollow Rd (Rt 110) E. Farmingdale, NY 11530
Town of Babylon, Suffolk County, New York

Remedial Investigation
Surface and Shallow Subsurface Soil Exceedences of
6 NYCRR 375-6.8 Unrestricted Use Soil Cleanup Objectives (UUSCO)
June-July 2014

Figure 3

Created by: RKC
2/5/15

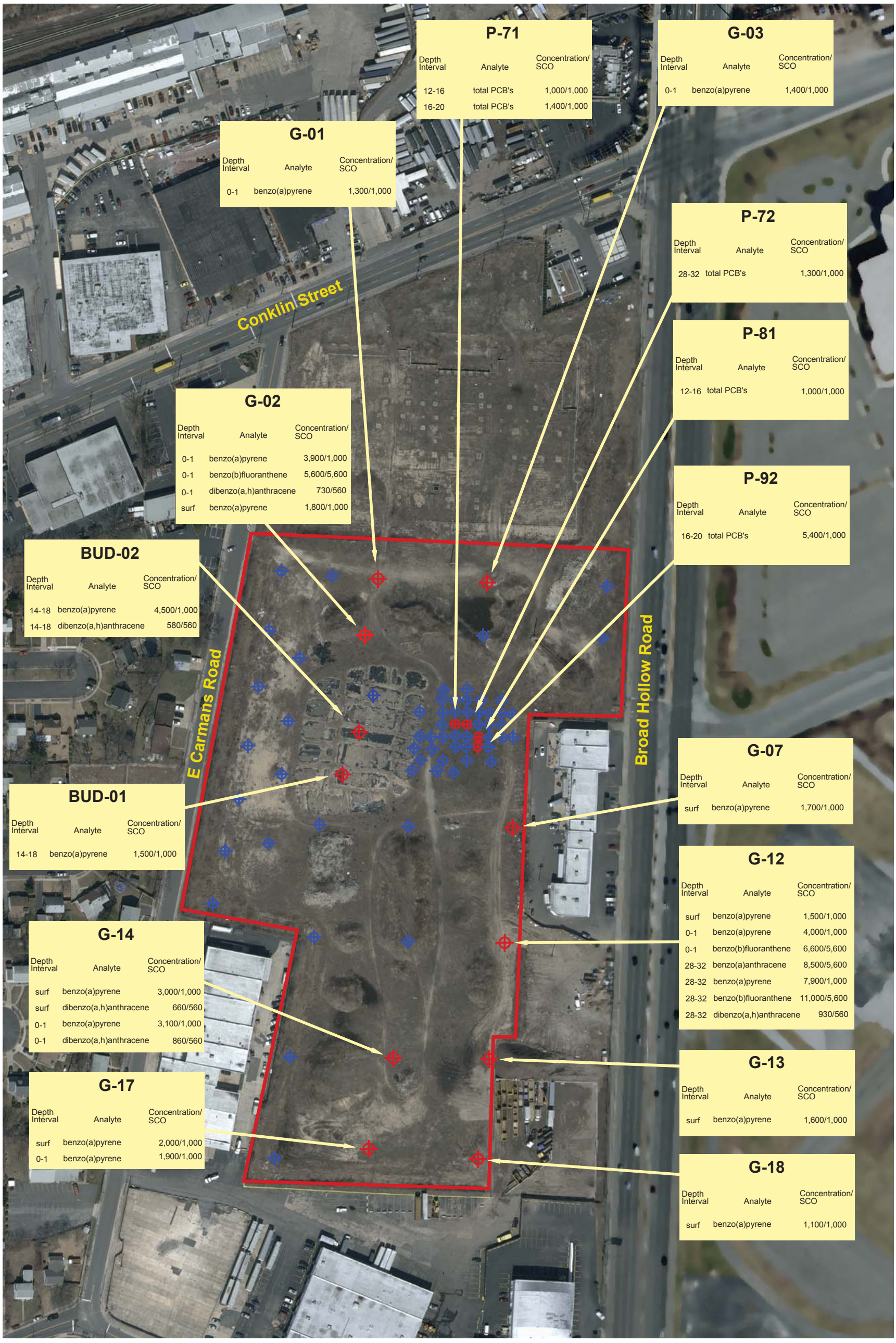


Fairchild Old Sump Site (class 2) Site No. 152004
Broad Hollow Rd (Rt 110) E. Farmingdale, NY 11530
Town of Babylon, Suffolk County, New York

Remedial Investigation
Sample Results
PCB Area of Concern
June/July 2014

Figure 4

Created by: RKC
10/2/14



P-71

Depth Interval	Analyte	Concentration/ SCO
12-16	total PCB's	1,000/1,000
16-20	total PCB's	1,400/1,000

G-03

Depth Interval	Analyte	Concentration/ SCO
0-1	benzo(a)pyrene	1,400/1,000

G-01

Depth Interval	Analyte	Concentration/ SCO
0-1	benzo(a)pyrene	1,300/1,000

P-72

Depth Interval	Analyte	Concentration/ SCO
28-32	total PCB's	1,300/1,000

P-81

Depth Interval	Analyte	Concentration/ SCO
12-16	total PCB's	1,000/1,000

G-02

Depth Interval	Analyte	Concentration/ SCO
0-1	benzo(a)pyrene	3,900/1,000
0-1	benzo(b)fluoranthene	5,600/5,600
0-1	dibenzo(a,h)anthracene	730/560
surf	benzo(a)pyrene	1,800/1,000

P-92

Depth Interval	Analyte	Concentration/ SCO
16-20	total PCB's	5,400/1,000

BUD-02

Depth Interval	Analyte	Concentration/ SCO
14-18	benzo(a)pyrene	4,500/1,000
14-18	dibenzo(a,h)anthracene	580/560

G-07

Depth Interval	Analyte	Concentration/ SCO
surf	benzo(a)pyrene	1,700/1,000

BUD-01

Depth Interval	Analyte	Concentration/ SCO
14-18	benzo(a)pyrene	1,500/1,000

G-12

Depth Interval	Analyte	Concentration/ SCO
surf	benzo(a)pyrene	1,500/1,000
0-1	benzo(a)pyrene	4,000/1,000
0-1	benzo(b)fluoranthene	6,600/5,600
28-32	benzo(a)anthracene	8,500/5,600
28-32	benzo(a)pyrene	7,900/1,000
28-32	benzo(b)fluoranthene	11,000/5,600
28-32	dibenzo(a,h)anthracene	930/560

G-14

Depth Interval	Analyte	Concentration/ SCO
surf	benzo(a)pyrene	3,000/1,000
surf	dibenzo(a,h)anthracene	660/560
0-1	benzo(a)pyrene	3,100/1,000
0-1	dibenzo(a,h)anthracene	860/560

G-13

Depth Interval	Analyte	Concentration/ SCO
surf	benzo(a)pyrene	1,600/1,000

G-17

Depth Interval	Analyte	Concentration/ SCO
surf	benzo(a)pyrene	2,000/1,000
0-1	benzo(a)pyrene	1,900/1,000

G-18

Depth Interval	Analyte	Concentration/ SCO
surf	benzo(a)pyrene	1,100/1,000

- Soil Sampling Location w/ Commercial SCO Exceedance
- Soil Sampling Location

All concentrations reported in ug/Kg

Depth intervals provided in feet below grade surface

All analyses by Test America, Inc.

0 175

SCALE IN FEET

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www.Enviro-Asmnt.com

Figure 5

Commercial SCO Exceedances

June-July 2014 Remedial Investigation

6 NYCRR 375-6.8 Commercial Use Soil Cleanup Objectives

Fairchild Republic Aircraft; Old Sump
Broad Hollow Road
East Farmingdale, NY
Site No.152004



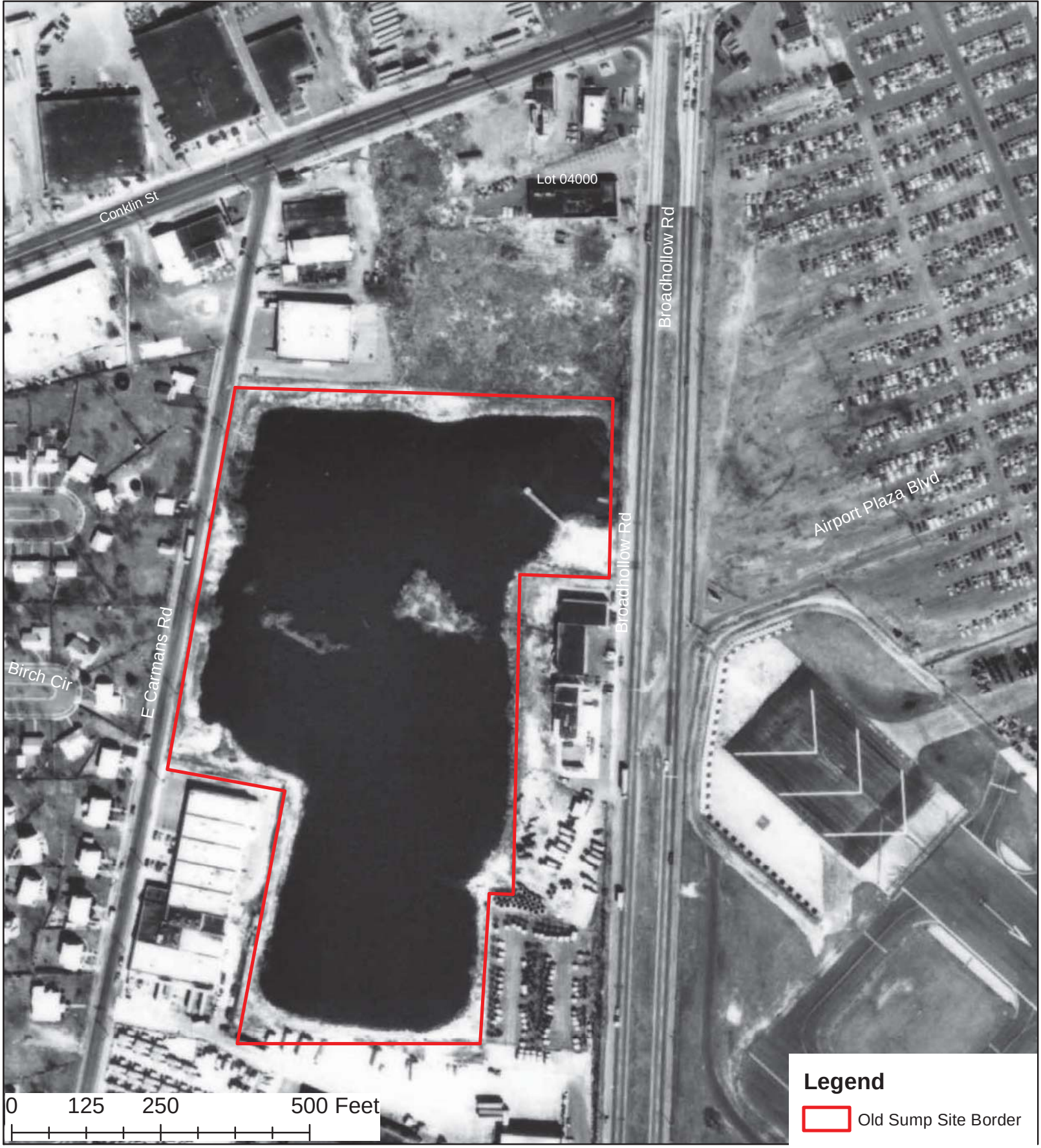
N

Fairchild Old Sump Site (class 2) Site No. 152004
Broad Hollow Rd (Rt 110) E. Farmingdale, NY 11530
Town of Babylon, Suffolk County, New York

Remedial Investigation
Approximate Area for Commercial Cover System
June/July 2014

Created by: RKC
2/5/15

Figure 6



N

Fairchild Old Sump Site (class 2) Site No. 152004
Broad Hollow Rd (Rt 110) E. Farmingdale, NY 11530
Town of Babylon, Suffolk County, New York

Remedial Investigation
Historical Aerial Photo
1976

Figure 7

Created by: RKC
5/01/14

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

Fairchild Republic Aircraft; Old Sump
State Superfund Project
East Farmingdale, Suffolk County New York
Site No. 152004

The Proposed Remedial Action Plan (PRAP) for the Fairchild Republic Aircraft; Old Sump site was prepared by the New York State Department of Environmental Conservation (the Department) in consultation with the New York State Department of Health (NYSDOH) and was issued to the document repositories on February 26, 2015. The PRAP outlined the remedial measure proposed for the contaminated soil at the Fairchild Republic Aircraft; Old Sump site.

The release of the PRAP was announced by sending a notice to the public contact list, informing the public of the opportunity to comment on the proposed remedy.

A public meeting was held on March 18, 2015, which included a presentation of the remedial investigation feasibility study (RI/FS) for the Fairchild Republic Aircraft; Old Sump site as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed remedy. These comments have become part of the Administrative Record for this site. The public comment period for the PRAP ended on March 28, 2015.

This responsiveness summary responds to all questions and comments raised during the public comment period. The following are the comments received, with the Department's responses:

COMMENT 1: The Town of Babylon was originally opposed to the filling in of the old sump when it was proposed. The Town representative wanted to make note of this at the meeting.

RESPONSE 1: The Town’s statement is noted.

COMMENT 2: The Town of Babylon requested that they be copied on any IC’s or EC’s that are placed on the property because they are keeping their own database for sites in the Town.

RESPONSE 2: The Department will forward a copy of the environmental easement to the town.

COMMENT 3: When will this remedy be completed so that the site can be redeveloped?

RESPONSE 3: The property owner has elected to implement the selected remedy – a cover system to allow for commercial use of the site- the soil cover (or buildings, paving or other elements of the development) can be implemented simultaneously with property redevelopment.

APPENDIX B

Administrative Record

Administrative Record

Fairchild Republic Aircraft; Old Sump
State Superfund Project
East Farmingdale, Suffolk County New York
Site No. 152004

1. Proposed Remedial Action Plan for the Fairchild Republic Aircraft; Old Sump site, dated February 2015, prepared by the Department.

2. Order on Consent, Index No. W1-1182-14-04, between the Department and Acadia Republic Farmingdale LLC, executed on July 24, 2014.

3. Fairchild Old Sump Site, Broad Hollow Road, East Farmingdale, NY – June-July 2014 Remedial Investigation Summary Report, dated October 29, 2014, prepared by Environmental Assessment & Remediations (EAR).

4. Feasibility Study Report, dated December 2014, prepared by the Department.

5. Record of Decision for the Fairchild Republic Old Recharge Basin Site, dated June 1996, prepared by the Department.

FAIRCHILD REPUBLIC AIRCRAFT; OLD SUMP SITE
SUFFOLK COUNTY
EAST FARMINGDALE, NEW YORK

SITE MANAGEMENT PLAN

NYSDEC Site Number: 152004

Prepared for:
Acadia Republic Farmingdale, LLC
c/o Acadia Realty Trust
411 Theodore Fremd Avenue, Suite 300
Rye, New York 10580

Prepared by:
Remedial Engineering, P.C.
209 Shafter Street
Islandia, New York 11749
631-232-2600

and

Roux Associates, Inc.
209 Shafter Street
Islandia, New York 11749
631-232-2600

Revisions to Final Approved Site Management Plan:

Revision No.	Date Submitted	Summary of Revision	NYSDEC Approval Date

FEBRUARY 2016

CERTIFICATION STATEMENT

I, CHARLES MCGUCKIN, certify that I am currently a NYS registered professional engineer as in defined in 6 NYCRR Part 375 and that this Site Management Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

Charles J. McGuckin, P.E. NYS Professional Engineer #069509	February 11, 2016 Date	 Signature

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LIST OF ACRONYMS

Acronym	Definition
CAMP	Community Air Monitoring Plan
CLP	Contract Laboratory Program
COC	Certificate of Completion
CP	Commissioner Policy
DER	Division of Environmental Remediation
EC	Engineering Control
ECL	Environmental Conservation Law
ELAP	Environmental Laboratory Approval Program
HASP	Health and Safety Plan
IC	Institutional Control
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYCRR	New York Codes, Rules and Regulations
O&M	Operations and Maintenance
OM&M	Operation, Maintenance and Monitoring
OSHA	Occupational Safety and Health Administration
PID	Photoionization Detector
PRP	Potentially Responsible Party
PRR	Periodic Review Report
QA/QC	Quality Assurance/Quality Control
RAO	Remedial Action Objective
RAWP	Remedial Action Work Plan
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RP	Remedial Party
SCG	Standards, Criteria and Guidelines
SCO	Soil Cleanup Objective
SMP	Soil Management Plan
SPDES	State Pollutant Discharge Elimination System

Acronym	Definition
SSD	Sub-slab Depressurization
SVI	Soil Vapor Intrusion
SVMS	Soil Vapor Mitigation System
TAL	Target Analyte List
TCL	Target Compound List
TCLP	Toxicity Characteristic Leachate Procedure
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank

EXECUTIVE SUMMARY

The following provides a brief summary of the controls implemented for the Site, as well as the inspections, monitoring, maintenance and reporting activities required by this Site Management Plan:

Site Identification: Site Identification No. 152004; Fairchild Republic Aircraft; Old Sump Site; East Farmingdale, New York

Institutional Controls:	1. The property may be used for commercial use	
	2. Environmental Easement	
	3. All ECs must be inspected at a frequency and in a manner defined in the SMP.	
Engineering Controls:	1. Cover system	
Inspections:		**Frequency**
1. Cover inspection		Annually

Further descriptions of the above requirements are provided in detail in the latter sections of this Site Management Plan.

1.0 INTRODUCTION

1.1 General

This Site Management Plan (SMP) is a required element of the remedial program for the Fairchild Republic Aircraft; Old Sump Site (aka: Old Recharge Basin) located in East Farmingdale, New York (hereinafter referred to as the "Site"). See Figure 1. The Site is currently in the New York State (NYS) Inactive Hazardous Waste Disposal Site Remedial Program, Site No. 152004, which is administered by New York State Department of Environmental Conservation (NYSDEC).

Acadia Republic Farmingdale, LLC entered into an Order on Consent on July 24, 2014 with the NYSDEC to remediate the Site. A figure showing the Site location and boundaries of this Site is provided in Figure 1. The boundaries of the Site are more fully described in the metes and bounds Site description that is part of the Environmental Easement provided in Appendix A (will be included in the final version of the SMP).

After completion of the remedial work, some contamination was left at this Site, which is hereafter referred to as "remaining contamination". Institutional and Engineering Controls (ICs and ECs) have been incorporated into the Site remedy to control exposure to remaining contamination to ensure protection of public health and the environment. An Environmental Easement granted to the NYSDEC, and recorded with the Suffolk County Clerk, requires compliance with this SMP and all ECs and ICs placed on the Site.

This SMP was prepared to manage remaining contamination at the Site until the Environmental Easement is extinguished in accordance with ECL Article 71, Title 36. This plan has been approved by the NYSDEC, and compliance with this plan is required by the grantor of the Environmental Easement and the grantor's successors and assigns. This SMP may only be revised with the approval of the NYSDEC.

It is important to note that:

- This SMP details the site-specific implementation procedures that are required by the Environmental Easement. Failure to properly implement the SMP is a violation of the Environmental Easement, which is grounds for revocation of the Certificate of Completion (COC).

- Failure to comply with this SMP is also a violation of Environmental Conservation Law, 6NYCRR Part 375 and the Order on Consent dated July 24, 2014 (Index #W1-1182-14-05; Site #152004) for the Site, and thereby subject to applicable penalties.

All reports associated with the Site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State. A list of contacts for persons involved with the Site is provided in Appendix C of this SMP.

This SMP was prepared by Remedial Engineering, P.C. and Roux Associates, Inc. (collectively Remedial Engineering), on behalf of Acadia Republic Farmingdale, LLC , in accordance with the requirements of the NYSDEC's DER-10 ("Technical Guidance for Site Investigation and Remediation"), dated May 2010, and the guidelines provided by the NYSDEC. This SMP addresses the means for implementing the ICs and ECs that are required by the Environmental Easement for the Site.

1.2 Revisions

Revisions to this SMP will be proposed in writing to the NYSDEC's project manager. Revisions will be necessary upon, but not limited to, the following occurring: a change in media monitoring requirements, upgrades to or shut-down of a remedial system, post-remedial removal of contaminated sediment or soil, or other significant change to the Site conditions. In accordance with the Environmental Easement for the Site, the NYSDEC will provide a notice of any approved changes to the SMP, and append these notices to the SMP that is retained in its files.

1.3 Notifications

Notifications will be submitted by the property owner to the NYSDEC, as needed, in accordance with NYSDEC's DER – 10 for the following reasons:

- 60-day advance notice of any proposed changes in site use that are required under the terms of the July 2014 Order on Consent, 6NYCRR Part 375 and/or Environmental Conservation Law.
- 7-day advance notice of any field activity associated with the remedial program.
- 15-day advance notice of any proposed ground-intrusive activity pursuant to the Excavation Work Plan.

- Notice within 48-hours of any damage or defect to the foundation, structures or EC that reduces or has the potential to reduce the effectiveness of an EC, and likewise, any action to be taken to mitigate the damage or defect.

- Verbal notice by noon of the following day of any emergency, such as a fire; flood; or earthquake that reduces or has the potential to reduce the effectiveness of ECs in place at the Site, with written confirmation within 7 days that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.

- Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action submitted to the NYSDEC within 45 days describing and documenting actions taken to restore the effectiveness of the ECs.

Any change in the ownership of the Site or the responsibility for implementing this SMP will include the following notifications:

- At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser/Remedial Party has been provided with a copy of 2014 Order on Consent, and all approved work plans and reports, including this SMP.

- Within 15 days after the transfer of all or part of the Site, the new owner's name, contact representative, and contact information will be confirmed in writing to the NYSDEC.

Table 1 on the following page includes contact information for the above notification. The information on this table will be updated as necessary to provide accurate contact information. A full listing of Site-related contact information is provided in Appendix C.

Table 1: Notifications*

Name	Contact Information
Bob Corcoran	(518) 402-9658 bob.corcoran@dec.ny.gov
Walter Parish	(631) 444-0240 walter.parish@dec.ny.gov
Kelly Lewandowski	(518) 402-9543 kelly.lewandowski@dec.ny.gov

* Note: Notifications are subject to change and will be updated as necessary.

2.0 SUMMARY OF PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

2.1 Site Location and Description

The Site is located in East Farmingdale, Suffolk County, New York and is identified as Section 049.00 Block 02.00 and Lots 007.000, 008.000, 010.000, 011.000 and 014.000 on the Town of Babylon Tax Map (see Figure 2). The Site is an approximately 13-acre area and is bounded by vacant property and Conklin Street to the north, commercial buildings to the south, State Route 110 to the east, and East Carmans Road to the west (see Figure 2 – Site Layout Map). The boundaries of the Site are more fully described in Appendix A –Environmental Easement. The owner of the Site parcel(s) at the time of issuance of this SMP is:

Acadia Republic Farmingdale, LLC

2.2 Physical Setting

2.2.1 Land Use

The Site consists of the following: vacant lots with various concrete debris and soil piles situated throughout the Site. The Site is zoned light industrial and is currently vacant. The northern portion of the Site lies in the runway protection zone of the Republic Airport and building height in the zone is restricted by local ordinance.

The properties adjoining the Site and in the neighborhood surrounding the Site primarily include light industrial, commercial, and residential properties. The properties immediately south of the Site include commercial properties; the properties immediately north of the Site include light industrial properties; the properties immediately east of the Site include commercial properties; and the properties to the west of the Site include fire department and residential properties.

2.2.2 Geology

The Site lies on a gently sloping glacial outwash plain. The Site is underlain by three major unconsolidated geological units, which include Pliestocene Upper Glacial deposits; the Magothy Formation; and the Raritan Formation, which is comprised of an upper clay unit and the lower Lloyd sand. These units have a combined total thickness of approximately 1,300 feet beneath the Site and rest unconformably on a bedrock surface that slopes gently to the southeast. The bedrock is Precambrian and/or Paleozoic and is composed of schist and gneiss (Suter, 1904).

Based on previous investigations completed at the Site, the native subsurface geology is comprised of fine to coarse brown sand and rounded gravel to a depth of approximately 120 feet below land surface (ft bls). Below this is a layer of a mottled fine to medium sand with trace silt and mica, intermixed with silt and clay lenses. Solid waste from the demolition of the former Main Plant site is mixed into the upper 30 feet of subsurface at the Site. The solid waste is comprised primarily of heterogeneous chunks of cement, rebar and relocated soils. Site specific boring logs prepared by Environmental Assessment and Remediations (EAR) are provided in Appendix B.

2.2.3 Hydrogeology

The Site is underlain by the Upper Glacial, Magothy and Lloyd aquifers, which are designated by the United States Environmental Protection Agency (USEPA) as sole source aquifers. The regional groundwater flow is characterized by an east-west trending groundwater divide that occurs in the approximate center of Long Island. Groundwater recharge to the Magothy and Lloyd aquifers occurs in the vicinity of the regional groundwater divide north of the Site where there is relatively high downward vertical hydraulic gradient and relatively flat horizontal hydraulic gradient. The groundwater flow direction becomes more horizontal with increasing distances form the regional divide. Groundwater ultimately discharges to streams and creeks near the shoreline, or discharges to the surrounding bays and the Atlantic Ocean (Smolensky et al. 1989).

Based on previous investigations, depth to groundwater ranges from 20 to 30 ft bls, and flows generally to the south. Groundwater monitoring well construction logs prepared by EAR are provided in Appendix B.

2.3 Investigation and Remedial History

The Site is the location of a former sand mining operation for Colonial Sand & Gravel Company that was later converted to a storm water recharge basin and wastewater/cooling water repository. The basin, also known as the Old Recharge Basin (ORB), was used by New York State Department of Transportation (NYSDOT) to collect storm water runoff, and by Fairchild Republic Corporation (Fairchild) for runoff and disposal of up to 2 million gallons per day of non-contact cooling water and treated waste water from the Fairchild Main Plant Site (Site No.

152130). These discharges were regulated under a New York State issued State Pollution Discharge Elimination System (SPDES) permit. Fairchild stopped discharging to the basin in 1983 when it constructed a new recharge basin on the east side of Route 110. The Fairchild Main Plant Site produced sludge from metal precipitation from alodine process, anodizing, chemical milling and wash water from paint spray booths. The Suffolk County Department of Health Services (SCDHS) expressed concerns about the discharges entering the ORB and these concerns, along with variants from the SPDES permit, led to a Notice of Violation (NOV). The NOV trigged environmental investigations of the Site that began in 1982. On August 11, 1982, Fairchild entered into a Consent Agreement with SCDHS to investigate the ORB, which resulted in the Site becoming listed on the Registry of Inactive Hazardous Waste Disposal Sites as Class 2 in August 1989. Extensive investigations were completed at the Site under the direction of the NYSDEC and with input from the SCDHS that characterized the soil, sediment and groundwater.

The following narrative provides a remedial history timeline and a brief summary of the available project records to document key investigative and remedial milestones for the Site. Full titles for each of the reports referenced below are provided in Section 8.0 - References.

2.3.1 Environmental Investigations – York Wastewater Consultants, 1982

York Wastewater Consultants (York) conducted two environmental investigations in 1982 at the Site (Eder Associates, 1995). The investigations included the collection of bottom sediment, surface water, and groundwater samples. Based on the analytical results, tetrachloroethylene was detected in a temporary upgradient well (FR-1) and temporary downgradient well (FR-2).

2.3.2 Environmental Investigations – Geraghty and Miller, 1985 to 1989

Geraghty and Miller conducted three environmental investigations at the Site from 1983 through 1989, which addressed groundwater, surface water, soil and sediment (Eder Associates, 1995). The first investigation, conducted in 1983, included the installation and sampling of seven groundwater monitoring well clusters (one shallow and one deep well) in the vicinity of the ORB, and the sampling of two existing wells installed by York. Based on investigation results, it was concluded that metals were not leaching from the ORB sediments to groundwater.

A second investigation was conducted in 1985, which included a second round of groundwater sampling from the monitoring wells previous sampled in 1983, to determine the leachability of metals in bottom sediments. The analytical results indicated that small amounts of metals were leaching from the ORB bottom sediments at concentrations below regulatory standards, at that time.

A third investigation was conducted from 1988 through 1989, which included a geophysical survey, the collection and analysis of sediment, soil and surface-water samples. The analytical data for the sediment samples indicated that there were detectable concentrations of volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), pesticides and metals in the ORB sediment. VOCs and metals were also detected in the surface water samples. VOCs were detected in the surface water samples at concentrations ranging from 67 micrograms per liter (µg/L) to 134 µg/L.

Based on the results of the aforementioned investigations, the Site was listed on the NYS Inactive Hazardous Waste Disposal Site Registry as a Class 2 Site in August 1989.

2.3.3 ORB Final Remediation Investigation Report – Eder Associates, Sept 1995

Eder Associates (Eder) conducted a remediation investigation (RI) in two phases from 1992 to 1993. The RI included the installation of 11 groundwater monitoring wells, collection of seven surface soil samples, the completion of two groundwater sampling rounds (from the 11 wells installed as part of the RI and 15 existing wells) and surface water sampling; and the completion of a well inventory. Groundwater samples were also collected from three off-Site monitoring wells located on the East Farmingdale Fire Department property. The analytical data from the RI was compared to applicable Standards, Criteria and Guidance values in determining remedial alternative at the time. The on-Site groundwater quality results indicated that VOCs (including chlorinated VOCs), SVOCs, metals (including chromium and lead), pesticides and PCBs were detected at concentrations above New York Codes, Rules and Regulation (NYCRR) Part 703 groundwater standards at the time. The surface water quality results indicated that VOCs, SVOCs, PCBs and pesticides were not detected at concentrations above NYCRR Part 703 groundwater standards at the time. The surface soil quality results indicated that SVOCs, metals and PCBs were detected at concentrations above NYSDEC recommended soil cleanup levels

(SCOs) at the time. The off-Site groundwater quality data indicated that minor CVOCs, SVOCs, metals and pesticides were detected at concentrations above NYCRR Part 703 groundwater standards at the time.

A well inventory was conducted for all public water supply wells within a three mile radius of the Site and all wells within a one mile radius of the Site. Based on the well inventory results, the closest downgradient active supply well was approximately 7,000 feet (>1 mile) southeast of the Site.

2.3.4 Feasibility Study Report – Eder Associates, September 1995

Following the completion of the RI conducted by Eder in 1995 at the Site, Eder prepared a Feasibility Study Report, which recommended a remedial alternative 2 (Limited Action/Site Use Restrictions) for the Site based on the alternative screening, detailed analysis and comparative analysis. Alternative 2 would maintain a fence around the Site (with regular inspections and repairs as necessary) to restrict unauthorized access and reduce the potential for inadvertent contact with contaminants; would be protective to human health and the environment given Site-specific studies that indicate there are no risks associated with existing conditions; and would be cost-effective because funds would be used for long-term surface water and groundwater monitoring and fence maintenance to ensure that there are no significant future impacts.

2.3.5 Record of Decision – NYSDEC 1996

The 1996 Record of Decision (ROD) determined that minor groundwater contamination discovered at the Site was due to an upgradient source(s) and, since groundwater issues were to be managed under the ROD for the Fairchild Main Plant Site, no remedial actions were required to be taken on the Site to address groundwater. In addition, the 1996 ROD determined, based on the results of the 1995 Remedial Investigation/Feasibility Study conducted by Eder, that the sediments located at the bottom of the ORB are contaminated with elevated levels of some metals (including chromium and lead) and PCBs. The NYSDEC selected a Limited Action/Institutional Controls alternative remedy for the Site. Components of the remedy described, in detail in the 1996 Record of Decision (ROD), included a deed restriction be put on the basin to restrict future use of the Site; maintaining highly visible signs indicating that

hazardous constituents present and that trespassing, swimming, and fishing are prohibited; and proper maintenance of the Site fence.

In 1998, the Site was delisted from the NYS Inactive Hazardous Waste Disposal Site Registry, following completion of the 1996 ROD requirements.

2.3.6 Demolition and Filling Work Plan – Savik & Murray, October 1996

Pursuant to the 1997 Order on Consent, the Respondent (Mairoll, Inc.) was given the opportunity to exceed the requirements of the selected remedial alternative (identified in the 1996 ROD) by electing to fill in the ORB. On behalf of Mairoll, Savik & Murray prepared a Demolition and Filling Work Plan (Work Plan) for the ORB, which was approved by the NYSDEC in March 1997. The Work Plan detailed the procedures to fill in the ORB and provided information regarding Mairoll's plan to use granular material, clean concrete and masonry building demolition debris and soil as fill material, which was approved by the NYSDEC. The fill material was obtained from the property located on the east side of Route 110 known as the Main Plant property. Demolition and ORB filling activities took place between 1997 and 1998.

During filling of the ORB, bottom sediments rose to the surface as the filling material was placed within the ORB (MAC, 2002). The sediment was confined by surrounding it with an earthen berm to prevent spreading the sediment over a wider area. The sediment was placed in trenches and allowed to dry as much as possible before being buried beneath clean sand and gravel fill.

In addition, chromium impacted soil, detected during previous investigations, exists along the western boundary of the Site (MAC 2002). The chromium impacted area was marked with cautionary snow fence and buried during filling of the ORB.

Due to the failure of the remedy to adequately address the significant threats at the Site, the Site was placed back on the NYS Inactive Hazardous Waste Site Registry as a Class 2 Site in April 2010.

2.3.7 Bottom Sediment Investigation Report – MAC Consultants, Inc., August 2002

In June 2002, MAC Consultants, Inc. (MAC) conducted a subsurface investigation, at the request of the NYSDEC. The investigation included the collection of sediment samples from the ORB bottom sediment confined and re-buried during filling activities; the collection of soil samples along the western boundary of the Site to delineate chromium impacts in this area; and the collection of 13 soil gas samples. The soil quality results for the ORB sediments indicated that SVOCs, PCBs and metals were detected at concentrations above NYSDEC soil cleanup guidelines at the time. The soil quality results for the western boundary area indicated chromium concentrations were detected in samples collected from the 4 to 8 ft bls and 8 to 12 ft bls intervals at concentrations exceeding the eastern USA background levels at the time. The soil gas quality results indicated that tetrachloroethene (PCE) was detected at a concentration of 16 milligrams per cubic meter (mg/m^3) from a sample located adjacent to the East Farmingdale Fire Department (Fire Department) property. Based on previous sampling results, PCE was detected in groundwater at a concentration of 12,143 µg/L from a monitoring well located on the Fire Department property.

2.3.8 Soil Management Plan – Malcolm Pirnie, Inc., April 2004

In 2004, a Soil Management Plan (Plan) was prepared by Malcolm Pirnie, Inc. (MP) to provide information and procedures for those who may encounter soil that has been impacted by the historic use of the property, during intrusive construction activities that breach the asphalt parking lot or the building foundations at the Site. At the completion of the 2004 Plan, the Site was being redeveloped by Stew Leonard's as a commercial food store. As part of the redevelopment by Stew Leonard's, the property lots were combined into one site, which included the ORB, the former Johnson Property, located immediately north of the ORB, and the former USA Signs property located immediately northeast of the ORB. The former Johnson Property and USA Signs property are not covered under this SMP.

During Site development, petroleum contaminated soil from the former Johnson Property was treated under a NYSDEC Beneficial Reuse Determination (BUD) permit and a pavement subbase material stockpile was created that remains on-Site. The total amount of recycled subbase material created was approximately 25,000 cubic yards, which was stockpiled on-Site.

The NYSDEC issued BUD permit (#99-0001) required the reuse of the treated petroleum impacted material as a pavement subbase by June 1, 2000. Since the subbase material was not reused by the required date, a new BUD permit was required and the subbase material needed to be retested to demonstrate that it was still useable as a pavement subbase. On August 26, 2003, a new BUD (#788-1-30) was issued by the NYSDEC for the beneficial reuse of the subbase material; this BUD approval expired on October 31, 2004.

2.3.9 Phase I ESA – CNS Management Corporation, December 2012

In 2012, a Phase I ESA was performed by CNS Management Corporation (CNS) to characterize the environmental conditions at the Site. The scope of work for this Phase I ESA included a visual inspection of the Site, a regulatory agency file review, a historical Site review using aerial photographs, topographic maps, Sanborn fire insurance maps and data identified within previous environmental reports and an environmental lien search.

The Phase I ESA revealed two recognized environmental conditions (REC) in connection with the Site as described below.

- The northeastern abutting gas station is located upgradient of the Site and represents a concern based upon the southerly direction of groundwater flow and its current/past operations as a gasoline station.
- There are environmental impacts from past Site operations, however impacted soil consisting of petroleum, chromium and PCBs are allowed to remain on-Site as outlined within a NYSDEC-approved soil management plan.

2.3.10 2014 Remedial Investigation Summary Report prepared by EAR

In June through July 2014, Environmental Assessment and Remediations (EAR) conducted a remedial investigation (RI) at the Site at the direction of the NYSDEC. The scope of work included the advancement of 43 soil borings within the PCB impacted area and 18 general (Site-wide) soil boring; collection of three soil samples from the BUD soil stockpile; advancement of 12 soil borings within the chromium impacted area; the installations and sampling of four groundwater monitoring wells and sampling of two existing groundwater monitoring wells. The soil quality results from samples collected in the PCB impacted area indicated that PCBs were detected at concentrations above Unrestricted use and Commercial SCOs at depth intervals ranging from 4-8 ft bls, 12-16 ft bls and 28-32 ft bls. Chromium was

also detected at concentrations above NYSDEC Part 375 Unrestricted use SCOs (UUSCOs) from the 28-32 ft bls interval at two locations. The soil quality results for the general Site-wide soil sampling indicated that SVOCs, metals and PCBs were detected at concentrations above UUSCOs and/or NYSDEC Part 375 Commercial use SCOs (CUSCOs). The soil quality results of the BUD stockpile sampling indicated that SVOCs and metals (chromium, lead and zinc) were detected at concentrations above the UUSCOs and CUSCOs in the 14-18 ft bls interval. The soil quality results from samples collected in the chromium impacted area indicated that metals (including chromium, lead, mercury and silver) were detected at concentrations exceeding UUSCOs. The groundwater quality results indicated that PCE was detected in one groundwater sample (MW-3) at a concentration above NYSDEC Ambient Water Quality Standards and Guidance Values (AWQSGV). Naturally occurring metals (iron, manganese and sodium) were also detected in multiple wells at concentrations above NYSDEC AWQSGV.

2.3.11 Feasibility Study Report – NYSDEC, December 2014

The NYSDEC completed a feasibility study (FS) in December of 2014 to address remedial options at the Site following the results of the 2014 RI conducted by EAR (at the direction of the NYSDEC). The FS evaluated three remedial alternatives to address soil contamination at the Site. As described in the FS, the NYSDEC recommended Alternative 3 – Installation of a Surface Cover, as the recommended remedy for the Site. This alternative was recommended since there was very limited concern with off-Site migration and future exposure to public health or the environment due to the immobility of the SVOCs and PCBs detected in soil beneath the Site. In addition, the installation of a surface cover was recommended because it effectively achieved the Remedial Action Objectives (RAOs) for the Site, is the most easily implemented, and is relatively low in cost.

2.3.12 Record of Decision – NYSDEC 2015

The 2015 ROD indicated that VOC contamination found in groundwater at the Site is associated with an off-Site source. The extent of on-Site groundwater VOC contamination as well as associated human exposure assessments and abatement actions will be addressed separately by the NYSDEC as part of the remedial program for the Brandt Airflex Superfund site (Site No. 152183). Also, the 2015 ROD determined that the selected remedy for the Site to be a Cover System with the imposition of an institutional control in the form of an Environmental Easement.

As described in the 2004 Soil Management Plan and 2015 ROD, approximately 25,000 cubic yards of petroleum contaminated soil (PCS) has been stockpiled on the Site since approximately 1999. In August 2003, the NYSDEC issued a BUD approving the on-Site use of the PCS as parking lot subbase material for an anticipated commercial redevelopment of the Site. The development never materialized and the BUD and subsequent BUD extensions have since expired.

2.4 Remedial Action Objectives

The Remedial Action Objectives (RAOs) for the Site as listed in the Record of Decision dated March 30, 2015 are as follows:

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.

2.5 Remaining Contamination

2.5.1 Soil

Based on the most recent RI conducted at the Site in 2014, UUSCOs and/or CUSCOs were exceeded at a majority of the 76 soil sample locations across the Site for one or more of the following: PCBs; metals including lead, chromium, cadmium, mercury, silver, copper and zinc; and SVOCs including benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, chrysene, and indeno(1,2,3-cd)pyrene (EAR, 2014).

Surface soils and/or shallow subsurface soils (one ft bls), exceed UUSCOs for SVOC, metals or PCB at 15 of 30 sample locations. SVOCs are the most widely distributed Site contaminant. They were detected in all 40 surface and shallow subsurface soil samples analyzed, exceeding UUSCO at 10 of 40 locations.

CUSCOs were exceeded for four SVOCs: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and dibenzo(a,h)anthracene. The exceedances occurred in surface, shallow subsurface and deep soils at up to 11 locations. Total PCB concentrations exceeded CUSCOs at 4 locations at depths ranging from 12-32 ft bls. PCB concentrations are below the acceptable presumptive remedy guidelines set forth in CP-51 (Commissioner Policy 51/Soil Cleanup Guidance), for non-residential use sites, where a soil cleanup level for PCBs of 1 ppm in surface soils and 10 ppm in subsurface soils has been established.

Tables 2 through 6 summarize the results of all soil samples collected during the 2014 RI, which include results that exceed the UUSCOs and the CUSCOs at the Site after completion of remedial action.

2.5.2 Groundwater

Based on the most recent RI conducted at the Site in 2014, groundwater was not found to be impacted by Site-related contamination. PCE was detected in MW-3 slightly above NYSDEC AWQSGVs at a concentration of 6 µg/L. Based on off-Site investigations performed hydraulically upgradient to the Site, the suspected source of the PCE detected in groundwater is from the Brandt Airflex Superfund site. Further actions, if necessary, will be done under the Brandt Airflex Superfund site remedial program.

Several naturally occurring metals including iron, manganese and sodium were also detected at concentrations above NYSDEC AWQSGVs, however, the concentrations were consistent with regional conditions commonly found on Long Island and are not considered to be Site related contamination. Tables 7 through 11 summarize the results of the groundwater samples collected during the 2014 RI.

2.5.3 Soil Vapor

The Site compounds of concern (PCBs, metals and SVOCs) are not volatile. As a result, soil gas (i.e., soil vapor) conditions at the Site have only been documented in one historical environmental report from 2002 (see Section 2.3.5). As discussed in Section 2.3.7, PCE was detected in one soil vapor sample collected on-Site at a concentration of 16 mg/m^3, at a location adjacent to the East Farmingdale Fire Department. Since on-Site soil vapor conditions may be impacted from the

adjacent site, sub-slab depressurization (SSD) systems (i.e., engineering control) will be a component to the proposed building(s) design plans and installed under all proposed building concrete slab foundations as a preventative measure. SSD system piping will be installed below each of the building slabs in order to provide a mitigative pathway to manage vapor that may accumulate beneath the building slabs. These systems will be installed for passive operations as a preventative measure. Each SSD system will consist of a series of four-inch diameter perforated collection pipes embedded in a gravel layer below the building slabs. The perforated pipes will be connected to a common solid riser pipe, which will extend to the roof of the building. A sample port will be installed on the SSD systems' piping in an accessible area. The SSD system(s) specifications have not yet been finalized and will be submitted to the NYSDEC under separate cover prior to the start of Site development. Following completion of each building envelope but before interior improvements (i.e., carpeting, flooring) are installed, a post-construction soil vapor intrusion investigation will be completed. One round of indoor air sample and sub-slab samples (from the sample ports) will be collected within each building to evaluate the need for an active SSD system upgrade. A confirmation indoor air and sub-slab sampling round will be completed following the completion of the buildings' interior improvements but prior to occupancy, to confirm initial sample results. The indoor air/sub-slab sample results will be compared to the Soil Vapor/Indoor Air Matrices of the NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York dated October 2006 (GESVI). If data from the initial indoor air samples are within the monitor/mitigate concentration range, as described in NYSDOH GESVI and an active SSD system operation is deemed necessary by the NYSDEC, the riser will be retrofitted with an appropriately sized blower.

Proposed sub-slab soil vapor and indoor air sample locations will be provided for NYSDEC and NYSDOH review once the Site development plans are finalized. Sub-slab soil vapor and indoor air samples will be collected at each proposed location, over a 2-hour sample period and analyzed for VOCs using United States Environmental Protection Agency (USEPA) Method TO-15. A letter report will be prepared and submitted to the NYSDEC/NYSDOH documenting the post-construction soil vapor intrusion investigation and sampling results. In addition, the letter report will include an evaluation of the need for upgrading the SSDS systems to active operation.

3.0 INSTITUTIONAL AND ENGINEERING CONTROL PLAN

3.1 General

Since remaining contamination exists at the Site, Institutional Controls (ICs) and Engineering Controls (ECs) are required to protect human health and the environment. This IC/EC Plan describes the procedures for the implementation and management of all IC/ECs at the Site. The IC/EC Plan is one component of the SMP and is subject to revision by the NYSDEC.

This plan provides:

- A description of all IC/ECs on the Site;
- The basic implementation and intended role of each IC/EC;
- A description of the key components of the ICs set forth in the Environmental Easement;
- A description of the controls to be evaluated during each required inspection and periodic review;
- A description of plans and procedures to be followed for implementation of IC/ECs, such as the implementation of the Excavation Work Plan (EWP) (as provided in Appendix E for the proper handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the Site; and
- Any other provisions necessary to identify or establish methods for implementing the IC/ECs required by the Site remedy, as determined by the NYSDEC.

3.2 Institutional Controls

A series of ICs is required by the 2015 ROD to: (1) implement, maintain and monitor Engineering Control systems; (2) prevent future exposure to remaining contamination; and, (3) limit the use and development of the Site to Commercial/Retail uses only. Adherence to these ICs on the Site is required by the Environmental Easement and will be implemented under this SMP. ICs identified in the Environmental Easement may not be discontinued without an amendment to or extinguishment of the Environmental Easement. These ICs are:

- The property may be used for: commercial use;
- All ECs must be operated and maintained as specified in this SMP;
- All ECs must be inspected at a frequency and in a manner defined in the SMP;
- The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the Suffolk Department of Health

Services to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the NYSDEC;

- Data and information pertinent to Site management must be reported at the frequency and in a manner as defined in this SMP;
- All future activities that will disturb remaining contaminated material must be conducted in accordance with this SMP;
- Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in this SMP;
- Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical component of the remedy shall be performed as defined in this SMP;
- Access to the Site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by the Environmental Easement;
- The potential for vapor intrusion must be evaluated for any buildings developed in the area within the Site, and any potential impacts that are identified must be monitored or mitigated; and
- Vegetable gardens and farming on the Site are prohibited.

3.3 Engineering Controls

3.3.1 Cover (or Cap)

Exposure to remaining contamination at the Site will be prevented by a cover system placed over the Site as part of redevelopment. This cover system will be comprised of a minimum of 12 inches of clean soil, asphalt pavement, concrete-covered sidewalks, and concrete building slabs. The cover system is described in detail in the August 2015 Site-Wide Cover Design Plan included in Appendix D. Figure 3 presents the development plan and location of the cover system and applicable demarcation layer details. The Excavation Work Plan (EWP) provided in Appendix E outlines the procedures required to be implemented in the event the cover system is breached, penetrated or temporarily removed, and any underlying remaining contamination is disturbed. Procedures for the inspection of this cover are provided in the Monitoring Plan included in Section 4.0 of this SMP. Any work conducted pursuant to the EWP must also be conducted in accordance with the procedures defined in a Health and Safety Plan (HASP) and associated Community Air Monitoring Plan (CAMP) prepared for the Site and provided in Appendix F.

3.3.2 Sub-slab Depressurization Systems (Contingency)

As discussed in Section 2.5.3, SSD system piping will be installed below each of the building slabs in order to provide a mitigative pathway to manage vapor that may accumulate beneath the building slabs. These systems will be installed for passive operations as a preventative measure.

If an active system(s) is warranted, based results of the on post-construction soil vapor intrusion investigation (see Section 2.5.3), procedures for operating and maintaining the active SSD system(s) as well as As-built drawings, signed and sealed by a professional engineer will be documented in the Operation and Maintenance Plan, which will be submitted under separate cover pending completion of the post-construction soil vapor intrusion investigation.

3.3.3 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when monitoring indicates that the remedy has achieved the remedial action objectives identified by the 2015 ROD. The framework for determining when remedial processes are complete is provided in Section 6.4 of NYSDEC DER-10.

3.3.3.1 Cover (or Cap)

The composite cover system is a permanent control and the quality and integrity of this system will be inspected at defined, regular intervals in accordance with this SMP in perpetuity.

3.3.3.2 Sub-Slab Depressurization (SSD) System

If the installation of an active SSD system(s) is warranted, based on the post-construction soil vapor intrusion investigation, the active SSD system(s) will not be discontinued unless prior written approval is granted by the NYSDEC and the NYSDOH. In the event that monitoring data indicates that the SSD system may no longer be required, a proposal to discontinue the SSD system(s) will be submitted by the remedial party to the NYSDEC and NYSDOH.

4.0 MONITORING PLAN

4.1 General

This Monitoring Plan describes the measures for evaluating the overall performance and effectiveness of the remedy. This Monitoring Plan may only be revised with the approval of the NYSDEC.

This Monitoring Plan describes the methods to be used for:

- Evaluating Site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment.

To adequately address these issues, this Monitoring Plan provides information on:

- Annual inspection and periodic certification.

Reporting requirements are provided in Section 7.0 of this SMP.

4.2 Site – Wide Inspection

Site-wide inspections will be performed once per year. Modification to the frequency or duration of the inspections will require approval from the NYSDEC. Site-wide inspections will also be performed after all severe weather conditions that may affect ECs or monitoring devices. During these inspections, an inspection form will be completed as provided in Appendix G – Site Management Forms. The form will compile sufficient information to assess the following:

- Compliance with all ICs, including Site usage;
- An evaluation of the condition and continued effectiveness of ECs;
- General Site conditions at the time of the inspection;
- The Site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection; and
- Confirm that Site records are up to date.

Inspections of all remedial components installed at the Site, if warranted, will be conducted. A comprehensive Site-wide inspection will be conducted and documented according to the SMP schedule, regardless of the frequency of the Periodic Review Report. The inspections will determine and document the following:

- Whether ECs continue to perform as designed;

- If these controls continue to be protective of human health and the environment;
- Compliance with requirements of this SMP and the Environmental Easement;
- Achievement of remedial performance criteria; and
- If Site records are complete and up to date.

Reporting requirements are outlined in Section 7.0 of this plan.

Inspections will also be performed in the event of an emergency. If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs that reduces or has the potential to reduce the effectiveness of ECs in place at the Site, verbal notice to the NYSDEC must be given by noon of the following day. In addition, an inspection of the Site will be conducted within 5 days of the event to verify the effectiveness of the IC/ECs implemented at the Site by a qualified environmental professional, as determined by the NYSDEC. Written confirmation must be provided to the NYSDEC within 7 days of the event that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.

5.0 OPERATION AND MAINTENANCE PLAN

5.1 General

The Site remedy does not rely on any mechanical systems, such as groundwater treatment systems, air sparge/soil vapor extraction systems or active SSD systems (pending post-construction soil vapor intrusion investigation) to protect public health and the environment. Therefore, the operation and maintenance of such components is not included in this SMP. If a mechanical system(s) (i.e., active SSD system(s)) is deemed necessary, based on the post-construction soil vapor intrusion investigation sampling results (see Section 2.5.3), the operation and maintenance of the mechanical system(s) will be included with the letter report, which will be submitted to the NYSDEC under separate cover.

6.0 PERIODIC ASSESSMENTS/EVALUATIONS

6.1 Climate Change Vulnerability Assessment

Increases in both the severity and frequency of storms/weather events, an increase in sea level elevations along with accompanying flooding impacts, shifting precipitation patterns and wide temperature fluctuation, resulting from global climactic change and instability, have the potential to significantly impact the performance, effectiveness and protectiveness of a given Site and associated remedial systems. Vulnerability assessments provide information so that the Site and associated remedial systems are prepared for the impacts of the increasing frequency and intensity of severe storms/weather events and associated flooding.

A vulnerability assessment has not been prepared at the time of the SMP submission for the Site but will be conducted prior to construction activities and submitted to the NYSDEC under separate cover.

6.2 Green Remediation Evaluation

NYSDEC's DER-31 Green Remediation requires that green remediation concepts and techniques be considered during all stages of the remedial program including Site management, with the goal of improving the sustainability of the cleanup and summarizing the net environmental benefit of any implemented green technology. This section of the SMP provides a summary of any green remediation evaluations to be completed for the Site during Site management, and as reported in the Periodic Review Report (PRR).

Methods proposed to reduce energy consumption, resource usage, waste generation, water usage, etc. (i.e., Green Remediation Evaluation), which will be included in the PPR, will be evaluated prior to the start of construction and submitted to the NYSDEC under separate cover.

6.2.1 Timing of Green Remediation Evaluations

For major remedial system components, green remediation evaluations and corresponding modifications will be undertaken as part of a formal Remedial System Optimization (RSO), or at any time that the Project Manager feels appropriate, e.g. during significant maintenance events or in conjunction with storm recovery activities.

Modifications resulting from green remediation evaluations will be routinely implemented and scheduled to occur during planned/routine operation and maintenance activities. Reporting of these modifications will be presented in the PRR.

6.2.2 Building Operations

Structures including buildings and sheds will be operated and maintained to provide for the most efficient operation of the remedy, while minimizing energy, waste generation and water consumption in accordance with the appropriate State and/or County sustainability regulations.

6.2.3 Metrics and Reporting

As discussed in Section 7.0 and as shown in Appendix G – Site Management Forms, information on energy usage, solid waste generation, transportation and shipping, water usage and land use and ecosystems will be recorded to facilitate and document consistent implementation of green remediation during site management and to identify corresponding benefits; a set of metrics will be developed prior to the start of construction.

7.0 REPORTING REQUIREMENTS

7.1 Site Management Reports

All Site management inspection, maintenance and monitoring events will be recorded on the appropriate Site management forms provided in Appendix G. These forms are subject to NYSDEC revision.

All applicable inspection forms and other records, including media sampling data and system maintenance reports, generated for the Site during the reporting period will be provided in electronic format to the NYSDEC in accordance with the requirements of Table 2 and summarized in the Periodic Review Report.

Table 2: Schedule of Interim Monitoring/Inspection Reports

Task/Report	Reporting Frequency*
Inspection Report	Annual
Periodic Review Report	Annually, or as otherwise determined by the NYSDEC

* The frequency of events will be conducted as specified until otherwise approved by the NYSDEC.

All inspection reports will include, at a minimum:

- Date of event or reporting period;
- Name, company, and position of person(s) conducting monitoring/inspection activities;
- Description of the activities performed;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet);
- Any observations, conclusions, or recommendations; and
- A determination as to whether contaminant conditions have changed since the last reporting event.

Routine maintenance event reporting forms will include, at a minimum, if warranted:

- Date of event;

- Name, company, and position of person(s) conducting maintenance activities;
- Description of maintenance activities performed;
- Any modifications to the system;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet); and
- Other documentation such as copies of invoices for maintenance work, receipts for replacement equipment, etc., (attached to the checklist/form).

Non-routine maintenance event reporting forms will include, at a minimum:

- Date of event;
- Name, company, and position of person(s) conducting non-routine maintenance/repair activities;
- Description of non-routine activities performed;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents (included either on the form or on an attached sheet); and
- Other documentation such as copies of invoices for repair work, receipts for replacement equipment, etc. (attached to the checklist/form).

Data will be reported in digital format as determined by the NYSDEC. Currently, data is to be supplied electronically and submitted to the NYSDEC EQuIS^{TM} database in accordance with the requirements found at this link http://www.dec.ny.gov/chemical/62440.html.

7.2 Periodic Review Report

A Periodic Review Report (PRR) will be submitted to the Department beginning sixteen (16) months after the Certificate of Completion is issued. After submittal of the initial Periodic Review Report, the next PRR shall be submitted annually to the NYSDEC or at another frequency as may be required by the NYSDEC. In the event that the Site is subdivided into separate parcels with different ownership, a single Periodic Review Report will be prepared that addresses the Site described in Appendix A -Environmental Easement. The report will be prepared in accordance with NYSDEC's DER-10 and submitted within 30 days of the end of

each certification period. Media sampling results will also be incorporated into the Periodic Review Report. The report will include:

- Identification, assessment and certification of all ECs/ICs required by the remedy for the Site.
- Results of the required annual Site inspections and severe condition inspections, if applicable.
- All applicable Site management forms and other records generated for the Site during the reporting period in the NYSDEC-approved electronic format, if not previously submitted.
- If warranted, data summary tables and graphical representations of contaminants of concern by media (groundwater, soil vapor, etc.), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These will include a presentation of past data as part of an evaluation of contaminant concentration trends.
- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted in digital format as determined by the NYSDEC. Currently, data is supplied electronically and submitted to the NYSDEC EQuIS^{TM} database in accordance with the requirements found at this link: http://www.dec.ny.gov/chemical/62440.html.
- A Site evaluation, which includes the following:
  - The compliance of the remedy with the requirements of the Site-specific 2015 ROD;
  - If warranted, The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications;
  - Any new conclusions or observations regarding Site contamination based on inspections or data generated by the Monitoring and Sampling Plan for the media being monitored;
  - Recommendations regarding any necessary changes to the remedy and/or Monitoring and Sampling Plan;
  - Trends in contaminant levels in the affected media will be evaluated to determine if the remedy continues to be effective in achieving remedial goals as specified by the 2015 ROD; and
  - The overall performance and effectiveness of the remedy.

7.2.1 Certification of Institutional and Engineering Controls

Following the last inspection of the reporting period, a qualified environmental professional or Professional Engineer licensed to practice in New York State will prepare, and include in

the Periodic Review Report, the following certification as per the requirements of NYSDEC DER-10:

"*For each institutional or engineering control identified for the Site, I certify that all of the following statements are true:*

- *The inspection of the Site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under my direction;*
- *The institutional control and/or engineering control employed at this Site is unchanged from the date the control was put in place, or last approved by the Department;*
- *Nothing has occurred that would impair the ability of the control to protect the public health and environment;*
- *Nothing has occurred that would constitute a violation or failure to comply with any site management plan for this control;*
- *Access to the Site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of this control;*
- *If a financial assurance mechanism is required under the oversight document for the Site, the mechanism remains valid and sufficient for the intended purpose under the document;*
- *Use of the Site is compliant with the environmental easement;*
- *The engineering control systems are performing as designed and are effective;*
- *To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program and generally accepted engineering practices; and*
- *The information presented in this report is accurate and complete.*

I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, Charles McGuckin, of 209 Shafter Street, Islandia, New York, am certifying as Owner's/Remedial Party's Designated Site Representative for the Site."

The signed certification will be included in the Periodic Review Report.

The Periodic Review Report will be submitted, in electronic format, to the NYSDEC Central Office, Regional Office in which the Site is located and the NYSDOH Bureau of Environmental Exposure Investigation. The Periodic Review Report may need to be submitted in hard-copy format, as requested by the NYSDEC project manager.

7.3 Corrective Measures Work Plan

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an institutional or engineering control, a Corrective Measures Work Plan will be submitted to the NYSDEC for approval. This plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless an emergency condition exists, no work will be performed pursuant to the Corrective Measures Work Plan until it has been approved by the NYSDEC.

8.0 REFERENCES

CNS Management Corporation, 2012. Phase I Environmental Site Assessment, December 3, 2012.

Eder Associates, 1995. Old Recharge Basin Final Remediation Investigation Report, September 21, 1995.

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NYSDEC, 1996. Record of Decision – Site Number 152004, June 1996.

NYSDEC, 1998. Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1. June 1998 (April 2000 addendum).

NYSDEC, 2014. Feasibility Study Report – Fairchild Republic Aircraft; Old Sump, December 2014.

NYSDEC, 2015. Record of Decision – Site Number 152004, March 2015.

Savik & Murray Engineering Consultants, 1996, Old Recharge Basin Demolition and Filling Work Plan, October 1996.

TABLES

1. Notifications (*Embedded Table)*
2. Summary of Volatile Organic Compounds in Soil (EAR, 2014)
3. Summary of Semivolatile Organic Compounds in Soil (EAR, 2014)
4. Summary of Metals in Soil (EAR, 2014)
5. Summary of Polychlorinated Biphenyls in Soil (EAR, 2014)
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8. Summary of Semivolatile Organic Compounds on Groundwater (EAR, 2014)
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10. Summary of Polychlorinated Biphenyls in Groundwater (EAR, 2014)
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Table 2. Summary of Volatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	BUD-01	BUD-01	BUD-02	BUD-02	BUD-03	BUD-03
			Sample Date:	6/26/2014	6/26/2014	6/26/2014	6/26/2014	6/26/2014	6/26/2014
			Sample Depth (ft bls):	14 - 18	18 - 22	14 - 18	18 - 22	22 - 26	14 - 18
1,1,1-Trichloroethane	680	500000		1.1 UJ	0.92 U	0.98 U	0.89 U	1.0 U	0.92 U
1,1,2,2-Tetrachloroethane	--	--		1.1 UJ	0.92 U	0.98 U	0.89 U	1.0 U	0.92 U
1,1,2-Trichloroethane	--	--		1.1 UJ	0.92 U	0.98 U	0.89 U	1.0 U	0.92 U
1,1-Dichloroethane	270	240000		1.1 UJ	0.92 U	0.98 U	0.89 U	1.0 U	0.92 U
1,1-Dichloroethene	330	500000		1.1 UJ	0.92 U	0.98 U	0.89 U	1.0 U	0.92 U
1,2,3-Trichlorobenzene	--	--		1.1 UJ	0.92 U	0.98 U	0.89 U	1.0 U	0.92 U
1,2,4-Trichlorobenzene	--	--		1.1 UJ	0.92 U	0.98 U	0.89 U	1.0 U	0.92 U
1,2-Dibromoethane	--	--		1.1 UJ	0.92 U	0.98 U	0.89 U	1.0 U	0.92 U
1,2-Dichlorobenzene	1100	500000		1.1 UJ	0.92 U	0.98 U	0.89 U	1.0 U	0.92 U
1,2-Dichloroethane	20	30000		1.1 UJ	0.92 U	0.98 U	0.89 U	1.0 U	0.92 U
1,2-Dichloropropane	--	--		1.1 UJ	0.92 U	0.98 U	0.89 U	1.0 U	0.92 U
1,3-Dichlorobenzene	2400	280000		1.1 UJ	0.92 U	0.98 U	0.89 U	1.0 U	0.92 U
1,4-Dichlorobenzene	1800	130000		1.1 UJ	0.92 U	0.98 U	0.89 U	1.0 U	0.92 U
1,4-Dioxane	100	130000		21 UJ	18 U	20 U	18 U	20 U	18 U
2-Butanone (MEK)	120	500000		8.1 J	0.98 J	3.5 J	5.5	3.7 J	1.8 J
2-Hexanone	--	--		5.3 UJ	4.6 U	4.9 U	4.5 U	5.0 U	4.6 U
4-Methyl-2-pentanone (MIBK)	--	--		5.3 UJ	4.6 U	4.9 U	4.5 U	5.0 U	4.6 U
Acetone	50	500000		5.3 UJ	4.6 U	4.9 U	4.5 U	5.0 U	4.6 U
Benzene	60	44000		1.7 J	0.92 U	0.98 U	1.1	1.0 U	0.92 U
Bromochloromethane	--	--		1.1 UJ	0.92 U	0.98 U	0.89 U	1.0 U	0.92 U
Bromodichloromethane	--	--		1.1 UJ	0.92 U	0.98 U	0.89 U	1.0 U	0.92 U
Bromoform	--	--		1.1 UJ	0.92 U	0.98 U	0.89 U	1.0 U	0.92 U
Bromomethane	--	--		1.1 UJ	0.92 U	0.98 U	0.89 U	1.0 U	0.92 U
Carbon disulfide	--	--		5.1 J	0.92 U	0.98 U	2.9	0.38 J	0.5 J
Carbon tetrachloride	760	22000		1.1 UJ	0.92 U	0.98 U	0.89 U	1.0 U	0.92 U
Chlorobenzene	1100	500000		1.1 UJ	0.92 U	0.98 U	0.89 U	1.0 U	0.92 U
Chloroethane	--	--		1.1 UJ	0.92 U	0.98 U	0.89 U	1.0 U	0.92 U
Chloroform	370	350000		1.1 UJ	0.92 U	0.98 U	0.89 U	1.0 U	0.92 U
Chloromethane	--	--		1.1 UJ	0.92 U	0.98 U	0.89 U	1.0 U	0.92 U
cis-1,2-Dichloroethene	250	500000		0.26 J	0.92 U	0.18 J	0.89 U	1.0 U	0.92 U
cis-1,3-Dichloropropene	--	--		1.1 UJ	0.92 U	0.98 U	0.89 U	1.0 U	0.92 U
Cyclohexane	--	--		3.5 J	0.92 U	0.98 U	2	1.0 U	0.92 U
Dibromochloromethane	--	--		1.1 UJ	0.92 U	0.98 U	0.89 U	1.0 U	0.92 U
Dibromochloropropane	--	--		1.1 UJ	0.92 U	0.98 U	0.89 U	1.0 U	0.92 U

Table 2. Summary of Volatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	BUD-01	BUD-01	BUD-02	BUD-02	BUD-03	BUD-03
			Sample Date:	6/26/2014	6/26/2014	6/26/2014	6/26/2014	6/26/2014	6/26/2014
			Sample Depth (ft bls):	14 - 18	18 - 22	14 - 18	18 - 22	22 - 26	14 - 18
Dichlorodifluoromethane	--	--		1.1 UJ	0.92 U	0.98 U	0.89 U	1.0 U	0.92 U
Ethylbenzene	1000	390000		3.1 J	0.92 U	0.98 U	3.6	1.0 U	0.87 J
Freon 113	--	--		1.1 UJ	0.92 U	0.98 U	0.89 U	1.0 U	0.92 U
Isopropylbenzene	--	--		3.8 J	0.92 U	0.98 U	2.4	1.0 U	0.34 J
m+p-Xylene	--	--		3.3 J	0.92 U	0.98 U	8.2	1.0 U	2.3
Methyl acetate	--	--		5.3 UJ	4.6 U	4.9 U	4.5 U	5.0 U	4.6 U
Methylcyclohexane	--	--		8.4 J	0.92 U	0.2 J	3	1.0 U	0.32 J
Methylene chloride	50	500000		1.1 UJ	1.3	1.2	1.2	1.3	1.2
MTBE	930	500000		2.7 J	0.13 J	1.1	2.3	1.7	0.27 J
o-Xylene	--	--		1.3 J	0.92 U	0.98 U	5.1	0.29 J	1.5
Styrene	--	--		1.1 UJ	0.92 U	0.98 U	0.89 U	1.0 U	0.92 U
Tetrachloroethene	1300	150000		1.1 UJ	0.92 U	0.98 U	0.89 U	1.0 U	0.92 U
Toluene	700	500000		0.77 J	0.92 U	0.14 J	3.3	0.15 J	0.49 J
trans-1,2-Dichloroethene	190	500000		1.1 UJ	0.92 U	0.26 J	0.89 U	1.0 U	0.92 U
trans-1,3-Dichloropropene	--	--		1.1 UJ	0.92 U	0.98 U	0.89 U	1.0 U	0.92 U
Trichloroethene	470	200000		0.18 J	0.92 U	1.4	0.89 U	1.0 U	0.92 U
Trichlorofluoromethane	--	--		1.1 UJ	0.92 U	0.98 U	0.89 U	1.0 U	0.92 U
Vinyl chloride	20	13000		1.1 UJ	0.92 U	0.98 U	0.89 U	1.0 U	0.92 U

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Soil Cleanup Objective available
Bold data indicates that parameter was detected above the NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives
Shaded data indicates that parameter was detected above the NYSDEC Part 375 Commercial Soil Cleanup Objectives
Soil samples were collected by Environmental Assessment and Remediations in 2014

Table 2. Summary of Volatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	CR-10	CR-11	CR-5	G-01	G-01_SURF	G-02
			Sample Date:	7/15/2014	6/18/2014	7/15/2014	7/16/2014	7/16/2014	7/16/2014
			Sample Depth (ft bls):	0 - 1	24 - 29	0 - 1	0 - 1	-	0 - 1
1,1,1-Trichloroethane	680	500000		1.0 U	1.1 U	1.1 U	1.0 U	1.1 U	1.1 U
1,1,2,2-Tetrachloroethane	--	--		1.0 U	1.1 U	1.1 U	1.0 U	1.1 U	1.1 U
1,1,2-Trichloroethane	--	--		1.0 U	1.1 U	1.1 U	1.0 U	1.1 U	1.1 U
1,1-Dichloroethane	270	240000		1.0 U	1.1 U	1.1 U	1.0 U	1.1 U	1.1 U
1,1-Dichloroethene	330	500000		1.0 U	1.1 U	1.1 U	1.0 U	1.1 U	1.1 U
1,2,3-Trichlorobenzene	--	--		1.0 U	1.1 U	1.1 UJ	1.0 U	1.1 U	1.1 U
1,2,4-Trichlorobenzene	--	--		1.0 U	1.1 U	1.1 UJ	1.0 U	1.1 U	1.1 U
1,2-Dibromoethane	--	--		1.0 U	1.1 U	1.1 U	1.0 U	1.1 U	1.1 U
1,2-Dichlorobenzene	1100	500000		1.0 U	0.24 J	1.1 UJ	1.0 U	1.1 U	1.1 U
1,2-Dichloroethane	20	30000		1.0 U	1.1 U	1.1 U	1.0 U	1.1 U	1.1 U
1,2-Dichloropropane	--	--		1.0 U	1.1 U	1.1 U	1.0 U	1.1 U	1.1 U
1,3-Dichlorobenzene	2400	280000		1.0 U	1.1 U	1.1 UJ	1.0 U	1.1 U	1.1 U
1,4-Dichlorobenzene	1800	130000		1.0 U	1.1 U	1.1 UJ	1.0 U	1.1 U	1.1 U
1,4-Dioxane	100	130000		20 U	21 U	22 U	21 U	21 U	21 U
2-Butanone (MEK)	120	500000		5.0 U	10	5.6 U	5.2 U	5.4 U	5.3 U
2-Hexanone	--	--		5.0 U	5.3 U	5.6 U	5.2 U	5.4 U	5.3 U
4-Methyl-2-pentanone (MIBK)	--	--		5.0 U	5.3 U	5.6 U	5.2 U	5.4 U	5.3 U
Acetone	50	500000		5.0 U	5.3 U	5.6 U	5.2 U	5.4 UJ	5.3 U
Benzene	60	44000		1.0 U	1.1 U	1.1 U	1.0 U	1.1 U	1.1 U
Bromochloromethane	--	--		1.0 U	1.1 U	1.1 U	1.0 U	1.1 U	1.1 U
Bromodichloromethane	--	--		1.0 U	1.1 U	1.1 U	1.0 U	1.1 U	1.1 U
Bromoform	--	--		1.0 U	1.1 U	1.1 U	1.0 U	1.1 UJ	1.1 U
Bromomethane	--	--		1.0 U	1.1 UJ	1.1 U	1.0 U	1.1 U	1.1 U
Carbon disulfide	--	--		1.0 U	1.5	1.1 UJ	1.0 U	1.1 U	1.1 U
Carbon tetrachloride	760	22000		1.0 U	1.1 U	1.1 U	1.0 U	1.1 U	1.1 U
Chlorobenzene	1100	500000		1.0 U	1.1 U	1.1 U	1.0 U	1.1 U	1.1 U
Chloroethane	--	--		1.0 UJ	1.1 U	1.1 UJ	1.0 UJ	1.1 U	1.1 UJ
Chloroform	370	350000		1.0 U	1.1 U	1.1 U	1.0 U	1.1 U	1.1 U
Chloromethane	--	--		1.0 U	1.1 U	1.1 U	1.0 U	1.1 U	1.1 U
cis-1,2-Dichloroethene	250	500000		1.0 U	1.1 U	1.1 U	1.0 U	1.1 U	1.1 U
cis-1,3-Dichloropropene	--	--		1.0 U	1.1 U	1.1 U	1.0 U	1.1 U	1.1 U
Cyclohexane	--	--		1.0 U	1.1 U	1.1 U	1.0 U	1.1 U	1.1 U
Dibromochloromethane	--	--		1.0 U	1.1 U	1.1 UJ	1.0 U	1.1 U	1.1 U
Dibromochloropropane	--	--		1.0 U	1.1 U	1.1 U	1.0 U	1.1 U	1.1 U

Table 2. Summary of Volatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	CR-10	CR-11	CR-5	G-01	G-01_SURF	G-02
			Sample Date:	7/15/2014	6/18/2014	7/15/2014	7/16/2014	7/16/2014	7/16/2014
			Sample Depth (ft bls):	0 - 1	24 - 29	0 - 1	0 - 1	-	0 - 1
Dichlorodifluoromethane	--	--		1.0 U	1.1 U	1.1 U	1.0 U	1.1 U	1.1 U
Ethylbenzene	1000	390000		1.0 U	1.1 U	1.1 U	1.0 U	1.1 U	1.1 U
Freon 113	--	--		1.0 UJ	1.1 U	1.1 UJ	1.0 UJ	1.1 U	1.1 UJ
Isopropylbenzene	--	--		1.0 U	1.1 U	1.1 U	1.0 U	1.1 U	1.1 U
m+p-Xylene	--	--		1.0 U	1.1 U	1.1 U	1.0 U	1.1 U	1.1 U
Methyl acetate	--	--		5.0 UJ	5.3 U	5.6 UJ	5.2 UJ	5.4 U	5.3 UJ
Methylcyclohexane	--	--		1.0 U	0.16 J	1.1 UJ	1.0 U	1.1 U	1.1 U
Methylene chloride	50	500000		1.0 UJ	1.1 U	1.1 UJ	1.0 UJ	1.1 U	1.1 UJ
MTBE	930	500000		1.0 U	1.1 U	1.1 U	1.0 U	1.1 U	1.1 U
o-Xylene	--	--		1.0 U	1.1 U	1.1 U	1.0 U	1.1 U	1.1 U
Styrene	--	--		1.0 U	1.1 U	1.1 U	1.0 U	1.1 U	1.1 U
Tetrachloroethene	1300	150000		1.0 U	1.1 U	1.1 UJ	1.0 U	1.1 U	1.1 U
Toluene	700	500000		1.0 U	1.1 U	1.1 U	1.0 U	1.1 U	1.1 U
trans-1,2-Dichloroethene	190	500000		1.0 U	1.1 U	1.1 U	1.0 U	1.1 U	1.1 U
trans-1,3-Dichloropropene	--	--		1.0 U	1.1 U	1.1 U	1.0 U	1.1 U	1.1 U
Trichloroethene	470	200000		1.0 U	1.1 U	1.1 U	1.0 U	1.1 U	0.17 J
Trichlorofluoromethane	--	--		1.0 U	1.1 U	1.1 U	1.0 U	1.1 U	1.1 U
Vinyl chloride	20	13000		1.0 U	1.1 U	1.1 U	1.0 U	1.1 U	1.1 U

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Soil Cleanup Objective available
Bold data indicates that parameter was detected above the NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives
Shaded data indicates that parameter was detected above the NYSDEC Part 375 Commercial Soil Cleanup Objectives
Soil samples were collected by Environmental Assessment and Remediations in 2014

Table 2. Summary of Volatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	G-02_SURF	G-03	G-03_SURF	G-04	G-04_SURF	G-05
			Sample Date:	7/16/2014	7/16/2014	7/16/2014	7/16/2014	7/16/2014	7/16/2014
			Sample Depth (ft bls):	-	0 - 1	-	0 - 1	-	0 - 1
1,1,1-Trichloroethane	680	500000		1.3 U	1.2 U	1.1 U	1.2 U	1.1 U	1.0 U
1,1,2,2-Tetrachloroethane	--	--		1.3 U	1.2 U	1.1 U	1.2 U	1.1 U	1.0 U
1,1,2-Trichloroethane	--	--		1.3 U	1.2 U	1.1 U	1.2 U	1.1 U	1.0 U
1,1-Dichloroethane	270	240000		1.3 U	1.2 U	1.1 U	1.2 U	1.1 U	1.0 U
1,1-Dichloroethene	330	500000		1.3 U	1.2 U	1.1 U	1.2 U	1.1 U	1.0 U
1,2,3-Trichlorobenzene	--	--		1.3 U	1.2 UJ	1.1 U	1.2 U	1.1 U	1.0 U
1,2,4-Trichlorobenzene	--	--		1.3 U	1.2 UJ	1.1 U	1.2 U	1.1 U	1.0 U
1,2-Dibromoethane	--	--		1.3 U	1.2 U	1.1 U	1.2 U	1.1 U	1.0 U
1,2-Dichlorobenzene	1100	500000		1.3 U	1.2 UJ	1.1 U	1.2 U	1.1 U	1.0 U
1,2-Dichloroethane	20	30000		1.3 U	1.2 U	1.1 U	1.2 U	1.1 U	1.0 U
1,2-Dichloropropane	--	--		1.3 U	1.2 U	1.1 U	1.2 U	1.1 U	1.0 U
1,3-Dichlorobenzene	2400	280000		1.3 U	1.2 UJ	1.1 U	1.2 U	1.1 U	1.0 U
1,4-Dichlorobenzene	1800	130000		1.3 U	1.2 U	1.1 U	1.2 U	1.1 U	1.0 U
1,4-Dioxane	100	130000		26 U	23 U	22 U	25 U	22 U	21 U
2-Butanone (MEK)	120	500000		6.5 U	5.8 U	5.4 U	6.2 U	5.5 U	5.2 U
2-Hexanone	--	--		6.5 U	5.8 U	5.4 U	6.2 U	5.5 U	5.2 U
4-Methyl-2-pentanone (MIBK)	--	--		6.5 U	5.8 U	5.4 U	6.2 U	5.5 U	5.2 U
Acetone	50	500000		6.5 U	5.8 U	5.4 U	6.2 U	5.5 U	5.2 U
Benzene	60	44000		1.3 U	1.2 U	1.1 U	1.2 U	1.1 U	1.0 U
Bromochloromethane	--	--		1.3 U	1.2 U	1.1 U	1.2 U	1.1 U	1.0 U
Bromodichloromethane	--	--		1.3 UJ	1.2 UJ	1.1 UJ	1.2 UJ	1.1 UJ	1.0 UJ
Bromoform	--	--		1.3 U	1.2 U	1.1 U	1.2 U	1.1 U	1.0 U
Bromomethane	--	--		1.3 U	1.2 U	1.1 U	1.2 U	1.1 U	1.0 U
Carbon disulfide	--	--		1.3 UJ	1.2 UJ	1.1 U	1.2 UJ	1.1 UJ	1.0 UJ
Carbon tetrachloride	760	22000		1.3 U	1.2 U	1.1 UJ	1.2 U	1.1 U	1.0 U
Chlorobenzene	1100	500000		1.3 U	1.2 UJ	1.1 U	1.2 U	1.1 U	1.0 U
Chloroethane	--	--		1.3 U	1.2 U	1.1 U	1.2 U	1.1 U	1.0 U
Chloroform	370	350000		1.3 U	1.2 U	1.1 U	1.2 U	1.1 U	1.0 U
Chloromethane	--	--		1.3 U	1.2 U	1.1 U	1.2 U	1.1 U	1.0 U
cis-1,2-Dichloroethene	250	500000		1.3 U	1.2 U	1.1 U	1.2 U	1.1 U	1.0 U
cis-1,3-Dichloropropene	--	--		1.3 U	1.2 U	1.1 U	1.2 U	1.1 U	1.0 U
Cyclohexane	--	--		1.3 U	1.2 U	1.1 U	1.2 U	1.1 U	1.0 U
Dibromochloromethane	--	--		1.3 U	1.2 U	1.1 U	1.2 U	1.1 U	1.0 U
Dibromochloropropane	--	--		1.3 U	1.2 U	1.1 U	1.2 U	1.1 U	1.0 U

Table 2. Summary of Volatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	G-02_SURF	G-03	G-03_SURF	G-04	G-04_SURF	G-05
			Sample Date:	7/16/2014	7/16/2014	7/16/2014	7/16/2014	7/16/2014	7/16/2014
			Sample Depth (ft bls):	-	0 - 1	-	0 - 1	-	0 - 1
Dichlorodifluoromethane	--	--		1.3 U	1.2 U	1.1 U	1.2 U	1.1 U	1.0 U
Ethylbenzene	1000	390000		1.3 U	1.2 UJ	1.1 U	1.2 U	1.1 U	1.0 U
Freon 113	--	--		1.3 U	1.2 U	1.1 UJ	1.2 U	1.1 U	1.0 U
Isopropylbenzene	--	--		1.3 U	1.2 UJ	1.1 U	1.2 U	1.1 U	1.0 U
m+p-Xylene	--	--		1.3 U	1.2 UJ	1.1 U	1.2 U	1.1 U	1.0 U
Methyl acetate	--	--		6.5 U	5.8 U	5.4 U	6.2 U	5.5 U	5.2 U
Methylcyclohexane	--	--		1.3 U	1.2 UJ	1.1 U	1.2 U	1.1 U	1.0 U
Methylene chloride	50	500000		1.3 U	1.2 U	1.1 UJ	1.2 U	1.1 U	1.0 U
MTBE	930	500000		1.3 U	1.2 U	1.1 U	1.2 U	1.1 U	1.0 U
o-Xylene	--	--		1.3 U	1.2 UJ	1.1 U	1.2 U	1.1 U	1.0 U
Styrene	--	--		1.3 U	1.2 UJ	1.1 U	1.2 U	1.1 U	1.0 U
Tetrachloroethene	1300	150000		1.3 U	0.16 J	1.1 U	1.2 U	1.1 U	1.0 U
Toluene	700	500000		1.3 U	1.2 U	1.1 U	1.2 U	1.1 U	1.0 U
trans-1,2-Dichloroethene	190	500000		1.3 U	1.2 U	1.1 U	1.2 U	1.1 U	1.0 U
trans-1,3-Dichloropropene	--	--		1.3 U	1.2 U	1.1 U	1.2 U	1.1 U	1.0 U
Trichloroethene	470	200000		1.3 U	1.2 U	1.1 U	1.2 U	1.1 U	0.28 J
Trichlorofluoromethane	--	--		1.3 U	1.2 U	1.1 U	1.2 U	1.1 U	1.0 U
Vinyl chloride	20	13000		1.3 U	1.2 U	1.1 U	1.2 U	1.1 U	1.0 U

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Soil Cleanup Objective available
Bold data indicates that parameter was detected above the NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives
Shaded data indicates that parameter was detected above the NYSDEC Part 375 Commercial Soil Cleanup Objectives
Soil samples were collected by Environmental Assessment and Remediations in 2014

Table 2. Summary of Volatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	G-05_SURF	G-06	G-06_SURF	G-07	G-07_SURF	G-08
			Sample Date:	7/16/2014	7/16/2014	7/16/2014	7/17/2014	7/17/2014	7/17/2014
			Sample Depth (ft bls):	-	0 - 1	-	0 - 1	-	0 - 1
1,1,1-Trichloroethane	680	500000		1.2 U	1.1 UJ	1.3 UJ	1.2 U	1.2 U	1.1 U
1,1,2,2-Tetrachloroethane	--	--		1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U
1,1,2-Trichloroethane	--	--		1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U
1,1-Dichloroethane	270	240000		1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U
1,1-Dichloroethene	330	500000		1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U
1,2,3-Trichlorobenzene	--	--		1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U
1,2,4-Trichlorobenzene	--	--		1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U
1,2-Dibromoethane	--	--		1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U
1,2-Dichlorobenzene	1100	500000		1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U
1,2-Dichloroethane	20	30000		1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U
1,2-Dichloropropane	--	--		1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U
1,3-Dichlorobenzene	2400	280000		1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U
1,4-Dichlorobenzene	1800	130000		1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U
1,4-Dioxane	100	130000		24 U	23 UJ	25 UJ	24 UJ	24 U	22 U
2-Butanone (MEK)	120	500000		5.9 U	5.6 U	6.3 U	6.0 U	6.0 U	5.5 U
2-Hexanone	--	--		5.9 U	5.6 U	6.3 U	6.0 U	6.0 U	5.5 U
4-Methyl-2-pentanone (MIBK)	--	--		5.9 U	5.6 U	6.3 U	6.0 U	6.0 U	5.5 U
Acetone	50	500000		5.9 U	5.6 U	6.3 U	6.0 U	6.0 U	5.5 U
Benzene	60	44000		1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U
Bromochloromethane	--	--		1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U
Bromodichloromethane	--	--		1.2 UJ	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U
Bromoform	--	--		1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U
Bromomethane	--	--		1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U
Carbon disulfide	--	--		1.2 UJ	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U
Carbon tetrachloride	760	22000		1.2 U	1.1 UJ	1.3 UJ	1.2 U	1.2 U	1.1 U
Chlorobenzene	1100	500000		1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U
Chloroethane	--	--		1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U
Chloroform	370	350000		1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U
Chloromethane	--	--		1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U
cis-1,2-Dichloroethene	250	500000		1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U
cis-1,3-Dichloropropene	--	--		1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U
Cyclohexane	--	--		1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U
Dibromochloromethane	--	--		1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U
Dibromochloropropane	--	--		1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U

Table 2. Summary of Volatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	G-05_SURF	G-06	G-06_SURF	G-07	G-07_SURF	G-08
			Sample Date:	7/16/2014	7/16/2014	7/16/2014	7/17/2014	7/17/2014	7/17/2014
			Sample Depth (ft bls):	-	0 - 1	-	0 - 1	-	0 - 1
Dichlorodifluoromethane	--	--		1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U
Ethylbenzene	1000	390000		1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U
Freon 113	--	--		1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U
Isopropylbenzene	--	--		1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U
m+p-Xylene	--	--		1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U
Methyl acetate	--	--		5.9 U	5.6 U	6.3 U	6.0 U	6.0 U	5.5 U
Methylcyclohexane	--	--		1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U
Methylene chloride	50	500000		1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U
MTBE	930	500000		1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U
o-Xylene	--	--		1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U
Styrene	--	--		1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U
Tetrachloroethene	1300	150000		1.2 U	1.1 U	1.3 U	0.17 J	1.2 U	1.1 U
Toluene	700	500000		1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U
trans-1,2-Dichloroethene	190	500000		1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U
trans-1,3-Dichloropropene	--	--		1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U
Trichloroethene	470	200000		1.2 U	1.1 U	1.3 U	0.28 J	1.2 U	1.1 U
Trichlorofluoromethane	--	--		1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U
Vinyl chloride	20	13000		1.2 U	1.1 U	1.3 U	1.2 U	1.2 U	1.1 U

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Soil Cleanup Objective available
Bold data indicates that parameter was detected above the NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives
Shaded data indicates that parameter was detected above the NYSDEC Part 375 Commercial Soil Cleanup Objectives
Soil samples were collected by Environmental Assessment and Remediations in 2014

Table 2. Summary of Volatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	G-08_SURF	G-09	G-09_SURF	G-10	G-10_SURF	G-11
			Sample Date:	7/17/2014	7/17/2014	7/17/2014	7/17/2014	7/17/2014	7/17/2014
			Sample Depth (ft bls):	-	0 - 1	-	0 - 1	-	0 - 1
1,1,1-Trichloroethane	680	500000		1.1 U	1.1 UJ	1.1 U	1.1 U	1.1 U	1.1 U
1,1,2,2-Tetrachloroethane	--	--		1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
1,1,2-Trichloroethane	--	--		1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
1,1-Dichloroethane	270	240000		1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
1,1-Dichloroethene	330	500000		1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
1,2,3-Trichlorobenzene	--	--		1.1 U	1.1 UJ	1.1 U	1.1 U	1.1 U	1.1 U
1,2,4-Trichlorobenzene	--	--		1.1 U	1.1 UJ	1.1 U	1.1 U	1.1 U	1.1 U
1,2-Dibromoethane	--	--		1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
1,2-Dichlorobenzene	1100	500000		1.1 U	1.1 UJ	1.1 U	1.1 U	1.1 U	1.1 U
1,2-Dichloroethane	20	30000		1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
1,2-Dichloropropane	--	--		1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
1,3-Dichlorobenzene	2400	280000		1.1 U	1.1 UJ	1.1 U	1.1 U	1.1 U	1.1 U
1,4-Dichlorobenzene	1800	130000		1.1 U	1.1 UJ	1.1 U	1.1 U	1.1 U	1.1 U
1,4-Dioxane	100	130000		22 UJ	22 UJ	23 UJ	21 U	22 UJ	23 U
2-Butanone (MEK)	120	500000		5.4 U	5.4 U	5.7 U	5.3 U	5.6 U	5.7 U
2-Hexanone	--	--		5.4 U	5.4 U	5.7 U	5.3 U	5.6 U	5.7 U
4-Methyl-2-pentanone (MIBK)	--	--		5.4 U	5.4 U	5.7 U	5.3 U	5.6 U	5.7 U
Acetone	50	500000		5.4 U	5.4 U	5.7 U	5.3 U	5.6 U	5.7 U
Benzene	60	44000		1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Bromochloromethane	--	--		1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Bromodichloromethane	--	--		1.1 U	1.1 UJ	1.1 U	1.1 U	1.1 U	1.1 U
Bromoform	--	--		1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Bromomethane	--	--		1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Carbon disulfide	--	--		1.1 U	1.1 UJ	1.1 U	1.1 U	1.1 U	1.1 U
Carbon tetrachloride	760	22000		1.1 U	1.1 UJ	1.1 U	1.1 U	1.1 U	1.1 U
Chlorobenzene	1100	500000		1.1 U	1.1 UJ	1.1 U	1.1 U	0.74 J	1.1 U
Chloroethane	--	--		1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Chloroform	370	350000		1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Chloromethane	--	--		1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
cis-1,2-Dichloroethene	250	500000		1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
cis-1,3-Dichloropropene	--	--		1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Cyclohexane	--	--		1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Dibromochloromethane	--	--		1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Dibromochloropropane	--	--		1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U

Table 2. Summary of Volatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	G-08_SURF	G-09	G-09_SURF	G-10	G-10_SURF	G-11
			Sample Date:	7/17/2014	7/17/2014	7/17/2014	7/17/2014	7/17/2014	7/17/2014
			Sample Depth (ft bls):	-	0 - 1	-	0 - 1	-	0 - 1
Dichlorodifluoromethane	--	--		1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Ethylbenzene	1000	390000		1.1 U	1.1 UJ	1.1 U	1.1 U	0.24 J	1.1 U
Freon 113	--	--		1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Isopropylbenzene	--	--		1.1 U	1.1 UJ	1.1 U	1.1 U	1.1 U	1.1 U
m+p-Xylene	--	--		1.1 U	1.1 UJ	1.1 U	1.1 U	1.1 U	1.1 U
Methyl acetate	--	--		5.4 UJ	5.4 U	5.7 UJ	5.3 U	5.6 U	5.7 U
Methylcyclohexane	--	--		1.1 U	1.1 UJ	1.1 U	1.1 U	1.1 U	1.1 U
Methylene chloride	50	500000		1.1 U	4.9 J	1.1 U	1.1 U	1.1 U	1.1 U
MTBE	930	500000		1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
o-Xylene	--	--		1.1 U	1.1 UJ	1.1 U	1.1 U	1.1 U	1.1 U
Styrene	--	--		1.1 U	1.1 UJ	1.1 U	1.1 U	1.1 U	1.1 U
Tetrachloroethene	1300	150000		1.1 U	0.37 J	1.1 U	1.1 U	1.1 U	1.1 U
Toluene	700	500000		1.1 U	1.1 UJ	1.1 U	1.1 U	0.29 J	1.1 U
trans-1,2-Dichloroethene	190	500000		1.1 U	1.1 UJ	1.1 U	1.1 U	1.1 U	1.1 U
trans-1,3-Dichloropropene	--	--		1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Trichloroethene	470	200000		1.1 U	0.3 J	1.1 U	1.1 U	1.1 U	1.1 U
Trichlorofluoromethane	--	--		1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Vinyl chloride	20	13000		1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Soil Cleanup Objective available
Bold data indicates that parameter was detected above the NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives
Shaded data indicates that parameter was detected above the NYSDEC Part 375 Commercial Soil Cleanup Objectives
Soil samples were collected by Environmental Assessment and Remediations in 2014

Table 2. Summary of Volatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	G-11_SURF	G-12	G-12	G-12_SURF	G-13	G-13_SURF
			Sample Date:	7/17/2014	6/17/2014	6/17/2014	6/17/2014	7/16/2014	7/16/2014
			Sample Depth (ft bls):	-	28 - 32	0 - 1	-	0 - 1	-
1,1,1-Trichloroethane	680	500000		1.2 U	1.0 U	1.1 U	1.1 U	1.3 U	1.6 U
1,1,2,2-Tetrachloroethane	--	--		1.2 U	1.0 U	1.1 U	1.1 U	1.3 U	1.6 U
1,1,2-Trichloroethane	--	--		1.2 U	1.0 U	1.1 U	1.1 U	1.3 U	1.6 U
1,1-Dichloroethane	270	240000		1.2 U	1.0 U	1.1 U	1.1 U	1.3 U	1.6 U
1,1-Dichloroethene	330	500000		1.2 U	0.21 J	1.1 U	1.1 U	1.3 U	1.6 U
1,2,3-Trichlorobenzene	--	--		1.2 U	1.0 U	1.1 U	1.1 U	1.3 U	1.6 U
1,2,4-Trichlorobenzene	--	--		1.2 U	1.0 U	1.1 U	1.1 U	1.3 U	1.6 U
1,2-Dibromoethane	--	--		1.2 U	1.0 U	1.1 U	1.1 U	1.3 U	1.6 U
1,2-Dichlorobenzene	1100	500000		1.2 U	1.0 U	1.1 U	1.1 U	1.3 U	1.6 U
1,2-Dichloroethane	20	30000		1.2 U	1.0 U	1.1 U	1.1 U	1.3 U	1.6 U
1,2-Dichloropropane	--	--		1.2 U	1.0 U	1.1 U	1.1 U	1.3 U	1.6 U
1,3-Dichlorobenzene	2400	280000		1.2 U	1.0 U	1.1 U	1.1 U	1.3 U	1.6 U
1,4-Dichlorobenzene	1800	130000		1.2 U	1.0 U	1.1 U	1.1 U	1.3 U	1.6 U
1,4-Dioxane	100	130000		25 UJ	21 U	22 U	22 U	26 U	31 U
2-Butanone (MEK)	120	500000		6.2 U	14	5.4 U	5.6 U	6.5 U	7.8 U
2-Hexanone	--	--		6.2 U	5.1 U	5.4 U	5.6 U	6.5 U	7.8 U
4-Methyl-2-pentanone (MIBK)	--	--		6.2 U	5.1 U	5.4 U	5.6 U	6.5 U	7.8 U
Acetone	50	500000		6.2 U	**59**	5.4 U	5.6 U	6.5 UJ	7.8 UJ
Benzene	60	44000		1.2 U	1.0 U	1.1 U	1.1 U	1.3 U	1.6 U
Bromochloromethane	--	--		1.2 U	1.0 U	1.1 U	1.1 U	1.3 U	1.6 U
Bromodichloromethane	--	--		1.2 U	1.0 U	1.1 U	1.1 U	1.3 U	1.6 U
Bromoform	--	--		1.2 U	1.0 U	1.1 U	1.1 U	1.3 UJ	1.6 UJ
Bromomethane	--	--		1.2 U	1.0 U	1.1 U	1.1 U	1.3 U	1.6 U
Carbon disulfide	--	--		1.2 U	0.65 J	1.1 U	1.1 U	1.3 U	1.6 U
Carbon tetrachloride	760	22000		1.2 U	1.0 U	1.1 U	1.1 U	1.3 U	1.6 U
Chlorobenzene	1100	500000		0.31 J	1.0 U	1.1 U	1.1 U	1.3 U	1.6 U
Chloroethane	--	--		1.2 U	1.0 UJ	1.1 U	1.1 UJ	1.3 U	1.6 U
Chloroform	370	350000		1.2 U	1.0 U	1.1 UJ	1.1 U	1.3 U	1.6 U
Chloromethane	--	--		1.2 U	1.0 U	1.1 U	1.1 U	1.3 U	1.6 U
cis-1,2-Dichloroethene	250	500000		1.2 U	1.0 U	1.1 U	1.1 U	1.3 U	1.6 U
cis-1,3-Dichloropropene	--	--		1.2 U	1.0 U	1.1 U	1.1 U	1.3 U	1.6 U
Cyclohexane	--	--		1.2 U	0.72 J	1.1 U	1.1 U	1.3 U	1.6 U
Dibromochloromethane	--	--		1.2 U	1.0 U	1.1 U	1.1 U	1.3 U	1.6 U
Dibromochloropropane	--	--		1.2 U	1.0 U	1.1 U	1.1 U	1.3 U	1.6 U

Table 2. Summary of Volatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	G-11_SURF	G-12	G-12	G-12_SURF	G-13	G-13_SURF
			Sample Date:	7/17/2014	6/17/2014	6/17/2014	6/17/2014	7/16/2014	7/16/2014
			Sample Depth (ft bls):	-	28 - 32	0 - 1	-	0 - 1	-
Dichlorodifluoromethane	--	--		1.2 U	1.0 U	1.1 U	1.1 U	1.3 U	1.6 U
Ethylbenzene	1000	390000		1.2 U	1.0 U	1.1 U	1.1 U	1.3 U	1.6 U
Freon 113	--	--		1.2 U	1.0 U	1.1 U	1.1 U	1.3 U	1.6 U
Isopropylbenzene	--	--		1.2 U	1.0 U	1.1 U	1.1 U	1.3 U	1.6 U
m+p-Xylene	--	--		1.2 U	1.0 U	1.1 U	1.1 U	1.3 U	1.6 U
Methyl acetate	--	--		6.2 UJ	5.1 U	5.4 U	5.6 U	6.5 U	7.8 U
Methylcyclohexane	--	--		1.2 U	2.2	1.1 U	1.1 U	1.3 U	1.6 U
Methylene chloride	50	500000		1.2 U	1.0 U	1.1 U	1.1 U	1.3 U	1.6 U
MTBE	930	500000		1.2 U	1.0 U	1.1 U	1.1 U	1.3 U	1.6 U
o-Xylene	--	--		1.2 U	0.3 J	1.1 U	1.1 U	1.3 U	1.6 U
Styrene	--	--		1.2 U	1.0 U	1.1 U	1.1 U	1.3 U	1.6 U
Tetrachloroethene	1300	150000		1.2 U	1.0 U	1.1 U	1.1 U	1.3 U	1.6 U
Toluene	700	500000		0.21 J	1.0 U	1.1 U	1.1 U	1.3 U	1.6 U
trans-1,2-Dichloroethene	190	500000		1.2 U	1.0 U	1.1 U	1.1 U	1.3 U	1.6 U
trans-1,3-Dichloropropene	--	--		1.2 U	1.0 U	1.1 U	1.1 U	1.3 U	1.6 U
Trichloroethene	470	200000		1.2 U	1.0 U	1.1 U	1.1 U	1.3 U	1.6 U
Trichlorofluoromethane	--	--		1.2 U	1.0 U	1.1 U	1.1 U	1.3 U	1.6 U
Vinyl chloride	20	13000		1.2 U	1.0 U	1.1 U	1.1 U	1.3 U	1.6 U

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Soil Cleanup Objective available
Bold data indicates that parameter was detected above the NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives
Shaded data indicates that parameter was detected above the NYSDEC Part 375 Commercial Soil Cleanup Objectives
Soil samples were collected by Environmental Assessment and Remediations in 2014

Table 2. Summary of Volatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	G-14	G-14_SURF	G-15	G-15_SURF	G-16	G-16_SURF
			Sample Date:	7/16/2014	7/16/2014	7/17/2014	7/17/2014	7/17/2014	7/17/2014
			Sample Depth (ft bls):	0 - 1	-	0 - 1	-	0 - 1	-
1,1,1-Trichloroethane	680	500000		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	--	--		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U
1,1,2-Trichloroethane	--	--		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U
1,1-Dichloroethane	270	240000		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U
1,1-Dichloroethene	330	500000		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U
1,2,3-Trichlorobenzene	--	--		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	--	--		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U
1,2-Dibromoethane	--	--		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U
1,2-Dichlorobenzene	1100	500000		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U
1,2-Dichloroethane	20	30000		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U
1,2-Dichloropropane	--	--		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U
1,3-Dichlorobenzene	2400	280000		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U
1,4-Dichlorobenzene	1800	130000		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U
1,4-Dioxane	100	130000		25 U	25 U	21 UJ	24 U	20 U	20 U
2-Butanone (MEK)	120	500000		6.2 U	6.2 U	5.3 U	5.9 U	5.1 U	5.1 U
2-Hexanone	--	--		6.2 U	6.2 U	5.3 U	5.9 U	5.1 U	5.1 U
4-Methyl-2-pentanone (MIBK)	--	--		6.2 U	6.2 U	5.3 U	5.9 U	5.1 U	5.1 U
Acetone	50	500000		6.2 UJ	6.2 UJ	5.3 U	5.9 U	5.1 U	5.1 U
Benzene	60	44000		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U
Bromochloromethane	--	--		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U
Bromodichloromethane	--	--		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U
Bromoform	--	--		1.2 UJ	1.2 UJ	1.1 U	1.2 U	1.0 U	1.0 U
Bromomethane	--	--		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U
Carbon disulfide	--	--		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U
Carbon tetrachloride	760	22000		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U
Chlorobenzene	1100	500000		1.2 U	1.2 U	0.52 J	0.85 J	0.35 J	0.39 J
Chloroethane	--	--		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U
Chloroform	370	350000		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U
Chloromethane	--	--		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	250	500000		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	--	--		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U
Cyclohexane	--	--		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U
Dibromochloromethane	--	--		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U
Dibromochloropropane	--	--		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U

Table 2. Summary of Volatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	G-14	G-14_SURF	G-15	G-15_SURF	G-16	G-16_SURF
			Sample Date:	7/16/2014	7/16/2014	7/17/2014	7/17/2014	7/17/2014	7/17/2014
			Sample Depth (ft bls):	0 - 1	-	0 - 1	-	0 - 1	-
Dichlorodifluoromethane	--	--		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U
Ethylbenzene	1000	390000		1.2 U	1.2 U	0.2 J	0.23 J	1.0 U	1.0 U
Freon 113	--	--		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U
Isopropylbenzene	--	--		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U
m+p-Xylene	--	--		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U
Methyl acetate	--	--		6.2 U	6.2 U	5.3 UJ	5.9 U	5.1 U	5.1 U
Methylcyclohexane	--	--		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U
Methylene chloride	50	500000		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U
MTBE	930	500000		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U
o-Xylene	--	--		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U
Styrene	--	--		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U
Tetrachloroethene	1300	150000		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U
Toluene	700	500000		1.2 U	1.2 U	0.32 J	0.38 J	1.0 U	1.0 U
trans-1,2-Dichloroethene	190	500000		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	--	--		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U
Trichloroethene	470	200000		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U
Trichlorofluoromethane	--	--		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U
Vinyl chloride	20	13000		1.2 U	1.2 U	1.1 U	1.2 U	1.0 U	1.0 U

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Soil Cleanup Objective available
Bold data indicates that parameter was detected above the NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives
Shaded data indicates that parameter was detected above the NYSDEC Part 375 Commercial Soil Cleanup Objectives
Soil samples were collected by Environmental Assessment and Remediations in 2014

Table 2. Summary of Volatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	G-17	G-17	G-17_SURF	G-18	G-18_SURF	P-06
			Sample Date:	6/16/2014	6/16/2014	6/16/2014	7/16/2014	7/16/2014	6/27/2014
			Sample Depth (ft bls):	0 - 1	8 - 12	-	0 - 1	-	28 - 32
1,1,1-Trichloroethane	680	500000		1.1 U	1.0 U	0.96 U	1.2 U	1.2 U	1.0 U
1,1,2,2-Tetrachloroethane	--	--		1.1 U	1.0 U	0.96 U	1.2 U	1.2 U	1.0 U
1,1,2-Trichloroethane	--	--		1.1 U	1.0 U	0.96 U	1.2 U	1.2 U	1.0 U
1,1-Dichloroethane	270	240000		1.1 U	1.0 U	0.96 U	1.2 U	1.2 U	1.0 U
1,1-Dichloroethene	330	500000		1.1 U	1.0 U	0.96 U	1.2 U	1.2 U	1.0 U
1,2,3-Trichlorobenzene	--	--		1.1 U	1.0 U	0.96 U	1.2 U	1.2 U	1.0 U
1,2,4-Trichlorobenzene	--	--		1.1 U	1.0 U	0.96 U	1.2 U	1.2 U	1.0 U
1,2-Dibromoethane	--	--		1.1 U	1.0 U	0.96 U	1.2 U	1.2 U	1.0 U
1,2-Dichlorobenzene	1100	500000		1.1 U	1.0 U	0.96 U	1.2 U	1.2 U	1.0 U
1,2-Dichloroethane	20	30000		1.1 U	1.0 U	0.96 U	1.2 U	1.2 U	1.0 U
1,2-Dichloropropane	--	--		1.1 U	1.0 U	0.96 U	1.2 U	1.2 U	1.0 U
1,3-Dichlorobenzene	2400	280000		1.1 U	1.0 U	0.96 U	1.2 U	1.2 U	1.0 U
1,4-Dichlorobenzene	1800	130000		1.1 U	1.0 U	0.96 U	1.2 U	1.2 U	1.0 U
1,4-Dioxane	100	130000		22 U	21 UJ	19 U	23 U	24 U	20 U
2-Butanone (MEK)	120	500000		5.4 U	8.1	4.8 U	5.9 U	5.9 U	4.1 J
2-Hexanone	--	--		5.4 U	5.2 U	4.8 U	5.9 U	5.9 U	5.1 U
4-Methyl-2-pentanone (MIBK)	--	--		5.4 U	5.2 U	4.8 U	5.9 U	5.9 U	5.1 U
Acetone	50	500000		5.4 U	5.2 U	4.8 U	5.9 UJ	5.9 UJ	5.1 U
Benzene	60	44000		1.1 U	1.0 U	0.96 U	1.2 U	1.2 U	1.0 U
Bromochloromethane	--	--		1.1 U	1.0 U	0.96 U	1.2 U	1.2 U	1.0 U
Bromodichloromethane	--	--		1.1 U	1.0 U	0.96 U	1.2 U	1.2 U	1.0 U
Bromoform	--	--		1.1 U	1.0 U	0.96 U	1.2 UJ	1.2 UJ	1.0 U
Bromomethane	--	--		1.1 UJ	1.0 UJ	0.96 U	1.2 U	1.2 U	1.0 U
Carbon disulfide	--	--		1.1 U	0.33 J	0.96 U	1.2 U	1.2 U	0.28 J
Carbon tetrachloride	760	22000		1.1 U	1.0 U	0.96 U	1.2 U	1.2 U	1.0 U
Chlorobenzene	1100	500000		1.1 U	1.0 U	0.96 U	1.2 U	1.2 U	1.0 U
Chloroethane	--	--		1.1 U	1.0 U	0.96 U	1.2 U	1.2 U	1.0 U
Chloroform	370	350000		1.1 U	1.0 U	0.96 U	1.2 U	1.2 U	1.0 U
Chloromethane	--	--		1.1 UJ	1.0 UJ	0.96 U	1.2 U	1.2 U	1.0 U
cis-1,2-Dichloroethene	250	500000		1.1 U	0.13 J	0.96 U	1.2 U	1.2 U	1.0 U
cis-1,3-Dichloropropene	--	--		1.1 U	1.0 U	0.96 U	1.2 U	1.2 U	1.0 U
Cyclohexane	--	--		1.1 U	1.0 U	0.96 U	1.2 U	1.2 U	1.0 U
Dibromochloromethane	--	--		1.1 U	1.0 U	0.96 U	1.2 U	1.2 U	1.0 U
Dibromochloropropane	--	--		1.1 U	1.0 U	0.96 U	1.2 U	1.2 U	1.0 U

Table 2. Summary of Volatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	G-17	G-17	G-17_SURF	G-18	G-18_SURF	P-06
			Sample Date:	6/16/2014	6/16/2014	6/16/2014	7/16/2014	7/16/2014	6/27/2014
			Sample Depth (ft bls):	0 - 1	8 - 12	-	0 - 1	-	28 - 32
Dichlorodifluoromethane	--	--		1.1 UJ	1.0 UJ	0.96 U	1.2 U	1.2 U	1.0 U
Ethylbenzene	1000	390000		1.1 U	1.0 U	0.96 U	1.2 U	1.2 U	1.0 U
Freon 113	--	--		1.1 U	1.0 U	0.96 U	1.2 U	1.2 U	1.0 U
Isopropylbenzene	--	--		1.1 U	1.0 U	0.96 U	1.2 U	1.2 U	1.0 U
m+p-Xylene	--	--		1.1 U	1.0 U	0.96 U	1.2 U	1.2 U	1.0 U
Methyl acetate	--	--		5.4 U	5.2 U	4.8 U	5.9 U	5.9 U	5.1 UJ
Methylcyclohexane	--	--		1.1 U	1.0 U	0.96 U	1.2 U	1.2 U	1.0 U
Methylene chloride	50	500000		1.1 U	1.0 U	0.96 U	1.2 U	1.2 U	1.0 U
MTBE	930	500000		1.1 U	1.0 U	0.96 U	1.2 U	1.2 U	1.0 U
o-Xylene	--	--		1.1 U	1.0 U	0.96 U	1.2 U	1.2 U	1.0 U
Styrene	--	--		1.1 U	1.0 U	0.96 U	1.2 U	1.2 U	1.0 U
Tetrachloroethene	1300	150000		1.1 U	0.25 J	0.96 U	1.2 U	1.2 U	1.0 U
Toluene	700	500000		1.1 U	1.0 U	0.96 U	1.2 U	1.2 U	1.0 U
trans-1,2-Dichloroethene	190	500000		1.1 U	1.0 U	0.96 U	1.2 U	1.2 U	1.0 U
trans-1,3-Dichloropropene	--	--		1.1 U	1.0 U	0.96 U	1.2 U	1.2 U	1.0 U
Trichloroethene	470	200000		1.1 U	0.5 J	0.96 U	1.2 U	1.2 U	0.4 J
Trichlorofluoromethane	--	--		1.1 U	1.0 U	0.96 U	1.2 U	1.2 U	1.0 U
Vinyl chloride	20	13000		1.1 U	1.0 U	0.96 U	1.2 U	1.2 U	1.0 U

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Soil Cleanup Objective available
Bold data indicates that parameter was detected above the NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives
Shaded data indicates that parameter was detected above the NYSDEC Part 375 Commercial Soil Cleanup Objectives
Soil samples were collected by Environmental Assessment and Remediations in 2014

Table 2. Summary of Volatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	P-08	P-27
			Sample Date:	6/24/2014	6/20/2014
			Sample Depth (ft bls):	28 - 32	28 - 32
1,1,1-Trichloroethane	680	500000		0.97 U	1.1 U
1,1,2,2-Tetrachloroethane	--	--		0.97 U	1.1 U
1,1,2-Trichloroethane	--	--		0.97 U	1.1 U
1,1-Dichloroethane	270	240000		0.97 U	1.1 U
1,1-Dichloroethene	330	500000		0.97 U	1.1 U
1,2,3-Trichlorobenzene	--	--		0.97 U	1.1 U
1,2,4-Trichlorobenzene	--	--		0.97 U	1.1 U
1,2-Dibromoethane	--	--		0.97 U	1.1 U
1,2-Dichlorobenzene	1100	500000		0.97 U	1.1 U
1,2-Dichloroethane	20	30000		0.97 U	1.1 U
1,2-Dichloropropane	--	--		0.97 U	1.1 U
1,3-Dichlorobenzene	2400	280000		0.97 U	1.1 U
1,4-Dichlorobenzene	1800	130000		0.97 U	1.1 U
1,4-Dioxane	100	130000		19 U	21 U
2-Butanone (MEK)	120	500000		5	5.3 U
2-Hexanone	--	--		4.9 U	5.3 U
4-Methyl-2-pentanone (MIBK)	--	--		4.9 U	5.3 U
Acetone	50	500000		4.9 U	5.3 U
Benzene	60	44000		0.97 U	1.1 U
Bromochloromethane	--	--		0.97 U	1.1 U
Bromodichloromethane	--	--		0.97 U	1.1 U
Bromoform	--	--		0.97 U	1.1 UJ
Bromomethane	--	--		0.97 U	1.1 U
Carbon disulfide	--	--		1.6	0.2 J
Carbon tetrachloride	760	22000		0.97 U	1.1 U
Chlorobenzene	1100	500000		0.97 U	1.1 U
Chloroethane	--	--		0.97 U	1.1 U
Chloroform	370	350000		0.97 U	1.1 U
Chloromethane	--	--		0.97 U	1.1 U
cis-1,2-Dichloroethene	250	500000		0.97 U	1.1 U
cis-1,3-Dichloropropene	--	--		0.97 U	1.1 U
Cyclohexane	--	--		0.97 U	1.1 U
Dibromochloromethane	--	--		0.97 U	1.1 U
Dibromochloropropane	--	--		0.97 U	1.1 U

Table 2. Summary of Volatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	P-08	P-27
			Sample Date:	6/24/2014	6/20/2014
			Sample Depth (ft bls):	28 - 32	28 - 32
Dichlorodifluoromethane	--	--		0.97 U	1.1 U
Ethylbenzene	1000	390000		0.97 U	1.1 U
Freon 113	--	--		0.97 U	1.1 U
Isopropylbenzene	--	--		0.97 U	1.1 U
m+p-Xylene	--	--		0.97 U	1.1 U
Methyl acetate	--	--		4.9 U	5.3 U
Methylcyclohexane	--	--		0.84 J	1.1 U
Methylene chloride	50	500000		1.3	1.1 U
MTBE	930	500000		0.97 U	1.1 U
o-Xylene	--	--		0.97 U	1.1 U
Styrene	--	--		0.97 U	1.1 U
Tetrachloroethene	1300	150000		0.97 U	0.71 J
Toluene	700	500000		0.22 J	1.1 U
trans-1,2-Dichloroethene	190	500000		0.97 U	1.1 U
trans-1,3-Dichloropropene	--	--		0.97 U	1.1 U
Trichloroethene	470	200000		0.97 U	0.14 J
Trichlorofluoromethane	--	--		0.97 U	1.1 U
Vinyl chloride	20	13000		0.97 U	1.1 U

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Soil Cleanup Objective available
Bold data indicates that parameter was detected above the NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives
Shaded data indicates that parameter was detected above the NYSDEC Part 375 Commercial Soil Cleanup Objectives
Soil samples were collected by Environmental Assessment and Remediations in 2014

Table 3. Summary of Semivolatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	BUD-01	BUD-01	BUD-02	BUD-02	BUD-03	BUD-03
			Sample Date:	6/26/2014	6/26/2014	6/26/2014	6/26/2014	6/26/2014	6/26/2014
			Sample Depth (ft bls):	14 - 18	18 - 22	14 - 18	18 - 22	22 - 26	14 - 18
1,1'-Biphenyl	--	--		100 J	340 U	690 U	350 U	350 U	340 U
1,2,4,5-Tetrachlorobenzene	--	--		350 U	340 U	690 U	350 U	350 U	340 U
2,2'-oxybis (1-chloropropane)	--	--		350 U	340 U	690 U	350 U	350 U	340 U
2,3,4,6-Tetrachlorophenol	--	--		350 U	340 U	690 U	350 U	350 U	340 U
2,4,5-Trichlorophenol	--	--		350 U	340 U	690 U	350 U	350 U	340 U
2,4,6-Trichlorophenol	--	--		350 U	340 U	690 U	350 U	350 U	340 U
2,4-Dichlorophenol	--	--		350 U	340 U	690 U	350 U	350 U	340 U
2,4-Dimethylphenol	--	--		350 U	340 U	690 U	350 U	350 U	340 U
2,4-Dinitrophenol	--	--		720 U	690 U	1400 U	700 U	710 U	690 U
2,4-Dinitrotoluene	--	--		72 U	69 U	140 U	70 U	71 U	69 U
2,6-Dinitrotoluene	--	--		72 U	69 U	140 U	70 U	71 U	69 U
2-Chloronaphthalene	--	--		350 U	340 U	690 U	350 U	350 U	340 U
2-Chlorophenol	--	--		350 U	340 U	690 U	350 U	350 U	340 U
2-Methylnaphthalene	--	--		430	340 U	690 U	140 J	350 U	340 U
2-Methylphenol	330	500000		350 U	340 U	690 U	350 U	350 U	340 U
2-Nitroaniline	--	--		350 U	340 U	690 UJ	350 U	350 U	340 U
2-Nitrophenol	--	--		350 U	340 U	690 U	350 U	350 U	340 U
3,3'-Dichlorobenzidine	--	--		350 U	340 U	690 U	350 U	350 U	340 U
3-Nitroaniline	--	--		350 U	340 U	690 U	350 U	350 U	340 U
4,6-Dinitro-2-methylphenol	--	--		720 U	690 U	1400 U	700 U	710 U	690 U
4-Bromophenyl phenyl ether	--	--		350 U	340 U	690 U	350 U	350 U	340 U
4-Chloro-3-methylphenol	--	--		350 U	340 U	690 U	350 U	350 U	340 U
4-Chloroaniline	--	--		350 U	340 U	690 U	350 U	350 U	340 U
4-Chlorophenyl phenyl ether	--	--		350 U	340 U	690 U	350 U	350 U	340 U
4-Methylphenol	330	500000		350 U	340 U	690 U	350 U	350 U	340 U
4-Nitroaniline	--	--		720 U	690 U	1400 U	700 U	710 U	690 U
4-Nitrophenol	--	--		350 U	340 U	690 U	350 U	350 U	340 U
Acenaphthene	20000	500000		380	340 U	270 J	61 J	350 U	340 U
Acenaphthylene	100000	500000		120 J	340 U	690 U	350 U	350 U	340 U
Acetophenone	--	--		350 U	340 U	690 U	350 U	350 U	340 U
Anthracene	100000	500000		890	340 U	2400	150 J	350 U	340 U

Table 3. Summary of Semivolatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	BUD-01	BUD-01	BUD-02	BUD-02	BUD-03	BUD-03
			Sample Date:	6/26/2014	6/26/2014	6/26/2014	6/26/2014	6/26/2014	6/26/2014
			Sample Depth (ft bls):	14 - 18	18 - 22	14 - 18	18 - 22	22 - 26	14 - 18
Atrazine	--	--		350 U	340 U	690 U	350 U	350 U	340 U
Benzaldehyde	--	--		350 U	340 U	690 U	350 U	350 U	340 U
Benzo[a]anthracene	1000	5600		**1600**	110	**5400**	300	69	120
Benzo[a]pyrene	1000	1000		**1500**	110	**4500**	290	52	100
Benzo[b]fluoranthene	1000	5600		**2200**	130	**5400**	400	74	130
Benzo[g,h,i]perylene	100000	500000		420 J	98 J	1500	87 J	44 J	65 J
Benzo[k]fluoranthene	800	56000		**890**	49	**2300**	170	29 J	50
Bis(2-chloroethoxy)methane	--	--		350 U	340 U	690 U	350 U	350 U	340 U
Bis(2-chloroethyl) ether	--	--		35 U	34 U	69 U	35 U	35 U	34 U
Bis(2-ethylhexyl) phthalate	--	--		350 U	340 U	690 U	280 J	350 U	340 U
Butylbenzyl phthalate	--	--		430	340 U	690 U	350 U	350 U	340 U
Caprolactam	--	--		350 U	340 U	690 U	350 U	350 U	340 U
Carbazole	--	--		410	340 U	420 J	68 J	350 U	340 U
Chrysene	1000	56000		**1600**	110 J	**4900**	320 J	63 J	120 J
Dibenzo[a,h]anthracene	330	560		160 J	39 J	**580**	36 J	25 J	29 J
Dibenzofuran	7000	350000		330 J	340 U	210 J	59 J	350 U	340 U
Diethyl phthalate	--	--		350 U	340 U	690 U	350 U	350 U	340 U
Dimethyl phthalate	--	--		350 U	340 U	690 U	350 U	350 U	340 U
Di-n-butyl phthalate	--	--		47 J	340 U	690 U	350 U	350 U	340 U
Di-n-octyl phthalate	--	--		350 U	340 U	690 U	350 U	350 U	340 U
Fluoranthene	100000	500000		4700	160 J	12000	670	100 J	140 J
Fluorene	30000	500000		700	340 U	600 J	140 J	350 U	340 U
Hexachlorobenzene	330	6000		35 U	34 U	69 U	35 U	35 U	34 U
Hexachlorobutadiene	--	--		72 U	69 U	140 U	70 U	71 U	69 U
Hexachlorocyclopentadiene	--	--		350 U	340 U	690 U	350 U	350 U	340 U
Hexachloroethane	--	--		35 U	34 U	69 U	35 U	35 U	34 U
Indeno[1,2,3-cd]pyrene	500	5600		500	110	**1900**	110	57	83
Isophorone	--	--		150 J	340 U	690 U	350 U	350 U	340 U
Naphthalene	12000	500000		110 J	340 U	93 J	350 U	350 U	340 U
Nitrobenzene	--	--		35 U	34 U	69 U	35 U	35 U	34 U
n-Nitrosodi-n-propylamine	--	--		35 U	34 U	69 U	35 U	35 U	34 U

Table 3. Summary of Semivolatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	BUD-01	BUD-01	BUD-02	BUD-02	BUD-03	BUD-03
			Sample Date:	6/26/2014	6/26/2014	6/26/2014	6/26/2014	6/26/2014	6/26/2014
			Sample Depth (ft bls):	14 - 18	18 - 22	14 - 18	18 - 22	22 - 26	14 - 18
n-Nitrosodiphenylamine	--	--		350 U	340 U	690 U	350 U	350 U	340 U
Pentachlorophenol	800	6700		720 U	690 U	1400 U	700 U	710 U	690 U
Phenanthrene	100000	500000		4000	96 J	7400	670	47 J	78 J
Phenol	330	500000		350 U	340 U	690 U	350 U	350 U	340 U
Pyrene	100000	500000		2400	230 J	7100	390	130 J	200 J

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Soil Cleanup Objective available
Bold data indicates that parameter was detected above the NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives
Shaded data indicates that parameter was detected above the NYSDEC Part 375 Commercial Soil Cleanup Objectives
Soil samples were collected by Environmental Assessment and Remediations in 2014

Table 3. Summary of Semivolatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	CR-10	CR-11	CR-5	G-01	G-01_SURF	G-02
			Sample Date:	7/15/2014	6/18/2014	7/15/2014	7/16/2014	7/16/2014	7/16/2014
			Sample Depth (ft bls):	0 - 1	24 - 29	0 - 1	0 - 1	-	0 - 1
1,1'-Biphenyl	--	--		350 U	380 U	350 UJ	1800 U	370 U	360 U
1,2,4,5-Tetrachlorobenzene	--	--		350 U	380 U	350 UJ	1800 U	370 U	360 U
2,2'-oxybis (1-chloropropane)	--	--		350 UJ	380 U	350 UJ	1800 U	370 U	360 U
2,3,4,6-Tetrachlorophenol	--	--		350 U	380 U	350 UJ	1800 U	370 U	360 U
2,4,5-Trichlorophenol	--	--		350 U	380 U	350 UJ	1800 U	370 U	360 U
2,4,6-Trichlorophenol	--	--		350 U	380 U	350 UJ	1800 U	370 U	360 U
2,4-Dichlorophenol	--	--		350 U	380 U	350 UJ	1800 U	370 U	360 U
2,4-Dimethylphenol	--	--		350 U	380 U	350 UJ	1800 U	370 U	360 U
2,4-Dinitrophenol	--	--		710 UJ	770 U	700 UJ	3700 U	760 UJ	740 UJ
2,4-Dinitrotoluene	--	--		71 U	77 U	70 UJ	370 U	76 U	74 U
2,6-Dinitrotoluene	--	--		71 U	77 U	70 UJ	370 U	76 U	74 U
2-Chloronaphthalene	--	--		350 U	380 U	350 UJ	1800 U	370 U	360 U
2-Chlorophenol	--	--		350 U	380 U	350 UJ	1800 U	370 U	360 U
2-Methylnaphthalene	--	--		350 U	380 U	350 UJ	1800 U	370 U	70 J
2-Methylphenol	330	500000		350 U	380 U	350 UJ	1800 U	370 U	360 U
2-Nitroaniline	--	--		350 U	380 U	350 UJ	1800 U	370 U	360 U
2-Nitrophenol	--	--		350 U	380 U	350 UJ	1800 U	370 U	360 U
3,3'-Dichlorobenzidine	--	--		350 UJ	380 UJ	350 UJ	1800 U	370 U	360 U
3-Nitroaniline	--	--		350 U	380 U	350 UJ	1800 U	370 U	360 U
4,6-Dinitro-2-methylphenol	--	--		710 U	770 U	700 UJ	3700 U	760 U	740 U
4-Bromophenyl phenyl ether	--	--		350 U	380 U	350 UJ	1800 U	370 U	360 U
4-Chloro-3-methylphenol	--	--		350 U	380 U	350 UJ	1800 U	370 UJ	360 UJ
4-Chloroaniline	--	--		350 U	380 U	350 UJ	1800 U	370 U	360 U
4-Chlorophenyl phenyl ether	--	--		350 U	380 U	350 UJ	1800 U	370 U	360 U
4-Methylphenol	330	500000		350 U	380 U	350 UJ	1800 U	370 U	360 U
4-Nitroaniline	--	--		710 U	770 U	700 UJ	3700 U	760 UJ	740 UJ
4-Nitrophenol	--	--		350 U	380 U	350 UJ	1800 UJ	370 UJ	360 UJ
Acenaphthene	20000	500000		350 U	380 U	350 UJ	1800 U	370 U	280 J
Acenaphthylene	100000	500000		350 U	380 U	350 UJ	1800 U	370 U	52 J
Acetophenone	--	--		350 U	380 U	350 UJ	1800 U	370 U	360 U
Anthracene	100000	500000		350 U	71 J	350 UJ	300 J	110 J	990

Table 3. Summary of Semivolatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	CR-10	CR-11	CR-5	G-01	G-01_SURF	G-02
			Sample Date:	7/15/2014	6/18/2014	7/15/2014	7/16/2014	7/16/2014	7/16/2014
			Sample Depth (ft bls):	0 - 1	24 - 29	0 - 1	0 - 1	-	0 - 1
Atrazine	--	--		350 UJ	380 U	350 UJ	1800 UJ	370 U	360 U
Benzaldehyde	--	--		350 U	380 U	350 UJ	1800 U	370 U	360 U
Benzo[a]anthracene	1000	5600		110	300	130 J	**1200**	650	**4300**
Benzo[a]pyrene	1000	1000		120	280	140 J	**1300**	800	**3900**
Benzo[b]fluoranthene	1000	5600		150	440	180 J	**1600**	**1100**	**5600**
Benzo[g,h,i]perylene	100000	500000		61 J	98 J	140 J	1400 J	550	2500
Benzo[k]fluoranthene	800	56000		66	160	74 J	630	460	**2100**
Bis(2-chloroethoxy)methane	--	--		350 U	380 U	350 UJ	1800 U	370 U	360 U
Bis(2-chloroethyl) ether	--	--		35 U	38 U	35 UJ	180 U	37 U	36 U
Bis(2-ethylhexyl) phthalate	--	--		350 U	420	350 UJ	1800 U	370 U	390
Butylbenzyl phthalate	--	--		350 U	62 J	350 UJ	1800 U	370 U	540
Caprolactam	--	--		350 U	380 U	350 UJ	1800 U	370 U	360 U
Carbazole	--	--		350 U	380 U	350 UJ	1800 U	53 J	420
Chrysene	1000	56000		130 J	330 J	160 J	**1300 J**	720	**4400**
Dibenzo[a,h]anthracene	330	560		40	45	49 J	**370**	180	**730**
Dibenzofuran	7000	350000		350 U	380 U	350 UJ	1800 U	370 U	140 J
Diethyl phthalate	--	--		350 U	380 U	350 UJ	1800 U	370 U	360 U
Dimethyl phthalate	--	--		350 U	380 U	350 UJ	1800 U	370 U	360 U
Di-n-butyl phthalate	--	--		350 U	380 U	350 UJ	1800 U	370 U	360 U
Di-n-octyl phthalate	--	--		350 U	380 U	350 UJ	1800 U	370 UJ	360 UJ
Fluoranthene	100000	500000		190 J	640	240 J	2100	1200	7600
Fluorene	30000	500000		350 U	380 U	350 UJ	1800 U	370 U	310 J
Hexachlorobenzene	330	6000		35 U	38 U	35 UJ	180 U	37 U	36 U
Hexachlorobutadiene	--	--		71 U	77 U	70 UJ	370 U	76 U	74 U
Hexachlorocyclopentadiene	--	--		350 U	380 U	350 UJ	1800 UJ	370 U	360 U
Hexachloroethane	--	--		35 U	38 U	35 UJ	180 U	37 U	36 U
Indeno[1,2,3-cd]pyrene	500	5600		95	130	170 J	**1400**	**600**	**2800**
Isophorone	--	--		350 U	380 U	350 UJ	1800 U	370 U	360 U
Naphthalene	12000	500000		350 U	380 U	350 UJ	1800 U	370 U	78 J
Nitrobenzene	--	--		35 U	38 U	35 UJ	180 U	37 U	36 U
n-Nitrosodi-n-propylamine	--	--		35 UJ	38 U	35 UJ	180 U	37 U	36 U

Table 3. Summary of Semivolatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	CR-10	CR-11	CR-5	G-01	G-01_SURF	G-02
			Sample Date:	7/15/2014	6/18/2014	7/15/2014	7/16/2014	7/16/2014	7/16/2014
			Sample Depth (ft bls):	0 - 1	24 - 29	0 - 1	0 - 1	-	0 - 1
n-Nitrosodiphenylamine	--	--		350 U	380 U	350 UJ	1800 U	370 U	360 U
Pentachlorophenol	800	6700		710 U	770 U	700 UJ	3700 U	760 U	740 U
Phenanthrene	100000	500000		70 J	270 J	76 J	1200 J	440	3700
Phenol	330	500000		350 U	380 U	350 UJ	1800 U	370 U	360 U
Pyrene	100000	500000		140 J	360 J	170 J	1600 J	820	5300

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Soil Cleanup Objective available
Bold data indicates that parameter was detected above the NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives
Shaded data indicates that parameter was detected above the NYSDEC Part 375 Commercial Soil Cleanup Objectives
Soil samples were collected by Environmental Assessment and Remediations in 2014

Table 3. Summary of Semivolatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	G-02_SURF	G-03	G-03_SURF	G-04	G-04_SURF	G-05
			Sample Date:	7/16/2014	7/16/2014	7/16/2014	7/16/2014	7/16/2014	7/16/2014
			Sample Depth (ft bls):	-	0 - 1	-	0 - 1	-	0 - 1
1,1'-Biphenyl	--	--		370 U	350 U	350 U	370 U	390 U	360 U
1,2,4,5-Tetrachlorobenzene	--	--		370 U	350 U	350 U	370 U	390 U	360 U
2,2'-oxybis (1-chloropropane)	--	--		370 U	350 U	350 U	370 U	390 U	360 U
2,3,4,6-Tetrachlorophenol	--	--		370 U	350 U	350 U	370 U	390 U	360 U
2,4,5-Trichlorophenol	--	--		370 U	350 U	350 U	370 U	390 U	360 U
2,4,6-Trichlorophenol	--	--		370 U	350 U	350 U	370 U	390 U	360 U
2,4-Dichlorophenol	--	--		370 U	350 U	350 U	370 U	390 U	360 U
2,4-Dimethylphenol	--	--		370 U	350 U	350 U	370 U	390 U	360 U
2,4-Dinitrophenol	--	--		750 UJ	720 U	720 U	740 UJ	780 U	730 UJ
2,4-Dinitrotoluene	--	--		75 U	72 U	72 U	74 U	78 U	73 U
2,6-Dinitrotoluene	--	--		75 U	72 U	72 U	74 U	78 U	73 U
2-Chloronaphthalene	--	--		370 U	350 U	350 U	370 U	390 U	360 U
2-Chlorophenol	--	--		370 U	350 U	350 U	370 U	390 U	360 U
2-Methylnaphthalene	--	--		49 J	69 J	350 U	370 U	390 U	360 U
2-Methylphenol	330	500000		370 U	350 U	350 U	370 U	390 U	360 U
2-Nitroaniline	--	--		370 U	350 U	350 U	370 U	390 U	360 U
2-Nitrophenol	--	--		370 U	350 U	350 U	370 U	390 U	360 U
3,3'-Dichlorobenzidine	--	--		370 U	350 U	350 U	370 U	390 U	360 U
3-Nitroaniline	--	--		370 U	350 U	350 U	370 U	390 U	360 U
4,6-Dinitro-2-methylphenol	--	--		750 U	720 U	720 U	740 U	780 U	730 U
4-Bromophenyl phenyl ether	--	--		370 U	350 U	350 U	370 U	390 U	360 U
4-Chloro-3-methylphenol	--	--		370 UJ	350 U	350 U	370 UJ	390 U	360 UJ
4-Chloroaniline	--	--		370 U	350 U	350 U	370 U	390 U	360 U
4-Chlorophenyl phenyl ether	--	--		370 U	350 U	350 U	370 U	390 U	360 U
4-Methylphenol	330	500000		370 U	350 U	350 U	370 U	390 U	360 U
4-Nitroaniline	--	--		750 UJ	720 U	720 U	740 UJ	780 U	730 UJ
4-Nitrophenol	--	--		370 UJ	350 UJ	350 U	370 UJ	390 U	360 UJ
Acenaphthene	20000	500000		100 J	90 J	350 U	370 U	390 U	360 U
Acenaphthylene	100000	500000		60 J	96 J	48 J	370 U	68 J	360 U
Acetophenone	--	--		370 U	350 U	350 U	370 U	390 U	360 U
Anthracene	100000	500000		300 J	570	120 J	370 U	82 J	82 J

Table 3. Summary of Semivolatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	Sample Designation:	G-02_SURF	G-03	G-03_SURF	G-04	G-04_SURF	G-05
			Sample Date:	7/16/2014	7/16/2014	7/16/2014	7/16/2014	7/16/2014	7/16/2014
			Sample Depth (ft bls):	-	0 - 1	-	0 - 1	-	0 - 1
Atrazine	--	--		370 U	350 UJ	350 UJ	370 U	390 UJ	360 U
Benzaldehyde	--	--		370 U	350 U	350 U	370 U	390 U	360 U
Benzo[a]anthracene	1000	5600		**1500**	**1600**	520	240	420	310
Benzo[a]pyrene	1000	1000		**1800**	**1400**	580	290	500	330
Benzo[b]fluoranthene	1000	5600		**2500**	**1700**	770	360	670	450
Benzo[g,h,i]perylene	100000	500000		1200	1100	410	230 J	340 J	230 J
Benzo[k]fluoranthene	800	56000		**990**	690	330	160	220	200
Bis(2-chloroethoxy)methane	--	--		370 U	350 U	350 U	370 U	390 U	360 U
Bis(2-chloroethyl) ether	--	--		37 U	35 U	35 U	37 U	39 U	36 U
Bis(2-ethylhexyl) phthalate	--	--		170 J	350 U	350 U	370 U	390 U	360 U
Butylbenzyl phthalate	--	--		190 J	350 U	350 U	370 U	390 U	360 U
Caprolactam	--	--		370 U	350 U	350 U	370 U	390 U	360 U
Carbazole	--	--		140 J	240 J	57 J	370 U	390 U	44 J
Chrysene	1000	56000		**1700**	**1500**	620	300 J	570	340 J
Dibenzo[a,h]anthracene	330	560		**350**	320	130	69	120	72
Dibenzofuran	7000	350000		370 U	180 J	350 U	370 U	390 U	360 U
Diethyl phthalate	--	--		370 U	350 U	350 U	370 U	390 U	360 U
Dimethyl phthalate	--	--		370 U	350 U	350 U	370 U	390 U	360 U
Di-n-butyl phthalate	--	--		370 U	350 U	350 U	370 U	390 U	360 U
Di-n-octyl phthalate	--	--		370 UJ	350 U	350 U	370 UJ	390 U	360 UJ
Fluoranthene	100000	500000		2900	3600	1200	360 J	800	630
Fluorene	30000	500000		86 J	140 J	350 U	370 U	390 U	360 U
Hexachlorobenzene	330	6000		37 U	35 U	35 U	37 U	39 U	36 U
Hexachlorobutadiene	--	--		75 U	72 U	72 U	74 U	78 U	73 U
Hexachlorocyclopentadiene	--	--		370 U	350 UJ	350 UJ	370 U	390 UJ	360 U
Hexachloroethane	--	--		37 U	35 U	35 U	37 U	39 U	36 U
Indeno[1,2,3-cd]pyrene	500	5600		**1400**	**1200**	490	200	390	230
Isophorone	--	--		370 U	350 U	350 U	370 U	390 U	360 U
Naphthalene	12000	500000		370 U	120 J	350 U	370 U	390 U	360 U
Nitrobenzene	--	--		37 U	35 U	35 U	37 U	39 U	36 U
n-Nitrosodi-n-propylamine	--	--		37 U	35 U	35 U	37 U	39 U	36 U

Table 3. Summary of Semivolatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	G-02_SURF	G-03	G-03_SURF	G-04	G-04_SURF	G-05
			Sample Date:	7/16/2014	7/16/2014	7/16/2014	7/16/2014	7/16/2014	7/16/2014
			Sample Depth (ft bls):	-	0 - 1	-	0 - 1	-	0 - 1
n-Nitrosodiphenylamine	--	--		370 U	350 U	350 U	370 U	390 U	360 U
Pentachlorophenol	800	6700		750 U	720 U	720 U	740 U	780 U	730 U
Phenanthrene	100000	500000		1100	2600	510	130 J	190 J	360
Phenol	330	500000		370 U	350 U	350 U	370 U	390 U	360 U
Pyrene	100000	500000		1800	2000	700	460	560	550

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Soil Cleanup Objective available
Bold data indicates that parameter was detected above the NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives
Shaded data indicates that parameter was detected above the NYSDEC Part 375 Commercial Soil Cleanup Objectives
Soil samples were collected by Environmental Assessment and Remediations in 2014

Table 3. Summary of Semivolatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	G-05_SURF	G-06	G-06_SURF	G-07	G-07_SURF	G-08
			Sample Date:	7/16/2014	7/16/2014	7/16/2014	7/17/2014	7/17/2014	7/17/2014
			Sample Depth (ft bls):	-	0 - 1	-	0 - 1	-	0 - 1
1,1'-Biphenyl	--	--		380 U	360 U	360 U	370 U	370 U	360 U
1,2,4,5-Tetrachlorobenzene	--	--		380 U	360 U	360 U	370 U	370 U	360 U
2,2'-oxybis (1-chloropropane)	--	--		380 U	360 U	360 U	370 U	370 U	360 U
2,3,4,6-Tetrachlorophenol	--	--		380 U	360 U	360 U	370 U	370 U	360 U
2,4,5-Trichlorophenol	--	--		380 U	360 U	360 U	370 UJ	370 UJ	360 UJ
2,4,6-Trichlorophenol	--	--		380 U	360 U	360 U	370 U	370 U	360 U
2,4-Dichlorophenol	--	--		380 U	360 U	360 U	370 U	370 U	360 U
2,4-Dimethylphenol	--	--		380 U	360 U	360 U	370 U	370 U	360 U
2,4-Dinitrophenol	--	--		780 UJ	720 UJ	730 U	750 U	740 U	740 U
2,4-Dinitrotoluene	--	--		78 U	72 U	73 U	75 U	74 U	74 U
2,6-Dinitrotoluene	--	--		78 U	72 U	73 U	75 U	74 U	74 U
2-Chloronaphthalene	--	--		380 U	360 U	360 U	370 U	370 U	360 U
2-Chlorophenol	--	--		380 U	360 U	360 U	370 U	370 U	360 U
2-Methylnaphthalene	--	--		380 U	360 U	360 U	370 U	370 U	360 U
2-Methylphenol	330	500000		380 U	360 U	360 U	370 U	370 U	360 U
2-Nitroaniline	--	--		380 U	360 U	360 U	370 U	370 U	360 U
2-Nitrophenol	--	--		380 U	360 U	360 U	370 U	370 U	360 U
3,3'-Dichlorobenzidine	--	--		380 U	360 U	360 U	370 U	370 U	360 U
3-Nitroaniline	--	--		380 U	360 U	360 U	370 U	370 U	360 U
4,6-Dinitro-2-methylphenol	--	--		780 U	720 U	730 U	750 U	740 U	740 U
4-Bromophenyl phenyl ether	--	--		380 U	360 U	360 U	370 U	370 U	360 U
4-Chloro-3-methylphenol	--	--		380 UJ	360 UJ	360 U	370 U	370 U	360 U
4-Chloroaniline	--	--		380 U	360 U	360 U	370 U	370 U	360 U
4-Chlorophenyl phenyl ether	--	--		380 U	360 U	360 U	370 U	370 U	360 U
4-Methylphenol	330	500000		380 U	360 U	360 U	370 U	370 U	360 U
4-Nitroaniline	--	--		780 UJ	720 UJ	730 U	750 U	740 U	740 U
4-Nitrophenol	--	--		380 UJ	360 UJ	360 UJ	370 U	370 U	360 U
Acenaphthene	20000	500000		380 U	360 U	360 U	370 U	96 J	360 U
Acenaphthylene	100000	500000		380 U	360 U	360 U	370 U	370 U	360 U
Acetophenone	--	--		380 U	360 U	360 U	370 U	370 U	360 U
Anthracene	100000	500000		380 U	360 U	45 J	130 J	280 J	360 U

Table 3. Summary of Semivolatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	G-05_SURF	G-06	G-06_SURF	G-07	G-07_SURF	G-08
			Sample Date:	7/16/2014	7/16/2014	7/16/2014	7/17/2014	7/17/2014	7/17/2014
			Sample Depth (ft bls):	-	0 - 1	-	0 - 1	-	0 - 1
Atrazine	--	--		380 U	360 U	360 UJ	370 U	370 U	360 U
Benzaldehyde	--	--		380 U	360 U	360 U	370 U	370 U	360 U
Benzo[a]anthracene	1000	5600		310	190	280	990	**1700**	300
Benzo[a]pyrene	1000	1000		420	240	330	960	**1700**	340
Benzo[b]fluoranthene	1000	5600		570	340	440	**1400**	**2300**	440
Benzo[g,h,i]perylene	100000	500000		390	210 J	290 J	900	1500	300 J
Benzo[k]fluoranthene	800	56000		240	150	170	530	**1100**	190
Bis(2-chloroethoxy)methane	--	--		380 U	360 U	360 U	370 U	370 U	360 U
Bis(2-chloroethyl) ether	--	--		38 U	36 U	36 U	37 U	37 U	36 U
Bis(2-ethylhexyl) phthalate	--	--		380 U	360 U	360 U	7500	2200	360 U
Butylbenzyl phthalate	--	--		380 U	360 U	360 U	370 U	370 U	360 U
Caprolactam	--	--		380 U	360 U	360 U	370 U	370 U	360 U
Carbazole	--	--		380 U	360 U	360 U	79 J	150 J	360 U
Chrysene	1000	56000		380	230 J	340 J	950	1700	330 J
Dibenzo[a,h]anthracene	330	560		110	60	92	260	**420**	98
Dibenzofuran	7000	350000		380 U	360 U	360 U	370 U	47 J	360 U
Diethyl phthalate	--	--		380 U	360 U	360 U	370 U	370 U	360 U
Dimethyl phthalate	--	--		380 U	360 U	360 U	370 U	370 U	360 U
Di-n-butyl phthalate	--	--		380 U	360 U	360 U	370 U	370 U	360 U
Di-n-octyl phthalate	--	--		380 UJ	360 UJ	360 U	370 U	370 U	360 UJ
Fluoranthene	100000	500000		590	350 J	600	1500	2800	490
Fluorene	30000	500000		380 U	360 U	360 U	370 U	92 J	360 U
Hexachlorobenzene	330	6000		38 U	36 U	36 U	37 U	37 U	36 U
Hexachlorobutadiene	--	--		78 U	72 U	73 U	75 U	74 U	74 U
Hexachlorocyclopentadiene	--	--		380 U	360 U	360 UJ	370 U	370 U	360 U
Hexachloroethane	--	--		38 U	36 U	36 U	37 U	37 U	36 U
Indeno[1,2,3-cd]pyrene	500	5600		400	190	310	**890**	**1500**	330
Isophorone	--	--		380 U	360 U	360 U	370 U	370 U	360 U
Naphthalene	12000	500000		380 U	360 U	360 U	370 U	370 U	360 U
Nitrobenzene	--	--		38 U	36 U	36 U	37 U	37 U	36 U
n-Nitrosodi-n-propylamine	--	--		38 U	36 U	36 U	37 U	37 U	36 U

Table 3. Summary of Semivolatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	G-05_SURF	G-06	G-06_SURF	G-07	G-07_SURF	G-08
			Sample Date:	7/16/2014	7/16/2014	7/16/2014	7/17/2014	7/17/2014	7/17/2014
			Sample Depth (ft bls):	-	0 - 1	-	0 - 1	-	0 - 1
n-Nitrosodiphenylamine	--	--		380 U	360 U	360 U	370 U	370 U	360 U
Pentachlorophenol	800	6700		780 U	720 U	730 U	750 U	740 U	740 U
Phenanthrene	100000	500000		180 J	120 J	200 J	570	1200	200 J
Phenol	330	500000		380 U	360 U	360 U	370 U	370 U	360 U
Pyrene	100000	500000		510	320 J	340 J	1300	2300	470

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Soil Cleanup Objective available
Bold data indicates that parameter was detected above the NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives
Shaded data indicates that parameter was detected above the NYSDEC Part 375 Commercial Soil Cleanup Objectives
Soil samples were collected by Environmental Assessment and Remediations in 2014

Table 3. Summary of Semivolatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	G-08_SURF	G-09	G-09_SURF	G-10	G-10_SURF	G-11
			Sample Date:	7/17/2014	7/17/2014	7/17/2014	7/17/2014	7/17/2014	7/17/2014
			Sample Depth (ft bls):	-	0 - 1	-	0 - 1	-	0 - 1
1,1'-Biphenyl	--	--		370 U	360 U	370 U	350 U	350 U	360 U
1,2,4,5-Tetrachlorobenzene	--	--		370 U	360 U	370 U	350 U	350 U	360 U
2,2'-oxybis (1-chloropropane)	--	--		370 U	360 U	370 U	350 U	350 U	360 U
2,3,4,6-Tetrachlorophenol	--	--		370 U	360 UJ	370 U	350 U	350 U	360 U
2,4,5-Trichlorophenol	--	--		370 UJ	360 U	370 U	350 UJ	350 UJ	360 UJ
2,4,6-Trichlorophenol	--	--		370 U	360 U	370 U	350 U	350 U	360 U
2,4-Dichlorophenol	--	--		370 U	360 U	370 U	350 U	350 U	360 U
2,4-Dimethylphenol	--	--		370 U	360 U	370 U	350 U	350 U	360 U
2,4-Dinitrophenol	--	--		750 U	730 U	750 U	720 U	720 U	740 U
2,4-Dinitrotoluene	--	--		75 U	73 U	75 U	72 U	72 U	74 U
2,6-Dinitrotoluene	--	--		75 U	73 U	75 U	72 U	72 U	74 U
2-Chloronaphthalene	--	--		370 U	360 U	370 U	350 U	350 U	360 U
2-Chlorophenol	--	--		370 U	360 U	370 U	350 U	350 U	360 U
2-Methylnaphthalene	--	--		370 U	360 U	370 U	350 U	350 U	360 U
2-Methylphenol	330	500000		370 U	360 U	370 U	350 U	350 U	360 U
2-Nitroaniline	--	--		370 U	360 U	370 U	350 U	350 U	360 U
2-Nitrophenol	--	--		370 U	360 U	370 U	350 U	350 U	360 U
3,3'-Dichlorobenzidine	--	--		370 U	360 U	370 U	350 U	350 U	360 U
3-Nitroaniline	--	--		370 U	360 U	370 U	350 U	350 U	360 U
4,6-Dinitro-2-methylphenol	--	--		750 U	730 U	750 U	720 U	720 U	740 U
4-Bromophenyl phenyl ether	--	--		370 U	360 U	370 U	350 U	350 U	360 U
4-Chloro-3-methylphenol	--	--		370 U	360 U	370 U	350 U	350 U	360 U
4-Chloroaniline	--	--		370 U	360 U	370 U	350 U	350 U	360 U
4-Chlorophenyl phenyl ether	--	--		370 U	360 U	370 U	350 U	350 U	360 U
4-Methylphenol	330	500000		370 U	360 U	370 U	350 U	350 U	360 U
4-Nitroaniline	--	--		750 U	730 U	750 U	720 U	720 U	740 U
4-Nitrophenol	--	--		370 U	360 U	370 U	350 U	350 U	360 U
Acenaphthene	20000	500000		370 U	360 U	370 U	350 U	350 U	360 U
Acenaphthylene	100000	500000		370 U	360 U	370 U	350 U	350 U	360 U
Acetophenone	--	--		370 U	360 U	370 U	350 U	350 U	360 U
Anthracene	100000	500000		56 J	120 J	130 J	350 U	350 U	85 J

Table 3. Summary of Semivolatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:** / **Sample Date:** / **Sample Depth (ft bls):**	G-08_SURF 7/17/2014 -	G-09 7/17/2014 0 - 1	G-09_SURF 7/17/2014 -	G-10 7/17/2014 0 - 1	G-10_SURF 7/17/2014 -	G-11 7/17/2014 0 - 1
Atrazine	--	--		370 U	360 U	370 U	350 U	350 U	360 U
Benzaldehyde	--	--		370 U	360 U	370 U	350 U	350 U	360 U
Benzo[a]anthracene	1000	5600		460	510	880	35 U	35 U	510
Benzo[a]pyrene	1000	1000		510	520	840	57	60	530
Benzo[b]fluoranthene	1000	5600		710	690	**1300**	63	73	720
Benzo[g,h,i]perylene	100000	500000		470	350 J	560	34 J	35 J	450
Benzo[k]fluoranthene	800	56000		270	250	430	26 J	30 J	250
Bis(2-chloroethoxy)methane	--	--		370 U	360 U	370 U	350 U	350 U	360 U
Bis(2-chloroethyl) ether	--	--		37 U	36 U	37 U	35 U	35 U	36 U
Bis(2-ethylhexyl) phthalate	--	--		370 U	360 U	370 U	350 U	350 U	360 U
Butylbenzyl phthalate	--	--		370 U	360 U	370 U	350 U	350 U	360 U
Caprolactam	--	--		370 U	360 U	370 U	350 U	350 U	360 U
Carbazole	--	--		370 U	56 J	110 J	350 U	350 U	49 J
Chrysene	1000	56000		490	570	950	45 J	53 J	510
Dibenzo[a,h]anthracene	330	560		150	120	190	35 U	35 U	120
Dibenzofuran	7000	350000		370 U	360 U	370 U	350 U	350 U	360 U
Diethyl phthalate	--	--		370 U	360 U	370 U	350 U	350 U	360 U
Dimethyl phthalate	--	--		370 U	360 U	370 U	350 U	350 U	360 U
Di-n-butyl phthalate	--	--		370 U	360 U	370 U	350 U	350 U	360 U
Di-n-octyl phthalate	--	--		370 U	360 U	370 U	350 UJ	350 UJ	360 U
Fluoranthene	100000	500000		750	940 J	1800	86 J	77 J	860
Fluorene	30000	500000		370 U	360 U	370 U	350 U	350 U	360 U
Hexachlorobenzene	330	6000		37 U	36 U	37 U	35 U	35 U	36 U
Hexachlorobutadiene	--	--		75 U	73 U	75 U	72 U	72 U	74 U
Hexachlorocyclopentadiene	--	--		370 U	360 U	370 U	350 U	350 U	360 U
Hexachloroethane	--	--		37 U	36 U	37 U	35 U	35 U	36 U
Indeno[1,2,3-cd]pyrene	500	5600		490	420	**670**	52	56	480
Isophorone	--	--		370 U	360 U	370 U	350 U	350 U	360 U
Naphthalene	12000	500000		370 U	360 U	370 U	350 U	350 U	360 U
Nitrobenzene	--	--		37 U	36 U	37 U	35 U	35 U	36 U
n-Nitrosodi-n-propylamine	--	--		37 U	36 U	37 U	35 U	35 U	36 U

Table 3. Summary of Semivolatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	G-08_SURF	G-09	G-09_SURF	G-10	G-10_SURF	G-11
			Sample Date:	7/17/2014	7/17/2014	7/17/2014	7/17/2014	7/17/2014	7/17/2014
			Sample Depth (ft bls):	-	0 - 1	-	0 - 1	-	0 - 1
n-Nitrosodiphenylamine	--	--		370 U	360 U	370 U	350 U	350 U	360 U
Pentachlorophenol	800	6700		750 U	730 UJ	750 U	720 U	720 U	740 U
Phenanthrene	100000	500000		260 J	440 J	680	350 U	350 U	400
Phenol	330	500000		370 U	360 U	370 U	350 U	350 U	360 U
Pyrene	100000	500000		650	640	1200	76 J	74 J	770

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Soil Cleanup Objective available
Bold data indicates that parameter was detected above the NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives
Shaded data indicates that parameter was detected above the NYSDEC Part 375 Commercial Soil Cleanup Objectives
Soil samples were collected by Environmental Assessment and Remediations in 2014

Table 3. Summary of Semivolatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:** / **Sample Date:** / **Sample Depth (ft bls):**	G-11_SURF 7/17/2014 -	G-12 6/17/2014 28 - 32	G-12 6/17/2014 0 - 1	G-12_SURF 6/17/2014 -	G-13 7/16/2014 0 - 1	G-13_SURF 7/16/2014 -
1,1'-Biphenyl	--	--		380 U	2000 U	340 U	350 U	400 U	990 U
1,2,4,5-Tetrachlorobenzene	--	--		380 U	2000 U	340 U	350 U	400 U	990 U
2,2'-oxybis (1-chloropropane)	--	--		380 U	2000 U	340 U	350 U	400 U	990 U
2,3,4,6-Tetrachlorophenol	--	--		380 U	2000 U	340 U	350 U	400 U	990 U
2,4,5-Trichlorophenol	--	--		380 U	2000 U	340 U	350 U	400 U	990 U
2,4,6-Trichlorophenol	--	--		380 U	2000 U	340 U	350 U	400 U	990 U
2,4-Dichlorophenol	--	--		380 U	2000 U	340 U	350 U	400 U	990 U
2,4-Dimethylphenol	--	--		380 U	2000 U	340 U	350 U	400 U	990 U
2,4-Dinitrophenol	--	--		770 U	4000 U	700 U	700 U	810 UJ	2000 U
2,4-Dinitrotoluene	--	--		77 U	400 U	70 U	70 U	81 U	200 U
2,6-Dinitrotoluene	--	--		77 U	400 U	70 U	70 U	81 U	200 U
2-Chloronaphthalene	--	--		380 U	2000 U	340 U	350 U	400 U	990 U
2-Chlorophenol	--	--		380 U	2000 U	340 U	350 U	400 U	990 U
2-Methylnaphthalene	--	--		380 U	250 J	340 U	350 U	400 U	990 U
2-Methylphenol	330	500000		380 U	2000 U	340 U	350 U	400 U	990 U
2-Nitroaniline	--	--		380 U	2000 U	340 U	350 U	400 U	990 U
2-Nitrophenol	--	--		380 U	2000 U	340 U	350 U	400 U	990 U
3,3'-Dichlorobenzidine	--	--		380 U	2000 U	340 U	350 U	400 U	990 U
3-Nitroaniline	--	--		380 U	2000 U	340 U	350 U	400 U	990 U
4,6-Dinitro-2-methylphenol	--	--		770 U	4000 U	700 U	700 U	810 U	2000 U
4-Bromophenyl phenyl ether	--	--		380 U	2000 U	340 U	350 U	400 U	990 U
4-Chloro-3-methylphenol	--	--		380 U	2000 U	340 U	350 U	400 UJ	990 U
4-Chloroaniline	--	--		380 U	2000 U	340 U	350 U	400 U	990 U
4-Chlorophenyl phenyl ether	--	--		380 U	2000 U	340 U	350 U	400 U	990 U
4-Methylphenol	330	500000		380 U	2000 U	340 U	350 U	400 U	990 U
4-Nitroaniline	--	--		770 U	4000 U	700 U	700 U	810 UJ	2000 U
4-Nitrophenol	--	--		380 U	2000 U	340 U	350 U	400 UJ	990 U
Acenaphthene	20000	500000		380 U	2700	100 J	350 U	400 U	990 U
Acenaphthylene	100000	500000		380 U	250 J	110 J	46 J	400 U	990 U
Acetophenone	--	--		380 U	2000 U	340 U	350 U	400 U	990 U
Anthracene	100000	500000		56 J	3800	610	130 J	120 J	300 J

Table 3. Summary of Semivolatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	Sample Designation:	G-11_SURF	G-12	G-12	G-12_SURF	G-13	G-13_SURF
			Sample Date:	7/17/2014	6/17/2014	6/17/2014	6/17/2014	7/16/2014	7/16/2014
			Sample Depth (ft bls):	-	28 - 32	0 - 1	-	0 - 1	-
Atrazine	--	--		380 U	2000 U	340 U	350 U	400 U	990 U
Benzaldehyde	--	--		380 U	2000 U	340 U	350 U	400 U	990 U
Benzo[a]anthracene	1000	5600		400	**8500**	**4200**	**1300**	730	**1400**
Benzo[a]pyrene	1000	1000		450	**7900**	**4000**	**1500**	820	**1600**
Benzo[b]fluoranthene	1000	5600		630	**11000**	**6600**	**2600**	**1100**	**2200**
Benzo[g,h,i]perylene	100000	500000		400	2100	830	400	530	990
Benzo[k]fluoranthene	800	56000		220	**3900**	**2500**	**870**	450	**880**
Bis(2-chloroethoxy)methane	--	--		380 U	2000 U	340 U	350 U	400 U	990 U
Bis(2-chloroethyl) ether	--	--		38 U	200 U	34 U	35 U	40 U	99 U
Bis(2-ethylhexyl) phthalate	--	--		380 U	2000 U	340 U	350 U	400 U	990 UJ
Butylbenzyl phthalate	--	--		51 J	2000 U	340 U	350 U	400 U	990 U
Caprolactam	--	--		380 U	2000 U	340 U	350 U	400 U	990 U
Carbazole	--	--		380 U	430 J	140 J	86 J	50 J	120 J
Chrysene	1000	56000		440	**8100**	**4200**	**1400**	850	**1500**
Dibenzo[a,h]anthracene	330	560		120	**930**	310	160	170	**340**
Dibenzofuran	7000	350000		380 U	2500	340 U	350 U	400 U	990 U
Diethyl phthalate	--	--		380 U	2000 U	340 U	350 U	400 U	990 U
Dimethyl phthalate	--	--		380 U	2000 U	340 U	350 U	400 U	990 U
Di-n-butyl phthalate	--	--		380 U	2000 U	93 J	62 J	400 U	990 U
Di-n-octyl phthalate	--	--		380 U	2000 U	340 U	350 U	400 UJ	990 UJ
Fluoranthene	100000	500000		740	16000	7700	2000	1300	2600
Fluorene	30000	500000		380 U	3700	110 J	350 U	400 U	990 U
Hexachlorobenzene	330	6000		38 U	200 U	34 U	35 U	40 U	99 U
Hexachlorobutadiene	--	--		77 U	400 U	70 U	70 U	81 U	200 U
Hexachlorocyclopentadiene	--	--		380 U	2000 U	340 U	350 U	400 U	990 UJ
Hexachloroethane	--	--		38 U	200 U	34 U	35 U	40 U	99 U
Indeno[1,2,3-cd]pyrene	500	5600		460	**2900**	**1200**	**520**	**590**	**1200 J**
Isophorone	--	--		380 U	2000 U	340 U	350 U	400 U	990 U
Naphthalene	12000	500000		380 U	2000 U	340 U	350 U	400 U	990 U
Nitrobenzene	--	--		38 U	200 U	34 U	35 U	40 U	99 U
n-Nitrosodi-n-propylamine	--	--		38 U	200 U	34 U	35 U	40 U	99 U

Table 3. Summary of Semivolatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:** / **Sample Date:** / **Sample Depth (ft bls):**	G-11_SURF 7/17/2014 -	G-12 6/17/2014 28 - 32	G-12 6/17/2014 0 - 1	G-12_SURF 6/17/2014 -	G-13 7/16/2014 0 - 1	G-13_SURF 7/16/2014 -
n-Nitrosodiphenylamine	--	--		380 U	2000 U	340 U	350 U	400 U	990 U
Pentachlorophenol	800	6700		770 U	4000 U	700 U	700 U	810 U	2000 U
Phenanthrene	100000	500000		240 J	9500	2000	600	470	1100
Phenol	330	500000		380 U	2000 U	340 U	350 U	400 U	990 U
Pyrene	100000	500000		520	7300	3700	1200	1000	1700

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Soil Cleanup Objective available
Bold data indicates that parameter was detected above the NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives
Shaded data indicates that parameter was detected above the NYSDEC Part 375 Commercial Soil Cleanup Objectives
Soil samples were collected by Environmental Assessment and Remediations in 2014

Table 3. Summary of Semivolatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	G-14	G-14_SURF	G-15	G-15_SURF	G-16	G-16_SURF
			Sample Date:	7/16/2014	7/16/2014	7/17/2014	7/17/2014	7/17/2014	7/17/2014
			Sample Depth (ft bls):	0 - 1	-	0 - 1	-	0 - 1	-
1,1'-Biphenyl	--	--		1800 U	390 U	350 U	360 U	340 U	350 U
1,2,4,5-Tetrachlorobenzene	--	--		1800 U	390 U	350 U	360 U	340 U	350 U
2,2'-oxybis (1-chloropropane)	--	--		1800 U	390 U	350 U	360 U	340 U	350 U
2,3,4,6-Tetrachlorophenol	--	--		1800 U	390 U	350 U	360 U	340 U	350 U
2,4,5-Trichlorophenol	--	--		1800 U	390 U	350 U	360 U	340 U	350 U
2,4,6-Trichlorophenol	--	--		1800 U	390 U	350 U	360 U	340 U	350 U
2,4-Dichlorophenol	--	--		1800 U	390 U	350 U	360 U	340 U	350 U
2,4-Dimethylphenol	--	--		1800 U	390 U	350 U	360 U	340 U	350 U
2,4-Dinitrophenol	--	--		3700 U	790 U	720 U	730 U	690 U	700 U
2,4-Dinitrotoluene	--	--		370 U	79 U	72 U	73 U	69 U	70 U
2,6-Dinitrotoluene	--	--		370 U	79 U	72 U	73 U	69 U	70 U
2-Chloronaphthalene	--	--		1800 U	390 U	350 U	360 U	340 U	350 U
2-Chlorophenol	--	--		1800 U	390 U	350 U	360 U	340 U	350 U
2-Methylnaphthalene	--	--		1800 U	390 U	350 U	360 U	340 U	350 U
2-Methylphenol	330	500000		1800 U	390 U	350 U	360 U	340 U	350 U
2-Nitroaniline	--	--		1800 U	390 U	350 U	360 U	340 U	350 U
2-Nitrophenol	--	--		1800 U	390 U	350 U	360 U	340 U	350 U
3,3'-Dichlorobenzidine	--	--		1800 U	390 U	350 U	360 U	340 U	350 U
3-Nitroaniline	--	--		1800 U	390 U	350 U	360 U	340 U	350 U
4,6-Dinitro-2-methylphenol	--	--		3700 U	790 U	720 U	730 U	690 U	700 U
4-Bromophenyl phenyl ether	--	--		1800 U	390 U	350 U	360 U	340 U	350 U
4-Chloro-3-methylphenol	--	--		1800 U	390 U	350 U	360 U	340 U	350 U
4-Chloroaniline	--	--		1800 U	390 U	350 U	360 U	340 U	350 U
4-Chlorophenyl phenyl ether	--	--		1800 U	390 U	350 U	360 U	340 U	350 U
4-Methylphenol	330	500000		1800 U	390 U	350 U	360 U	340 U	350 U
4-Nitroaniline	--	--		3700 U	790 U	720 U	730 U	690 U	700 U
4-Nitrophenol	--	--		1800 UJ	390 U	350 U	360 U	340 U	350 U
Acenaphthene	20000	500000		1800 U	210 J	350 U	360 U	340 U	350 U
Acenaphthylene	100000	500000		1800 U	320 J	350 U	360 U	340 U	350 U
Acetophenone	--	--		1800 U	390 U	350 U	360 U	340 U	350 U
Anthracene	100000	500000		790 J	750	350 U	360 U	340 U	350 U

Table 3. Summary of Semivolatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	G-14	G-14_SURF	G-15	G-15_SURF	G-16	G-16_SURF
			Sample Date:	7/16/2014	7/16/2014	7/17/2014	7/17/2014	7/17/2014	7/17/2014
			Sample Depth (ft bls):	0 - 1	-	0 - 1	-	0 - 1	-
Atrazine	--	--		1800 UJ	390 U	350 U	360 U	340 U	350 U
Benzaldehyde	--	--		1800 U	390 U	350 U	360 U	340 U	350 U
Benzo[a]anthracene	1000	5600		**3400**	**2900**	80	240	36	95
Benzo[a]pyrene	1000	1000		**3100**	**3000**	99	260	60	150
Benzo[b]fluoranthene	1000	5600		**3800**	**4100**	120	360	60	210
Benzo[g,h,i]perylene	100000	500000		3300	2200	63 J	210 J	46 J	150 J
Benzo[k]fluoranthene	800	56000		**1500**	**1400**	38	160	28 J	93
Bis(2-chloroethoxy)methane	--	--		1800 U	390 U	350 U	360 U	340 U	350 U
Bis(2-chloroethyl) ether	--	--		180 U	39 U	35 U	36 U	34 U	35 U
Bis(2-ethylhexyl) phthalate	--	--		1800 U	390 U	350 U	250 J	340 U	350 U
Butylbenzyl phthalate	--	--		1800 U	59 J	350 U	360 U	340 U	350 U
Caprolactam	--	--		1800 U	390 U	350 U	360 U	340 U	350 U
Carbazole	--	--		220 J	340 J	350 U	360 U	340 U	350 U
Chrysene	1000	56000		**3700**	**3100**	95 J	280 J	49 J	150 J
Dibenzo[a,h]anthracene	330	560		**860**	**660**	40	74	33 J	52
Dibenzofuran	7000	350000		1800 U	91 J	350 U	360 U	340 U	350 U
Diethyl phthalate	--	--		1800 U	390 U	350 U	360 U	340 U	350 U
Dimethyl phthalate	--	--		1800 U	390 U	350 U	360 U	340 U	350 U
Di-n-butyl phthalate	--	--		1800 U	390 U	350 U	360 U	340 U	350 U
Di-n-octyl phthalate	--	--		1800 U	390 U	350 U	360 U	340 U	350 U
Fluoranthene	100000	500000		5800	6700	170 J	480	76 J	240 J
Fluorene	30000	500000		270 J	240 J	350 U	360 U	340 U	350 U
Hexachlorobenzene	330	6000		180 U	39 U	35 U	36 U	34 U	35 U
Hexachlorobutadiene	--	--		370 U	79 U	72 U	73 U	69 U	70 U
Hexachlorocyclopentadiene	--	--		1800 UJ	390 U	350 U	360 U	340 U	350 U
Hexachloroethane	--	--		180 U	39 U	35 U	36 U	34 U	35 U
Indeno[1,2,3-cd]pyrene	500	5600		**3300**	**2500**	84	250	63	180
Isophorone	--	--		1800 U	390 U	350 U	360 U	340 U	350 U
Naphthalene	12000	500000		1800 U	75 J	350 U	360 U	340 U	350 U
Nitrobenzene	--	--		180 U	39 U	35 U	36 U	34 U	35 U
n-Nitrosodi-n-propylamine	--	--		180 U	39 U	35 U	36 U	34 U	35 U

Table 3. Summary of Semivolatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	G-14	G-14_SURF	G-15	G-15_SURF	G-16	G-16_SURF
			Sample Date:	7/16/2014	7/16/2014	7/17/2014	7/17/2014	7/17/2014	7/17/2014
			Sample Depth (ft bls):	0 - 1	-	0 - 1	-	0 - 1	-
n-Nitrosodiphenylamine	--	--		1800 U	390 U	350 U	360 U	340 U	350 U
Pentachlorophenol	800	6700		3700 U	790 U	720 U	730 U	690 U	700 U
Phenanthrene	100000	500000		2900	2500	61 J	160 J	340 U	83 J
Phenol	330	500000		1800 U	390 U	350 U	360 U	340 U	350 U
Pyrene	100000	500000		5300	3200	110 J	340 J	52 J	170 J

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Soil Cleanup Objective available
Bold data indicates that parameter was detected above the NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives
Shaded data indicates that parameter was detected above the NYSDEC Part 375 Commercial Soil Cleanup Objectives
Soil samples were collected by Environmental Assessment and Remediations in 2014

Table 3. Summary of Semivolatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	G-17	G-17	G-17_SURF	G-18	G-18_SURF	P-06
			Sample Date:	6/16/2014	6/16/2014	6/16/2014	7/16/2014	7/16/2014	6/27/2014
			Sample Depth (ft bls):	0 - 1	8 - 12	-	0 - 1	-	28 - 32
1,1'-Biphenyl	--	--		370 U	390 U	370 U	350 U	410 U	360 U
1,2,4,5-Tetrachlorobenzene	--	--		370 U	390 U	370 U	350 U	410 U	360 U
2,2'-oxybis (1-chloropropane)	--	--		370 U	390 U	370 U	350 U	410 U	360 U
2,3,4,6-Tetrachlorophenol	--	--		370 U	390 U	370 U	350 U	410 U	360 U
2,4,5-Trichlorophenol	--	--		370 U	390 U	370 U	350 U	410 U	360 U
2,4,6-Trichlorophenol	--	--		370 U	390 U	370 U	350 U	410 U	360 U
2,4-Dichlorophenol	--	--		370 U	390 U	370 U	350 U	410 U	360 U
2,4-Dimethylphenol	--	--		370 U	390 U	370 U	350 U	410 U	360 U
2,4-Dinitrophenol	--	--		740 U	780 U	750 U	720 U	830 U	720 U
2,4-Dinitrotoluene	--	--		74 U	78 U	75 U	72 U	83 U	72 U
2,6-Dinitrotoluene	--	--		74 U	78 U	75 U	72 U	83 U	72 U
2-Chloronaphthalene	--	--		370 U	390 U	370 U	350 U	410 U	360 U
2-Chlorophenol	--	--		370 U	390 U	370 U	350 U	410 U	360 U
2-Methylnaphthalene	--	--		370 U	390 U	370 U	350 U	410 U	360 U
2-Methylphenol	330	500000		370 U	390 U	370 U	350 U	410 U	360 U
2-Nitroaniline	--	--		370 U	390 U	370 U	350 U	410 U	360 U
2-Nitrophenol	--	--		370 U	390 U	370 U	350 U	410 U	360 U
3,3'-Dichlorobenzidine	--	--		370 U	390 U	370 U	350 U	410 U	360 U
3-Nitroaniline	--	--		370 U	390 U	370 U	350 U	410 U	360 U
4,6-Dinitro-2-methylphenol	--	--		740 U	780 U	750 U	720 U	830 U	720 U
4-Bromophenyl phenyl ether	--	--		370 U	390 U	370 U	350 U	410 U	360 U
4-Chloro-3-methylphenol	--	--		370 U	390 U	370 U	350 U	410 U	360 U
4-Chloroaniline	--	--		370 U	390 U	370 U	350 U	410 U	360 U
4-Chlorophenyl phenyl ether	--	--		370 U	390 U	370 U	350 U	410 U	360 U
4-Methylphenol	330	500000		370 U	390 U	370 U	350 U	410 U	360 U
4-Nitroaniline	--	--		740 U	780 U	750 U	720 U	830 U	720 U
4-Nitrophenol	--	--		370 U	390 U	370 U	350 U	410 U	360 U
Acenaphthene	20000	500000		62 J	100 J	63 J	350 U	410 U	360 U
Acenaphthylene	100000	500000		82 J	390 U	87 J	350 U	410 U	360 U
Acetophenone	--	--		370 U	390 U	370 U	350 U	410 U	360 U
Anthracene	100000	500000		260 J	170 J	250 J	77 J	150 J	67 J

Table 3. Summary of Semivolatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	G-17	G-17	G-17_SURF	G-18	G-18_SURF	P-06
			Sample Date:	6/16/2014	6/16/2014	6/16/2014	7/16/2014	7/16/2014	6/27/2014
			Sample Depth (ft bls):	0 - 1	8 - 12	-	0 - 1	-	28 - 32
Atrazine	--	--		370 U	390 U	370 U	350 UJ	410 UJ	360 U
Benzaldehyde	--	--		370 U	390 U	370 U	350 U	410 U	360 U
Benzo[a]anthracene	1000	5600		**1700**	620	**1800**	570	950	300
Benzo[a]pyrene	1000	1000		**1900**	950	**2000**	640	**1100**	260
Benzo[b]fluoranthene	1000	5600		**2300**	**1400**	**2600**	840	**1500**	420
Benzo[g,h,i]perylene	100000	500000		550	230 J	600	630	1100	86 J
Benzo[k]fluoranthene	800	56000		810	470	**940**	340	510	160
Bis(2-chloroethoxy)methane	--	--		370 U	390 U	370 U	350 U	410 U	360 U
Bis(2-chloroethyl) ether	--	--		37 U	39 U	37 U	35 U	41 U	36 U
Bis(2-ethylhexyl) phthalate	--	--		370 U	410	370 U	350 U	160 J	360 U
Butylbenzyl phthalate	--	--		370 U	390 U	370 U	350 U	410 U	360 U
Caprolactam	--	--		370 U	390 U	370 U	350 U	410 U	360 U
Carbazole	--	--		65 J	89 J	59 J	51 J	100 J	360 U
Chrysene	1000	56000		**1900**	840	**2300**	770	**1400**	330 J
Dibenzo[a,h]anthracene	330	560		210	150	200	180	300	43 J
Dibenzofuran	7000	350000		370 U	90 J	370 U	350 U	410 U	360 U
Diethyl phthalate	--	--		370 U	390 U	370 U	350 U	410 U	360 U
Dimethyl phthalate	--	--		370 U	390 U	370 U	350 U	410 U	360 U
Di-n-butyl phthalate	--	--		50 J	65 J	69 J	350 U	410 U	360 U
Di-n-octyl phthalate	--	--		370 U	390 U	370 U	350 U	410 U	360 UJ
Fluoranthene	100000	500000		2500	1000	2900	1200	2400	730
Fluorene	30000	500000		89 J	110 J	79 J	350 U	52 J	360 U
Hexachlorobenzene	330	6000		37 U	39 U	37 U	35 U	41 U	36 U
Hexachlorobutadiene	--	--		74 U	78 U	75 U	72 U	83 U	72 U
Hexachlorocyclopentadiene	--	--		370 U	390 U	370 U	350 UJ	410 UJ	360 U
Hexachloroethane	--	--		37 U	39 U	37 U	35 U	41 U	36 U
Indeno[1,2,3-cd]pyrene	500	5600		**660**	270	**750**	**680**	**1200**	86 J
Isophorone	--	--		370 U	390 U	370 U	350 U	410 U	360 U
Naphthalene	12000	500000		370 U	390 U	43 J	350 U	410 U	360 U
Nitrobenzene	--	--		37 U	39 U	37 U	35 U	41 U	36 U
n-Nitrosodi-n-propylamine	--	--		37 U	39 U	37 U	35 U	41 U	36 U

Table 3. Summary of Semivolatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	G-17	G-17	G-17_SURF	G-18	G-18_SURF	P-06
			Sample Date:	6/16/2014	6/16/2014	6/16/2014	7/16/2014	7/16/2014	6/27/2014
			Sample Depth (ft bls):	0 - 1	8 - 12	-	0 - 1	-	28 - 32
n-Nitrosodiphenylamine	--	--		370 U	390 U	370 U	350 U	410 U	360 U
Pentachlorophenol	800	6700		740 U	780 U	750 U	720 U	830 U	720 U
Phenanthrene	100000	500000		1100	600	1200	440	970	270 J
Phenol	330	500000		370 U	390 U	370 U	350 U	410 U	360 U
Pyrene	100000	500000		2300	570	2600	890	1500	410

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
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Bold data indicates that parameter was detected above the NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives
Shaded data indicates that parameter was detected above the NYSDEC Part 375 Commercial Soil Cleanup Objectives
Soil samples were collected by Environmental Assessment and Remediations in 2014

Table 3. Summary of Semivolatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	P-08	P-27
			Sample Date:	6/24/2014	6/20/2014
			Sample Depth (ft bls):	28 - 32	28 - 32
1,1'-Biphenyl	--	--		740 U	390 U
1,2,4,5-Tetrachlorobenzene	--	--		740 U	390 U
2,2'-oxybis (1-chloropropane)	--	--		740 U	390 U
2,3,4,6-Tetrachlorophenol	--	--		740 U	390 U
2,4,5-Trichlorophenol	--	--		740 U	390 U
2,4,6-Trichlorophenol	--	--		740 U	390 U
2,4-Dichlorophenol	--	--		740 U	390 U
2,4-Dimethylphenol	--	--		740 U	390 U
2,4-Dinitrophenol	--	--		1500 R	790 U
2,4-Dinitrotoluene	--	--		150 U	79 U
2,6-Dinitrotoluene	--	--		150 U	79 U
2-Chloronaphthalene	--	--		740 U	390 U
2-Chlorophenol	--	--		740 U	390 U
2-Methylnaphthalene	--	--		740 U	390 U
2-Methylphenol	330	500000		740 U	390 U
2-Nitroaniline	--	--		740 U	390 U
2-Nitrophenol	--	--		740 U	390 U
3,3'-Dichlorobenzidine	--	--		740 U	390 UJ
3-Nitroaniline	--	--		740 U	390 U
4,6-Dinitro-2-methylphenol	--	--		1500 U	790 U
4-Bromophenyl phenyl ether	--	--		740 U	390 U
4-Chloro-3-methylphenol	--	--		740 U	390 U
4-Chloroaniline	--	--		740 U	390 U
4-Chlorophenyl phenyl ether	--	--		740 U	390 U
4-Methylphenol	330	500000		740 U	390 U
4-Nitroaniline	--	--		1500 U	790 U
4-Nitrophenol	--	--		740 U	390 U
Acenaphthene	20000	500000		740 U	390 U
Acenaphthylene	100000	500000		740 U	390 U
Acetophenone	--	--		740 U	390 U
Anthracene	100000	500000		740 U	390 U

Table 3. Summary of Semivolatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	P-08	P-27
			Sample Date:	6/24/2014	6/20/2014
			Sample Depth (ft bls):	28 - 32	28 - 32
Atrazine	--	--		740 U	390 U
Benzaldehyde	--	--		740 U	390 U
Benzo[a]anthracene	1000	5600		110	39 U
Benzo[a]pyrene	1000	1000		93	39 U
Benzo[b]fluoranthene	1000	5600		150	39 U
Benzo[g,h,i]perylene	100000	500000		81 J	390 U
Benzo[k]fluoranthene	800	56000		74 U	39 U
Bis(2-chloroethoxy)methane	--	--		740 U	390 U
Bis(2-chloroethyl) ether	--	--		74 U	39 U
Bis(2-ethylhexyl) phthalate	--	--		740 U	390 U
Butylbenzyl phthalate	--	--		740 U	390 U
Caprolactam	--	--		740 U	390 U
Carbazole	--	--		740 U	390 U
Chrysene	1000	56000		170 J	390 U
Dibenzo[a,h]anthracene	330	560		16 J	39 U
Dibenzofuran	7000	350000		740 U	390 U
Diethyl phthalate	--	--		740 U	390 U
Dimethyl phthalate	--	--		740 U	390 U
Di-n-butyl phthalate	--	--		740 U	390 U
Di-n-octyl phthalate	--	--		740 U	390 U
Fluoranthene	100000	500000		220 J	390 U
Fluorene	30000	500000		740 U	390 U
Hexachlorobenzene	330	6000		74 U	39 U
Hexachlorobutadiene	--	--		150 U	79 U
Hexachlorocyclopentadiene	--	--		740 U	390 U
Hexachloroethane	--	--		74 U	39 U
Indeno[1,2,3-cd]pyrene	500	5600		86 J	39 U
Isophorone	--	--		740 U	390 U
Naphthalene	12000	500000		740 U	390 U
Nitrobenzene	--	--		74 U	39 U
n-Nitrosodi-n-propylamine	--	--		74 U	39 U

Table 3. Summary of Semivolatile Organic Compounds in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	P-08	P-27
			Sample Date:	6/24/2014	6/20/2014
			Sample Depth (ft bls):	28 - 32	28 - 32
n-Nitrosodiphenylamine	--	--		740 U	390 U
Pentachlorophenol	800	6700		1500 U	790 U
Phenanthrene	100000	500000		150 J	390 U
Phenol	330	500000		740 U	390 U
Pyrene	100000	500000		250 J	390 UJ

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Soil Cleanup Objective available
Bold data indicates that parameter was detected above the NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives
Shaded data indicates that parameter was detected above the NYSDEC Part 375 Commercial Soil Cleanup Objectives
Soil samples were collected by Environmental Assessment and Remediations in 2014

Table 4. Summary of Metals in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in mg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:** / **Sample Date:** / **Sample Depth (ft bls):**	BUD-01 6/26/2014 14 - 18	BUD-01 6/26/2014 18 - 22	BUD-02 6/26/2014 14 - 18	BUD-02 6/26/2014 18 - 22	BUD-03 6/26/2014 22 - 26	BUD-03 6/26/2014 14 - 18	CR-1 7/15/2014 0 - 1
Aluminum	--	--		5050	2710	2450	2260	2880	1890	5000
Antimony	--	--		3.1 U	3.7 U	3.5 U	3.1 U	2.9 U	3.3 U	4.4 U
Arsenic	13	16		4.3	2.1 J	1.5 J	1.1 J	1 J	0.76 J	3.3
Barium	350	400		88.3	16.2 J	15.7 J	16.4 J	9.8 J	9.9 J	42.6 J
Beryllium	7.2	590		0.21 J	0.37 U	0.35 U	0.31 U	0.29 U	0.33 U	0.44 U
Cadmium	2.5	9.3		0.63 U	0.74 U	0.70 U	0.62 U	0.59 U	0.66 U	0.88 U
Calcium	--	--		27800	608 J	5840	2390	890	4020	6380
Chromium	30	1500		**33.3**	6.8	7.1	13.4	9.2	4.9	12.3
Cobalt	--	--		2.7 J	2.6 J	1.4 J	1.5 J	1.7 J	1.1 J	2.4 J
Copper	50	270		33.6	5.3	4.5	6.2	3.2 J	3.1 J	20
Iron	--	--		10200	15500	6640	4790	6030	4100	8100
Lead	63	1000		**78.4**	5.4	14.5	10	4.3	7.5	45
Magnesium	--	--		3360	499 J	2340	1090	518 J	599 J	2100
Manganese	1600	10000		143	354	93.2	64.2	88.1	74	121
Mercury	0.18	2.8		0.018 U	0.11	0.033	0.022	0.017 U	0.083	0.11
Nickel	30	310		14.5	4.1 J	2.8 J	3.9 J	2.9 J	2.3 J	6.4 J
Potassium	--	--		570 J	184 J	175 J	217 J	186 J	187 J	263 J
Selenium	3.9	1500		3.1 U	3.7 U	3.5 U	3.1 U	2.9 U	3.3 U	4.4 U
Silver	2	1500		1.6 U	1.8 U	1.8 U	1.5 U	1.5 U	1.6 U	2.2 U
Sodium	--	--		142 J	924 U	880 U	773 U	736 U	824 U	1100 U
Thallium	--	--		3.1 U	3.7 U	3.5 U	3.1 U	2.9 U	3.3 U	4.4 U
Vanadium	--	--		45.5	7.2 J	5.7 J	8.9	5.7 J	4.2 J	11.4
Zinc	109	10000		**128**	14.3	20.6	17.7	11.2	10.9	62

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
mg/kg - Milligrams per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Soil Cleanup Objective available
Bold data indicates that parameter was detected above the NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives
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Soil samples were collected by Environmental Assessment and Remediations in 2014

Table 4. Summary of Metals in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in mg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:** / **Sample Date:** / **Sample Depth (ft bls):**	CR-1_SURF 7/15/2014 -	CR-10 7/15/2014 0 - 1	CR-10_SURF 7/15/2014 -	CR-11 6/18/2014 0 - 1	CR-11 6/18/2014 24 - 29	CR-11_SURF 6/18/2014 -
Aluminum	--	--		3180	2200	2450	2290	5510	2700
Antimony	--	--		4.3 U	3.8 UJ	3.6 U	3.3 UJ	3.5 UJ	3.6 UJ
Arsenic	13	16		1.9 J	2.8 U	0.8 J	1 J	3.1	1.4 J
Barium	350	400		18.4 J	7.4 J	9.4 J	8.7 J	19.6 J	15.4 J
Beryllium	7.2	590		0.43 U	0.38 U	0.36 U	0.33 U	0.35 U	0.36 U
Cadmium	2.5	9.3		0.86 U	0.75 U	0.73 U	0.65 U	3.6	0.72 U
Calcium	--	--		3820	127 J	261 J	443 J	778 J	1350
Chromium	30	1500		18.7	6.2 J	6.8	18.6	**205**	30
Cobalt	--	--		1.7 J	1.1 J	1.3 J	1.4 J	3.8 J	1.7 J
Copper	50	270		8.4	2.3 J	6.5	3.7 J	12	6.2
Iron	--	--		5770	4230	4710	4340	10100	5340
Lead	63	1000		25.6	3.5	7.1	5.8	16.5	48.3
Magnesium	--	--		2200	374 J	454 J	401 J	800 J	562 J
Manganese	1600	10000		82	63.7 J	77.9	69.7	138	90.5
Mercury	0.18	2.8		0.068	0.017 U	0.012 J	0.016 J	**0.34**	0.021
Nickel	30	310		4 J	2.5 J	2.7 J	2.6 J	6.4 J	3.2 J
Potassium	--	--		191 J	128 J	136 J	131 J	271 J	223 J
Selenium	3.9	1500		4.3 U	3.8 U	3.6 U	3.3 U	3.5 U	3.6 U
Silver	2	1500		2.1 U	1.9 U	1.8 U	1.6 U	**10.5**	1.8 U
Sodium	--	--		1070 U	943 U	911 U	815 U	874 U	905 U
Thallium	--	--		4.3 U	3.8 U	3.6 U	3.3 U	3.5 U	3.6 U
Vanadium	--	--		7.7 J	4.1 J	5.3 J	4.8 J	11	5.7 J
Zinc	109	10000		52.7	8.7	20.8	17.5	68.3	30.1

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Shaded data indicates that parameter was detected above the NYSDEC Part 375 Commercial Soil Cleanup Objectives
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Table 4. Summary of Metals in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in mg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:** / **Sample Date:** / **Sample Depth (ft bls):**	CR-12 7/15/2014 0 - 1	CR-12_SURF 7/15/2014 -	CR-2 7/15/2014 0 - 1	CR-2_SURF 7/15/2014 -	CR-3 7/15/2014 0 - 1	CR-3_SURF 7/15/2014 -
Aluminum	--	--		5330	5080	2790	4910	4030	4030
Antimony	--	--		3.9 U	4.4 U	3.8 U	4.6 U	3.6 U	3.6 U
Arsenic	13	16		2.1 J	1.9 J	1.7 J	4.9	1.2 J	1.5 J
Barium	350	400		27.6 J	22.7 J	14 J	68.5	15 J	16.1 J
Beryllium	7.2	590		0.39 U	0.44 U	0.38 U	0.46 U	0.36 U	0.36 U
Cadmium	2.5	9.3		0.78 U	0.87 U	0.76 U	0.91 U	0.71 U	0.72 U
Calcium	--	--		5280	1300	1210	6010	361 J	1010
Chromium	30	1500		21.3	25.3	11	**41.9**	7.3	7.7
Cobalt	--	--		2.4 J	2.4 J	1.6 J	2.3 J	2.2 J	2.1 J
Copper	50	270		10.8	11.8	5.8	23.3	3.8 J	5.6
Iron	--	--		8950	8460	6090	16100	6350	7840
Lead	63	1000		18.2	26.4	14.9	**71.3**	5.4	8.6
Magnesium	--	--		3330	954 J	898 J	1440	890	691 J
Manganese	1600	10000		159	120	90.7	152	95.4	101
Mercury	0.18	2.8		0.044	0.044	0.04	0.11	0.018	0.014 J
Nickel	30	310		9.2	5.6 J	3 J	8.4 J	4.6 J	4 J
Potassium	--	--		294 J	338 J	152 J	353 J	459 J	244 J
Selenium	3.9	1500		3.9 U	4.4 U	3.8 U	4.6 U	3.6 U	3.6 U
Silver	2	1500		2.0 U	2.2 U	1.9 U	2.3 U	1.8 U	1.8 U
Sodium	--	--		977 U	1090 U	953 U	1140 U	888 U	896 U
Thallium	--	--		3.9 U	4.4 U	3.8 U	4.6 U	3.6 U	3.6 U
Vanadium	--	--		12.1	11.3	7.1 J	25.2	8.2 J	8.2 J
Zinc	109	10000		38.2	72.3	32.6	107	15.4	27.3

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Table 4. Summary of Metals in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in mg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:** / **Sample Date:** / **Sample Depth (ft bls):**	CR-4 7/15/2014 0 - 1	CR-4_SURF 7/15/2014 -	CR-5 7/15/2014 0 - 1	CR-5_SURF 7/15/2014 -	CR-6 7/15/2014 0 - 1	CR-6_SURF 7/15/2014 -
Aluminum	--	--		2810	3770	3010	2830	4270	3370
Antimony	--	--		3.7 U	3.5 U	3.4 UJ	3.3 U	3.6 U	3.5 U
Arsenic	13	16		2.8 U	2 J	1.3 J	1.6 J	1.7 J	1.9 J
Barium	350	400		9.2 J	27.5 J	9.8 J	10.6 J	10.9 J	27.3 J
Beryllium	7.2	590		0.37 U	0.35 U	0.34 U	0.33 U	0.36 U	0.35 U
Cadmium	2.5	9.3		0.74 U	0.70 U	0.69 U	0.66 U	0.72 U	0.39 J
Calcium	--	--		259 J	552 J	270 J	264 J	532 J	405 J
Chromium	30	1500		4.3	10.4	7.3 J	28	13.5	**55**
Cobalt	--	--		1.5 J	2.1 J	3.5 J	1.6 J	2.1 J	1.9 J
Copper	50	270		2.8 J	10	3.8 J	4.6	3.8 J	9.2
Iron	--	--		5890	7060	5800	6860	7070	6320
Lead	63	1000		3.5	26.4	4.7	6.1	5	**752**
Magnesium	--	--		460 J	727 J	515 J	470 J	753 J	614 J
Manganese	1600	10000		92.7	98.2	102 J	88.7	89.5	140
Mercury	0.18	2.8		0.013 J	0.04	0.013 J	0.051	0.011 J	0.036
Nickel	30	310		2.9 J	4.9 J	4.4 J	2.9 J	4.5 J	4 J
Potassium	--	--		153 J	240 J	149 J	159 J	199 J	232 J
Selenium	3.9	1500		3.7 U	3.5 U	3.4 U	3.3 U	3.6 U	3.5 U
Silver	2	1500		1.8 U	1.8 U	1.7 U	1.6 U	1.8 U	0.8 J
Sodium	--	--		920 U	876 U	860 U	821 U	897 U	878 U
Thallium	--	--		3.7 U	3.5 U	3.4 U	3.3 U	3.6 U	3.5 U
Vanadium	--	--		5.1 J	8.9	5.6 J	6.2 J	8 J	7.7 J
Zinc	109	10000		10.1	42.4	12	16.5	13.4	37.9

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Table 4. Summary of Metals in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in mg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:** / **Sample Date:** / **Sample Depth (ft bls):**	CR-7 7/15/2014 0 - 1	CR-7_SURF 7/15/2014 -	CR-8 7/15/2014 0 - 1	CR-8_SURF 7/15/2014 -	CR-9 7/15/2014 0 - 1	CR-9_SURF 7/15/2014 -
Aluminum	--	--		2500	2940	2700	1660	2050	4740
Antimony	--	--		3.6 U	3.1 U	3.1 U	3.1 U	2.9 U	3.5 U
Arsenic	13	16		0.85 J	1.2 J	1 J	2.3 U	1.4 J	2 J
Barium	350	400		7.9 J	11.1 J	8.7 J	6.7 J	8.4 J	40.3
Beryllium	7.2	590		0.36 U	0.31 U	0.31 U	0.31 U	0.29 U	0.35 U
Cadmium	2.5	9.3		0.62 J	0.61 U	0.63 U	0.62 U	0.58 U	0.71 U
Calcium	--	--		159 J	248 J	285 J	149 J	938	756 J
Chromium	30	1500		**80.6**	24.1	16.9	17.7	9.2	12.5
Cobalt	--	--		1.3 J	1.6 J	1.4 J	0.86 J	1.4 J	1.8 J
Copper	50	270		7.2	4.6	4.1	2.9 J	3 J	6
Iron	--	--		5240	5110	5830	3290	6570	6840
Lead	63	1000		6	6.1	4.6	4	4.8	20.3
Magnesium	--	--		401 J	547 J	481 J	293 J	410 J	608 J
Manganese	1600	10000		84.1	82.8	80.8	50.8	90	95
Mercury	0.18	2.8		0.016	0.012 J	0.019	0.022	0.019	0.019
Nickel	30	310		2.9 J	2.9 J	2.8 J	1.6 J	3 J	4.1 J
Potassium	--	--		132 J	169 J	142 J	101 J	122 J	270 J
Selenium	3.9	1500		3.6 U	3.1 U	3.1 U	3.1 U	2.9 U	3.5 U
Silver	2	1500		1.2 J	1.5 U	1.6 U	1.5 U	1.4 U	1.8 U
Sodium	--	--		896 U	765 U	782 U	770 U	723 U	885 U
Thallium	--	--		3.6 U	3.1 U	3.1 U	3.1 U	2.9 U	3.5 U
Vanadium	--	--		5.1 J	5.8 J	5.1 J	3.4 J	4.5 J	9
Zinc	109	10000		27.1	17.3	13.2	11.4	12	34.9

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Table 4. Summary of Metals in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in mg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	Sample Designation:	G-01	G-01_SURF	G-02	G-02_SURF	G-03	G-03_SURF
			Sample Date:	7/16/2014	7/16/2014	7/16/2014	7/16/2014	7/16/2014	7/16/2014
			Sample Depth (ft bls):	0 - 1	-	0 - 1	-	0 - 1	-
Aluminum	--	--		4180	2930	4320	4800	2990	2160
Antimony	--	--		3.8 UJ	4.2 UJ	3.9 UJ	3.9 UJ	3.8 UJ	4.1 UJ
Arsenic	13	16		2.7 J	2 J	4.4	3.7	2.4 J	1.1 J
Barium	350	400		58.1	30 J	78.4	72.1	25.6 J	19.1 J
Beryllium	7.2	590		0.38 U	0.42 U	0.39 U	0.39 U	0.38 U	0.41 U
Cadmium	2.5	9.3		0.76 U	0.84 U	0.29 J	2.2	0.76 U	0.82 U
Calcium	--	--		8850	1590	6460	7380	1370	1240
Chromium	30	1500		13.8	14.4	12.7	11.8	8	5.8
Cobalt	--	--		2 J	1.7 J	2.5 J	2.6 J	1.9 J	1.2 J
Copper	50	270		26.5	12.8	43.7	29.9	8	7.2
Iron	--	--		6790	15700	8150	8430	7090	4900
Lead	63	1000		**65.3**	32.1	**94.5**	**91.8**	**77.2**	28.2
Magnesium	--	--		1270 J	768 J	1840 J	2370 J	681 J	633 J
Manganese	1600	10000		116	141	111	134	80.9	70.7
Mercury	0.18	2.8		0.12	0.073	**0.24**	0.14	0.047	0.029
Nickel	30	310		8.2	10.8	9.3	10	3.9 J	3.5 J
Potassium	--	--		286 J	142 J	367 J	449 J	141 J	157 J
Selenium	3.9	1500		3.8 U	4.2 U	3.9 U	3.9 U	3.8 U	4.1 U
Silver	2	1500		1.9 U	2.1 U	2.0 U	2.0 U	1.9 U	2.1 U
Sodium	--	--		952 U	1050 U	979 U	977 U	947 U	1030 U
Thallium	--	--		3.8 U	4.2 U	3.9 U	3.9 U	3.8 U	4.1 U
Vanadium	--	--		10.9	8.2 J	14.6	15.8	8.5 J	5.6 J
Zinc	109	10000		109 J	49.4 J	**131 J**	**130 J**	51.4 J	46.1 J

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Table 4. Summary of Metals in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in mg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:** / **Sample Date:** / **Sample Depth (ft bls):**	G-04 7/16/2014 0 - 1	G-04_SURF 7/16/2014 -	G-05 7/16/2014 0 - 1	G-05_SURF 7/16/2014 -	G-06 7/16/2014 0 - 1	G-06_SURF 7/16/2014 -
Aluminum	--	--		2200	4530	4990	6940	3140	2810
Antimony	--	--		4.0 UJ	4.3 UJ	3.9 UJ	4.0 UJ	4.1 UJ	4.2 UJ
Arsenic	13	16		1 J	2.4 J	1.6 J	3.1	1.7 J	1.2 J
Barium	350	400		13.1 J	29.8 J	16.4 J	31.8 J	13.7 J	13.3 J
Beryllium	7.2	590		0.40 U	0.43 U	0.39 U	0.40 U	0.41 U	0.42 U
Cadmium	2.5	9.3		0.81 U	0.85 U	0.78 U	0.79 U	0.82 U	0.84 U
Calcium	--	--		3670	3400	747 J	1160	2230	671 J
Chromium	30	1500		4.9	11.1	7.1	10.6	13.7	7
Cobalt	--	--		1.1 J	1.9 J	1.9 J	2.5 J	1.6 J	1.5 J
Copper	50	270		4.9 J	12.7	5.8	11	6.9	8
Iron	--	--		4750	7590	7580	10600	7020	5380
Lead	63	1000		19.7	46.2	9.5	25.1	10.7	13
Magnesium	--	--		2120 J	2190 J	757 J	1010 J	1330 J	580 J
Manganese	1600	10000		53.6	77.7	80.8	105	76.9	75.4
Mercury	0.18	2.8		0.075	0.073	0.035	0.076	0.038	0.021
Nickel	30	310		3 J	5.1 J	4.3 J	6.5 J	4.6 J	4.4 J
Potassium	--	--		128 J	217 J	260 J	350 J	183 J	202 J
Selenium	3.9	1500		4.0 U	4.3 U	3.9 U	4.0 U	4.1 U	4.2 U
Silver	2	1500		2.0 U	2.1 U	1.9 U	2.0 U	2.1 U	2.1 U
Sodium	--	--		1010 U	1060 U	971 U	989 U	1030 U	1060 U
Thallium	--	--		4.0 U	4.3 U	3.9 U	4.0 U	4.1 U	4.2 U
Vanadium	--	--		5.5 J	11	9.1 J	13.5	8 J	6.1 J
Zinc	109	10000		25.4 J	65.5 J	19.2 J	42.2 J	22 J	29.2 J

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Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in mg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:** / **Sample Date:** / **Sample Depth (ft bls):**	G-07 7/17/2014 0 - 1	G-07_SURF 7/17/2014 -	G-08 7/17/2014 0 - 1	G-08_SURF 7/17/2014 -	G-09 7/17/2014 0 - 1	G-09_SURF 7/17/2014 -
Aluminum	--	--		4900	4360	6440	4620	5030	4310
Antimony	--	--		4.0 U	4.0 U	4.4 U	4.2 U	3.9 U	4.2 U
Arsenic	13	16		2.4 J	2 J	3.7	2.5 J	2.8 J	1.9 J
Barium	350	400		24.8 J	25 J	26.2 J	26 J	34 J	39.8 J
Beryllium	7.2	590		0.40 U	0.40 U	0.44 U	0.42 U	0.39 U	0.42 U
Cadmium	2.5	9.3		0.81 U	0.79 U	0.88 U	0.84 U	0.53 J	0.84 U
Calcium	--	--		10500	6410	1700	2900	4000	2810
Chromium	30	1500		10.2	10.5	15.9	9.5	28.3	14.9
Cobalt	--	--		2.1 J	2 J	2.9 J	2.3 J	2.2 J	2 J
Copper	50	270		8.8	7.1	6.9	8.1	15.2	15.6
Iron	--	--		8150	7400	12300	9320	11000	8050
Lead	63	1000		22.3	18.8	15.2	20.5	36	55.9
Magnesium	--	--		1340	1060	986 J	1110	824 J	963 J
Manganese	1600	10000		92 J	102 J	171 J	138 J	102 J	100 J
Mercury	0.18	2.8		0.082	0.11	0.049	0.075	0.099	0.075
Nickel	30	310		5.6 J	5 J	5.5 J	5.3 J	7.1 J	6.6 J
Potassium	--	--		199 J	310 J	300 J	265 J	204 J	241 J
Selenium	3.9	1500		4.0 U	4.0 U	4.4 U	4.2 U	3.9 U	4.2 U
Silver	2	1500		2.0 U	2.0 U	2.2 U	2.1 U	2	0.43 J
Sodium	--	--		1010 U	990 U	1100 U	1050 U	970 U	1050 U
Thallium	--	--		4.0 U	4.0 U	4.4 U	4.2 U	3.9 U	4.2 U
Vanadium	--	--		12	11.9	13.6	9.9 J	17.3	10.6
Zinc	109	10000		32.3	30.5	24.7	32	51.5	70.5

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Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in mg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:** / **Sample Date:** / **Sample Depth (ft bls):**	G-10 7/17/2014 0 - 1	G-10_SURF 7/17/2014 -	G-11 7/17/2014 0 - 1	G-11_SURF 7/17/2014 -	G-12 6/17/2014 28 - 32	G-12 6/17/2014 0 - 1
Aluminum	--	--		4370	3300	2730	3850	2930	5200
Antimony	--	--		3.8 U	4.2 U	4.2 U	4.2 U	4.2 UJ	4.1 UJ
Arsenic	13	16		1.2 J	1 J	1.5 J	1.1 J	1.4 J	3.5
Barium	350	400		15 J	14.5 J	11.5 J	18.6 J	15.2 J	21.7 J
Beryllium	7.2	590		0.38 U	0.42 U	0.42 U	0.42 U	0.42 U	0.41 U
Cadmium	2.5	9.3		0.76 U	0.83 U	0.85 U	0.84 U	0.84 U	0.82 U
Calcium	--	--		133 J	194 J	921 J	2440	3260	3940
Chromium	30	1500		7	5.4	6.2	10.1	10.5	15.9
Cobalt	--	--		3.9 J	4.1 J	1.1 J	3.5 J	1 J	2.2 J
Copper	50	270		4.7 J	4.6 J	5.2 J	**58.7**	5.8 J	10.1 J
Iron	--	--		9960	7750	4490	12400	3640	8710
Lead	63	1000		5.6	4.5	9.3	13.9	20.9	31.6
Magnesium	--	--		654 J	551 J	475 J	881 J	1730	1310
Manganese	1600	10000		365 J	363 J	48.7 J	102 J	26.8	102
Mercury	0.18	2.8		0.018	0.016 J	0.078	0.072	0.02	**0.28**
Nickel	30	310		5.1 J	4.6 J	2.9 J	3.4 J	2.7 J	5.8 J
Potassium	--	--		210 J	176 J	163 J	435 J	140 J	295 J
Selenium	3.9	1500		3.8 U	4.2 U	4.2 U	4.2 U	4.2 U	4.1 U
Silver	2	1500		1.9 U	2.1 U	2.1 U	2.1 U	2.1 U	2.0 U
Sodium	--	--		954 U	1040 U	1060 U	1050 U	1050 U	1020 U
Thallium	--	--		3.8 U	4.2 U	4.2 U	4.2 U	4.2 U	4.1 U
Vanadium	--	--		8.3 J	7.1 J	6 J	7.7 J	9.2 J	15
Zinc	109	10000		14.7	14.1	13.8	32.4	24.4	56.8

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Bold data indicates that parameter was detected above the NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives
Shaded data indicates that parameter was detected above the NYSDEC Part 375 Commercial Soil Cleanup Objectives
Soil samples were collected by Environmental Assessment and Remediations in 2014

Table 4. Summary of Metals in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in mg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	Sample Designation: / Sample Date: / Sample Depth (ft bls):	G-12_SURF 6/17/2014 -	G-13 7/16/2014 0 - 1	G-13_SURF 7/16/2014 -	G-14 7/16/2014 0 - 1	G-14_SURF 7/16/2014 -	G-15 7/17/2014 0 - 1
Aluminum	--	--		4330	5350	11000	4680	6020	3790
Antimony	--	--		3.7 UJ	4.4 UJ	5.9 UJ	4.0 UJ	4.7 UJ	4.0 U
Arsenic	13	16		2.9	3.7	7.2	6.3	4.4	3.0 U
Barium	350	400		19.3 J	41.9 J	115	97.5	114	10.5 J
Beryllium	7.2	590		0.37 U	0.44 U	0.59 U	0.40 U	0.47 U	0.40 U
Cadmium	2.5	9.3		0.74 U	0.38 J	1.2	0.41 J	0.37 J	0.80 U
Calcium	--	--		5140	4700	14400	11500	10000	206 J
Chromium	30	1500		14	16.8	**34.4**	13.3	14.1	7.5
Cobalt	--	--		2.7 J	2.7 J	5.3 J	3.2 J	3.1 J	2.5 J
Copper	50	270		9.5 J	19.3	**55.3**	**50.4**	47.2	4.2 J
Iron	--	--		7890	9220	15000	12800	11400	5560
Lead	63	1000		26.7	58.5	**177**	**130**	**141**	5.2
Magnesium	--	--		1980	1190 J	2930 J	1780 J	2780 J	551 J
Manganese	1600	10000		111	133	250	214	162	101 J
Mercury	0.18	2.8		**0.7**	0.15	**0.48**	0.17	**0.2**	0.027
Nickel	30	310		5.5 J	7.4 J	16.7	12.7	13.3	4 J
Potassium	--	--		263 J	307 J	711 J	308 J	525 J	176 J
Selenium	3.9	1500		3.7 U	4.4 U	5.9 U	4.0 U	4.7 U	4.0 U
Silver	2	1500		1.9 U	2.2 U	0.73 J	2.0 U	2.3 U	2.0 U
Sodium	--	--		929 U	1100 U	1460 U	992 U	1160 U	1000 U
Thallium	--	--		3.7 U	4.4 U	5.9 U	4.0 U	4.7 U	4.0 U
Vanadium	--	--		13.2	14	29.8	18.9	19.3	6.7 J
Zinc	109	10000		64.7	79.4 J	**229 J**	**154 J**	**170 J**	12.7

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
mg/kg - Milligrams per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Soil Cleanup Objective available
Bold data indicates that parameter was detected above the NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives
Shaded data indicates that parameter was detected above the NYSDEC Part 375 Commercial Soil Cleanup Objectives
Soil samples were collected by Environmental Assessment and Remediations in 2014

Table 4. Summary of Metals in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in mg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:** / **Sample Date:** / **Sample Depth (ft bls):**	G-15_SURF 7/17/2014 -	G-16 7/17/2014 0 - 1	G-16_SURF 7/17/2014 -	G-17 6/16/2014 0 - 1	G-17 6/16/2014 8 - 12	G-17_SURF 6/16/2014 -
Aluminum	--	--		3000	1280	2410	6280	5960	6230
Antimony	--	--		4.3 U	4.0 U	3.9 U	4.2 UJ	4.2 UJ	4.2 UJ
Arsenic	13	16		0.92 J	1.2 J	1.1 J	2.6 J	2.7 J	6.5
Barium	350	400		11.2 J	5.5 J	10.9 J	25.6 J	26.8 J	24.7 J
Beryllium	7.2	590		0.43 U	0.40 U	0.39 U	0.42 U	0.42 U	0.42 U
Cadmium	2.5	9.3		0.86 U	0.80 U	0.79 U	0.85 U	1.6	0.84 U
Calcium	--	--		366 J	244 J	288 J	2030 J	1620 J	2860 J
Chromium	30	1500		11	3.7	5.7	15.1 J	**765 J**	17.9 J
Cobalt	--	--		1.4 J	1 J	1.5 J	4 J	2.2 J	2.9 J
Copper	50	270		6.4	3.2 J	4.8 J	8.9 J	31.6 J	9.1 J
Iron	--	--		5280	3340	5080	10000	6930	10500
Lead	63	1000		8.9	3.7	7	20.5 J	**78.3 J**	21.4 J
Magnesium	--	--		530 J	246 J	539 J	1060 J	735 J	1570 J
Manganese	1600	10000		80.6 J	41.8 J	75.6 J	147	78.8	152
Mercury	0.18	2.8		0.028	0.016 U	0.016 U	0.052	**0.2**	0.054
Nickel	30	310		3.7 J	2.1 J	3.3 J	7.1 J	7.6 J	6.2 J
Potassium	--	--		154 J	99.8 J	202 J	402 J	226 J	467 J
Selenium	3.9	1500		4.3 U	4.0 U	3.9 U	4.2 U	4.2 U	4.2 U
Silver	2	1500		0.58 J	2.0 U	2.0 U	2.1 U	**15.7**	2.1 U
Sodium	--	--		1070 U	1000 U	983 U	1060 U	1050 U	1050 U
Thallium	--	--		4.3 U	4.0 U	3.9 U	4.2 U	4.2 U	4.2 U
Vanadium	--	--		5.9 J	3.2 J	5.7 J	12.8	13.1	14.1
Zinc	109	10000		24.2	16.9	16.3	37.7 J	62.2 J	43.3 J

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Soil samples were collected by Environmental Assessment and Remediations in 2014

Table 4. Summary of Metals in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in mg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:** / **Sample Date:** / **Sample Depth (ft bls):**	G-18 7/16/2014 0 - 1	G-18_SURF 7/16/2014 -	P-06 6/27/2014 28 - 32	P-08 6/24/2014 28 - 32	P-27 6/20/2014 28 - 32
Aluminum	--	--		4480	4210	3020	709	674
Antimony	--	--		3.7 UJ	4.8 UJ	3.8 U	4.5 UJ	3.5 UJ
Arsenic	13	16		3.5	2.1 J	1.1 J	3.4 U	2.6 U
Barium	350	400		30.6 J	32.8 J	10.9 J	4.3 J	4 J
Beryllium	7.2	590		0.37 U	0.48 U	0.38 U	0.45 U	0.35 U
Cadmium	2.5	9.3		0.36 J	0.56 J	0.37 J	1.7	0.70 U
Calcium	--	--		2250	2370	612 J	135 J	871 U
Chromium	30	1500		**38.6**	22.3	**62.7**	**37.3**	5.7
Cobalt	--	--		2.6 J	2.3 J	1.5 J	11.3 U	8.7 U
Copper	50	270		15.7	19.2	7.1	2.1 J	4.4 U
Iron	--	--		14700	8040	5430	1310	1840
Lead	63	1000		41.9	**66.9**	7.7	3.8	0.75 J
Magnesium	--	--		1200 J	1070 J	502 J	99.8 J	128 J
Manganese	1600	10000		148	92.4	73.1	16.6	9.2
Mercury	0.18	2.8		0.06	0.1	0.025	0.025	0.019 U
Nickel	30	310		19.3	6.6 J	3.1 J	9.0 U	7.0 U
Potassium	--	--		263 J	273 J	173 J	41.7 J	68.9 J
Selenium	3.9	1500		3.7 U	4.8 U	3.8 U	4.5 U	3.5 U
Silver	2	1500		0.44 J	0.47 J	0.57 J	1 J	1.7 U
Sodium	--	--		921 U	1210 U	953 U	1130 U	871 U
Thallium	--	--		3.7 U	4.8 U	3.8 U	4.5 U	3.5 U
Vanadium	--	--		13.5	12.1	6.7 J	1.7 J	2.2 J
Zinc	109	10000		**120 J**	**181 J**	26.6	18.2	8.1

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ft bls - Feet below land surface
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Bold data indicates that parameter was detected above the NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives
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Soil samples were collected by Environmental Assessment and Remediations in 2014

Table 5. Summary of Polychlorinated Biphenyls in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	BUD-01	BUD-01	BUD-02	BUD-02	BUD-03	BUD-03	CR-10
			Sample Date:	6/26/2014	6/26/2014	6/26/2014	6/26/2014	6/26/2014	6/26/2014	7/15/2014
			Sample Depth (ft bls):	14 - 18	18 - 22	14 - 18	18 - 22	22 - 26	14 - 18	0 - 1
Aroclor-1016	--	--		72 U	69 U	70 U	70 U	71 U	69 U	71 U
Aroclor-1221	--	--		72 U	69 U	70 U	70 U	71 U	69 U	71 U
Aroclor-1232	--	--		72 U	69 U	70 U	70 U	71 U	69 U	71 U
Aroclor-1242	--	--		72 U	69 U	70 U	70 U	71 U	69 U	71 U
Aroclor-1248	--	--		72 U	69 U	70 U	70 U	71 U	69 U	71 U
Aroclor-1254	--	--		72 U	69 U	70 U	70 U	71 U	69 U	71 U
Aroclor-1260	--	--		72 U	69 U	70 U	70 U	71 U	69 U	71 U
Aroclor-1262	--	--		72 U	69 U	70 U	70 U	71 U	69 U	71 U
Aroclor-1268	--	--		72 U	69 U	70 U	70 U	71 U	69 U	71 U
Aroclor (Total)	100	1000		72 U	69 U	70 U	70 U	71 U	69 U	71 U

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D - A secondary analysis after dilution due to exceedance
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
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of the calibration range in the original sample
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Table 5. Summary of Polychlorinated Biphenyls in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	CR-11	CR-5	G-01	G-01_SURF	G-02	G-02_SURF
			Sample Date:	6/18/2014	7/15/2014	7/16/2014	7/16/2014	7/16/2014	7/16/2014
			Sample Depth (ft bls):	24 - 29	0 - 1	0 - 1	-	0 - 1	-
Aroclor-1016	--	--		77 U	70 U	75 U	76 U	74 U	75 U
Aroclor-1221	--	--		77 U	70 U	75 U	76 U	74 U	75 U
Aroclor-1232	--	--		77 U	70 U	75 U	76 U	74 U	75 U
Aroclor-1242	--	--		77 U	70 U	75 U	76 U	74 U	75 U
Aroclor-1248	--	--		77 U	70 U	75 U	76 U	74 U	75 U
Aroclor-1254	--	--		77 U	70 U	75 U	76 U	74 U	75 U
Aroclor-1260	--	--		77 U	70 U	75 U	76 U	74 U	75 U
Aroclor-1262	--	--		77 U	70 U	75 U	76 U	74 U	75 U
Aroclor-1268	--	--		77 U	70 U	75 U	76 U	74 U	75 U
Aroclor (Total)	100	1000		77 U	70 U	75 U	76 U	74 U	75 U

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Soil samples were collected by Environmental Assessment and Remediations in 2014

Table 5. Summary of Polychlorinated Biphenyls in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	G-03	G-03_SURF	G-04	G-04_SURF	G-05	G-05_SURF
			Sample Date:	7/16/2014	7/16/2014	7/16/2014	7/16/2014	7/16/2014	7/16/2014
			Sample Depth (ft bls):	0 - 1	-	0 - 1	-	0 - 1	-
Aroclor-1016	--	--		72 U	72 U	74 U	78 U	73 U	78 U
Aroclor-1221	--	--		72 U	72 U	74 U	78 U	73 U	78 U
Aroclor-1232	--	--		72 U	72 U	74 U	78 U	73 U	78 U
Aroclor-1242	--	--		72 U	72 U	74 U	78 U	73 U	78 U
Aroclor-1248	--	--		72 U	72 U	74 U	78 U	73 U	78 U
Aroclor-1254	--	--		72 U	72 U	74 U	78 U	73 U	78 U
Aroclor-1260	--	--		72 U	72 U	74 U	78 U	73 U	78 U
Aroclor-1262	--	--		72 U	72 U	74 U	78 U	73 U	78 U
Aroclor-1268	--	--		72 U	72 U	74 U	78 U	73 U	78 U
Aroclor (Total)	100	1000		72 U	72 U	74 U	78 U	73 U	78 U

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Table 5. Summary of Polychlorinated Biphenyls in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	G-06	G-06_SURF	G-07	G-07_SURF	G-08	G-08_SURF
			Sample Date:	7/16/2014	7/16/2014	7/17/2014	7/17/2014	7/17/2014	7/17/2014
			Sample Depth (ft bls):	0 - 1	-	0 - 1	-	0 - 1	-
Aroclor-1016	--	--		72 U	73 U	75 U	74 U	74 U	75 U
Aroclor-1221	--	--		72 U	73 U	75 U	74 U	74 U	75 U
Aroclor-1232	--	--		72 U	73 U	75 U	74 U	74 U	75 U
Aroclor-1242	--	--		72 U	73 U	75 U	74 U	74 U	75 U
Aroclor-1248	--	--		72 U	73 U	75 U	74 U	74 U	75 U
Aroclor-1254	--	--		72 U	73 U	75 U	74 U	74 U	75 U
Aroclor-1260	--	--		72 U	73 U	75 U	74 U	74 U	75 U
Aroclor-1262	--	--		72 U	73 U	75 U	74 U	74 U	75 U
Aroclor-1268	--	--		72 U	73 U	75 U	74 U	74 U	75 U
Aroclor (Total)	100	1000		72 U	73 U	75 U	74 U	74 U	75 U

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Table 5. Summary of Polychlorinated Biphenyls in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	G-09	G-09_SURF	G-10	G-10_SURF	G-11	G-11_SURF
			Sample Date:	7/17/2014	7/17/2014	7/17/2014	7/17/2014	7/17/2014	7/17/2014
			Sample Depth (ft bls):	0 - 1	-	0 - 1	-	0 - 1	-
Aroclor-1016	--	--		73 U	75 U	72 U	72 U	74 U	77 U
Aroclor-1221	--	--		73 U	75 U	72 U	72 U	74 U	77 U
Aroclor-1232	--	--		73 U	75 U	72 U	72 U	74 U	77 U
Aroclor-1242	--	--		73 U	75 U	72 U	72 U	74 U	77 U
Aroclor-1248	--	--		73 U	75 U	72 U	72 U	74 U	77 U
Aroclor-1254	--	--		73 U	75 U	72 U	72 U	74 U	77 U
Aroclor-1260	--	--		73 U	75 U	72 U	72 U	74 U	77 U
Aroclor-1262	--	--		73 U	200	72 U	72 U	74 U	77 U
Aroclor-1268	--	--		73 U	75 U	72 U	72 U	74 U	77 U
Aroclor (Total)	100	1000		73 U	**200**	72 U	72 U	74 U	77 U

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Table 5. Summary of Polychlorinated Biphenyls in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	G-12	G-12	G-12_SURF	G-13	G-13_SURF	G-14
			Sample Date:	6/17/2014	6/17/2014	6/17/2014	7/16/2014	7/16/2014	7/16/2014
			Sample Depth (ft bls):	28 - 32	0 - 1	-	0 - 1	-	0 - 1
Aroclor-1016	--	--		80 U	70 U	70 U	81 U	100 U	74 U
Aroclor-1221	--	--		80 U	70 U	70 U	81 U	100 U	74 U
Aroclor-1232	--	--		80 U	70 U	70 U	81 U	100 U	74 U
Aroclor-1242	--	--		80 U	70 U	70 U	81 U	100 U	74 U
Aroclor-1248	--	--		190	70 U	70 U	81 U	100 U	74 U
Aroclor-1254	--	--		80 U	70 U	70 U	81 U	100 U	74 U
Aroclor-1260	--	--		80 U	70 U	70 U	81 U	100 U	74 U
Aroclor-1262	--	--		80 U	70 U	70 U	81 U	100 U	74 U
Aroclor-1268	--	--		80 U	70 U	70 U	81 U	100 U	74 U
Aroclor (Total)	100	1000		**190**	70 U	70 U	81 U	100 U	74 U

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Table 5. Summary of Polychlorinated Biphenyls in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	G-14_SURF	G-15	G-15_SURF	G-16	G-16_SURF	G-17
			Sample Date:	7/16/2014	7/17/2014	7/17/2014	7/17/2014	7/17/2014	6/16/2014
			Sample Depth (ft bls):	-	0 - 1	-	0 - 1	-	0 - 1
Aroclor-1016	--	--		78 U	72 U	73 U	69 U	70 U	74 U
Aroclor-1221	--	--		78 U	72 U	73 U	69 U	70 U	74 U
Aroclor-1232	--	--		78 U	72 U	73 U	69 U	70 U	74 U
Aroclor-1242	--	--		78 U	72 U	73 U	69 U	70 U	74 U
Aroclor-1248	--	--		78 U	72 U	73 U	69 U	70 U	74 U
Aroclor-1254	--	--		78 U	72 U	73 U	69 U	70 U	74 U
Aroclor-1260	--	--		78 U	72 U	73 U	69 U	70 U	74 U
Aroclor-1262	--	--		78 U	72 U	73 U	69 U	70 U	74 U
Aroclor-1268	--	--		78 U	72 U	73 U	69 U	70 U	74 U
Aroclor (Total)	100	1000		78 U	72 U	73 U	69 U	70 U	74 U

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
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Table 5. Summary of Polychlorinated Biphenyls in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:** / **Sample Date:** / **Sample Depth (ft bls):**	G-17 6/16/2014 8 - 12	G-17_SURF 6/16/2014 -	G-18 7/16/2014 0 - 1	G-18_SURF 7/16/2014 -	P-06 6/27/2014 4 - 8	P-06 6/27/2014 8 - 12
Aroclor-1016	--	--		79 U	75 U	72 U	83 U	73 U	71 U
Aroclor-1221	--	--		79 U	75 U	72 U	83 U	73 U	71 U
Aroclor-1232	--	--		79 U	75 U	72 U	83 U	73 U	71 U
Aroclor-1242	--	--		79 U	75 U	72 U	83 U	73 U	71 U
Aroclor-1248	--	--		79 U	75 U	72 U	83 U	73 U	71 U
Aroclor-1254	--	--		180	75 U	72 U	83 U	73 U	71 U
Aroclor-1260	--	--		79 U	75 U	72 U	83 U	73 U	71 U
Aroclor-1262	--	--		79 U	75 U	72 U	83 U	73 U	71 U
Aroclor-1268	--	--		79 U	75 U	72 U	83 U	73 U	71 U
Aroclor (Total)	100	1000		**180**	75 U	72 U	83 U	73 U	71 U

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
D - A secondary analysis after dilution due to exceedance
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Soil Cleanup Objective available
of the calibration range in the original sample
Bold data indicates that parameter was detected above the NYSDEC
Part 375 Unrestricted Use Soil Cleanup Objectives
Shaded data indicates that parameter was detected above the NYSDEC
Part 375 Commercial Soil Cleanup Objectives
Soil samples were collected by Environmental Assessment and Remediations in 2014

Table 5. Summary of Polychlorinated Biphenyls in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	P-06	P-06	P-07	P-07	P-07	P-07	P-07
			Sample Date:	6/27/2014	6/27/2014	6/24/2014	6/25/2014	6/25/2014	6/25/2014	6/25/2014
			Sample Depth (ft bls):	16 - 20	28 - 32	4 - 8	8 - 12	12 - 16	16 - 20	28 - 32
Aroclor-1016	--	--		72 U	72 U	72 U	74 U	74 U	77 U	74 U
Aroclor-1221	--	--		72 U	72 U	72 U	74 U	74 U	77 U	74 U
Aroclor-1232	--	--		72 U	72 U	72 U	74 U	74 U	77 U	74 U
Aroclor-1242	--	--		72 U	72 U	72 U	74 U	74 U	77 U	74 U
Aroclor-1248	--	--		72 U	72 U	72 U	230	74 U	77 U	340
Aroclor-1254	--	--		72 U	72 U	72 U	74 U	74 U	77 U	74 U
Aroclor-1260	--	--		72 U	72 U	72 U	98 J	130	75 J	420
Aroclor-1262	--	--		72 U	72 U	72 U	74 U	74 U	77 U	74 U
Aroclor-1268	--	--		72 U	72 U	72 U	74 U	74 U	77 U	74 U
Aroclor (Total)	100	1000		72 U	72 U	72 U	**320**	**130**	75 J	**730**

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
D - A secondary analysis after dilution due to exceedance
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Soil Cleanup Objective available
of the calibration range in the original sample
Bold data indicates that parameter was detected above the NYSDEC
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Part 375 Commercial Soil Cleanup Objectives
Soil samples were collected by Environmental Assessment and Remediations in 2014

Table 5. Summary of Polychlorinated Biphenyls in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	P-08	P-08	P-08	P-08	P-08	P-11	P-11
			Sample Date:	6/24/2014	6/24/2014	6/24/2014	6/24/2014	6/24/2014	6/23/2014	6/23/2014
			Sample Depth (ft bls):	28 - 32	4 - 8	8 - 12	12 - 16	16 - 20	16 - 20	28 - 32
Aroclor-1016	--	--		75 U	72 U	110 U	74 U	73 U	80 U	75 U
Aroclor-1221	--	--		75 U	72 U	110 U	74 U	73 U	80 U	75 U
Aroclor-1232	--	--		75 U	72 U	110 U	74 U	73 U	80 U	75 U
Aroclor-1242	--	--		75 U	72 U	110 U	74 U	73 U	80 U	75 U
Aroclor-1248	--	--		75 U	72 U	110 U	74 U	73 U	660	75 U
Aroclor-1254	--	--		75 U	72 U	110 U	74 U	73 U	80 U	75 U
Aroclor-1260	--	--		75 U	72 U	110 U	74 U	73 U	80 U	75 U
Aroclor-1262	--	--		75 U	72 U	110 U	74 U	73 U	80 U	75 U
Aroclor-1268	--	--		75 U	72 U	110 U	74 U	73 U	80 U	75 U
Aroclor (Total)	100	1000		75 U	72 U	110 U	74 U	73 U	**660**	75 U

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
D - A secondary analysis after dilution due to exceedance
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Soil Cleanup Objective available
of the calibration range in the original sample
Bold data indicates that parameter was detected above the NYSDEC
Part 375 Unrestricted Use Soil Cleanup Objectives
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Table 5. Summary of Polychlorinated Biphenyls in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	P-11	P-11	P-11	P-12	P-12	P-12	P-12
			Sample Date:	6/23/2014	6/23/2014	6/23/2014	6/27/2014	6/27/2014	6/27/2014	6/27/2014
			Sample Depth (ft bls):	4 - 8	8 - 12	12 - 16	12 - 16	16 - 20	28 - 32	4 - 8
Aroclor-1016	--	--		73 U	73 U	73 U	72 U	75 U	73 U	72 U
Aroclor-1221	--	--		73 U	73 U	73 U	72 U	75 U	73 U	72 U
Aroclor-1232	--	--		73 U	73 U	73 U	72 U	75 U	73 U	72 U
Aroclor-1242	--	--		73 U	73 U	73 U	72 U	75 U	73 U	72 U
Aroclor-1248	--	--		73 U	73 U	73 U	72 U	75 U	73 U	72 U
Aroclor-1254	--	--		73 U	73 U	73 U	72 U	75 U	73 U	72 U
Aroclor-1260	--	--		73 U	73 U	73 U	72 U	75 U	73 U	72 U
Aroclor-1262	--	--		73 U	73 U	73 U	72 U	75 U	73 U	72 U
Aroclor-1268	--	--		73 U	73 U	73 U	72 U	75 U	73 U	72 U
Aroclor (Total)	100	1000		73 U	73 U	73 U	72 U	75 U	73 U	72 U

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
D - A secondary analysis after dilution due to exceedance
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Soil Cleanup Objective available
of the calibration range in the original sample
Bold data indicates that parameter was detected above the NYSDEC
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Part 375 Commercial Soil Cleanup Objectives
Soil samples were collected by Environmental Assessment and Remediations in 2014

Table 5. Summary of Polychlorinated Biphenyls in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	P-12	P-13	P-13	P-13	P-13	P-14	P-14
			Sample Date:	6/27/2014	6/27/2014	6/27/2014	6/27/2014	6/27/2014	6/25/2014	6/25/2014
			Sample Depth (ft bls):	8 - 12	4 - 8	8 - 12	12 - 16	28 - 32	4 - 8	8 - 12
Aroclor-1016	--	--		72 U	79 U	82 U	94 U	75 U	71 U	72 U
Aroclor-1221	--	--		72 U	79 U	82 U	94 U	75 U	71 U	72 U
Aroclor-1232	--	--		72 U	79 U	82 U	94 U	75 U	71 U	72 U
Aroclor-1242	--	--		72 U	79 U	82 U	94 U	75 U	71 U	72 U
Aroclor-1248	--	--		72 U	250	84	150	180	71 U	72 U
Aroclor-1254	--	--		72 U	79 U	82 U	94 U	75 U	71 U	72 U
Aroclor-1260	--	--		38 J	280	82 U	94 U	75 U	230	160
Aroclor-1262	--	--		72 U	79 U	82 U	94 U	75 U	71 U	72 U
Aroclor-1268	--	--		72 U	79 U	82 U	94 U	75 U	71 U	72 U
Aroclor (Total)	100	1000		38 J	**520**	84	**150**	**180**	**230**	**160**

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
D - A secondary analysis after dilution due to exceedance
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Soil Cleanup Objective available
of the calibration range in the original sample
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Part 375 Commercial Soil Cleanup Objectives
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Table 5. Summary of Polychlorinated Biphenyls in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	P-14	P-14	P-14	P-15	P-15	P-15	P-15
			Sample Date:	6/25/2014	6/25/2014	6/25/2014	6/30/2014	6/30/2014	6/30/2014	6/30/2014
			Sample Depth (ft bls):	12 - 16	16 - 20	28 - 32	4 - 8	8 - 12	12 - 16	16 - 20
Aroclor-1016	--	--		77 U	81 U	83 U	73 U	71 U	72 U	72 U
Aroclor-1221	--	--		77 U	81 U	83 U	73 U	71 U	72 U	72 U
Aroclor-1232	--	--		77 U	81 U	83 U	73 U	71 U	72 U	72 U
Aroclor-1242	--	--		77 U	81 U	83 U	73 U	71 U	72 U	72 U
Aroclor-1248	--	--		77 U	360	330	73 U	71 U	72 U	72 U
Aroclor-1254	--	--		77 U	81 U	83 U	73 U	71 U	72 U	72 U
Aroclor-1260	--	--		77 U	81 U	83 U	73 U	71 U	82	72 U
Aroclor-1262	--	--		77 U	81 U	83 U	73 U	71 U	72 U	72 U
Aroclor-1268	--	--		77 U	81 U	83 U	73 U	71 U	72 U	72 U
Aroclor (Total)	100	1000		77 U	**360**	**330**	73 U	71 U	82	72 U

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U - Indicates that the compound was analyzed for but not detected
D - A secondary analysis after dilution due to exceedance
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
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of the calibration range in the original sample
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Table 5. Summary of Polychlorinated Biphenyls in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	P-15	P-16	P-16	P-16	P-16	P-16	P-17
			Sample Date:	6/30/2014	6/30/2014	6/30/2014	6/30/2014	6/30/2014	6/30/2014	6/25/2014
			Sample Depth (ft bls):	28 - 32	4 - 8	8 - 12	12 - 16	16 - 20	28 - 32	4 - 8
Aroclor-1016	--	--		85 U	72 U	71 U	71 U	85 U	82 U	69 U
Aroclor-1221	--	--		85 U	72 U	71 U	71 U	85 U	82 U	69 U
Aroclor-1232	--	--		85 U	72 U	71 U	71 U	85 U	82 U	69 U
Aroclor-1242	--	--		85 U	72 U	71 U	71 U	85 U	82 U	69 U
Aroclor-1248	--	--		490	72 U	71 U	71 U	85 U	82 U	69 U
Aroclor-1254	--	--		85 U	72 U	71 U	71 U	85 U	82 U	69 U
Aroclor-1260	--	--		85 U	72 U	71 U	71 U	85 U	82 U	300
Aroclor-1262	--	--		85 U	72 U	71 U	71 U	85 U	82 U	69 U
Aroclor-1268	--	--		85 U	72 U	71 U	71 U	85 U	82 U	69 U
Aroclor (Total)	100	1000		**490**	72 U	71 U	71 U	85 U	82 U	**300**

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
D - A secondary analysis after dilution due to exceedance
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
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Table 5. Summary of Polychlorinated Biphenyls in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	P-17	P-17	P-17	P-17	P-18	P-18	P-18
			Sample Date:	6/25/2014	6/25/2014	6/25/2014	6/25/2014	6/30/2014	6/30/2014	6/30/2014
			Sample Depth (ft bls):	8 - 12	12 - 16	16 - 20	28 - 32	4 - 8	8 - 12	12 - 16
Aroclor-1016	--	--		69 U	69 U	72 U	75 U	73 U	74 U	73 U
Aroclor-1221	--	--		69 U	69 U	72 U	75 U	73 U	74 U	73 U
Aroclor-1232	--	--		69 U	69 U	72 U	75 U	73 U	74 U	73 U
Aroclor-1242	--	--		69 U	69 U	72 U	75 U	73 U	74 U	73 U
Aroclor-1248	--	--		69 U	69 U	72 U	480	73 U	74 U	73 U
Aroclor-1254	--	--		69 U	69 U	72 U	75 U	73 U	74 U	73 U
Aroclor-1260	--	--		130	430	81	75 U	73 U	74 U	46 J
Aroclor-1262	--	--		69 U	69 U	72 U	75 U	73 U	74 U	73 U
Aroclor-1268	--	--		69 U	69 U	72 U	75 U	73 U	74 U	73 U
Aroclor (Total)	100	1000		**130**	**430**	81	**480**	73 U	74 U	46 J

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
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µg/kg - Micrograms per kilogram
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Table 5. Summary of Polychlorinated Biphenyls in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	P-18	P-18	P-19	P-19	P-19	P-19	P-19
			Sample Date:	6/30/2014	6/30/2014	6/30/2014	6/30/2014	6/30/2014	6/30/2014	6/30/2014
			Sample Depth (ft bls):	16 - 20	28 - 32	4 - 8	8 - 12	12 - 16	16 - 20	28 - 32
Aroclor-1016	--	--		110 U	79 U	72 U	72 U	72 U	74 U	76 U
Aroclor-1221	--	--		110 U	79 U	72 U	72 U	72 U	74 U	76 U
Aroclor-1232	--	--		110 U	79 U	72 U	72 U	72 U	74 U	76 U
Aroclor-1242	--	--		110 U	79 U	72 U	72 U	72 U	74 U	76 U
Aroclor-1248	--	--		940	79 U	72 U	72 U	72 U	74 U	76 U
Aroclor-1254	--	--		110 U	79 U	72 U	72 U	72 U	74 U	76 U
Aroclor-1260	--	--		110 U	79 U	72 U	72 U	72 U	74 U	76 U
Aroclor-1262	--	--		110 U	79 U	72 U	72 U	72 U	74 U	76 U
Aroclor-1268	--	--		110 U	79 U	72 U	72 U	72 U	74 U	76 U
Aroclor (Total)	100	1000		**940**	79 U	72 U	72 U	72 U	74 U	76 U

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
D - A secondary analysis after dilution due to exceedance
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
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of the calibration range in the original sample
Bold data indicates that parameter was detected above the NYSDEC
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Shaded data indicates that parameter was detected above the NYSDEC
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Table 5. Summary of Polychlorinated Biphenyls in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	P-20	P-20	P-20	P-20	P-20	P-21	P-21
			Sample Date:	6/27/2014	6/27/2014	6/27/2014	6/27/2014	6/27/2014	6/23/2014	6/23/2014
			Sample Depth (ft bls):	4 - 8	8 - 12	12 - 16	16 - 20	28 - 32	4 - 8	8 - 12
Aroclor-1016	--	--		74 U	72 U	71 U	73 U	76 U	72 U	75 U
Aroclor-1221	--	--		74 U	72 U	71 U	73 U	76 U	72 U	75 U
Aroclor-1232	--	--		74 U	72 U	71 U	73 U	76 U	72 U	75 U
Aroclor-1242	--	--		74 U	72 U	71 U	73 U	76 U	72 U	75 U
Aroclor-1248	--	--		74 U	72 U	71 U	73 U	76 U	72 U	210
Aroclor-1254	--	--		74 U	72 U	71 U	73 U	76 U	72 U	75 U
Aroclor-1260	--	--		74 U	72 U	71 U	73 U	76 U	72 U	75 U
Aroclor-1262	--	--		74 U	72 U	71 U	73 U	76 U	72 U	75 U
Aroclor-1268	--	--		74 U	72 U	71 U	73 U	76 U	72 U	75 U
Aroclor (Total)	100	1000		74 U	72 U	71 U	73 U	76 U	72 U	**210**

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
D - A secondary analysis after dilution due to exceedance
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Soil Cleanup Objective available
of the calibration range in the original sample
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Table 5. Summary of Polychlorinated Biphenyls in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	P-21	P-21	P-21	P-23	P-23	P-23	P-23
			Sample Date:	6/23/2014	6/23/2014	6/23/2014	6/20/2014	6/20/2014	6/20/2014	6/20/2014
			Sample Depth (ft bls):	12 - 16	16 - 20	28 - 32	12 - 16	16 - 20	28 - 32	4 - 8
Aroclor-1016	--	--		72 U	73 U	75 U	74 U	70 U	76 U	75 U
Aroclor-1221	--	--		72 U	73 U	75 U	74 U	70 U	76 U	75 U
Aroclor-1232	--	--		72 U	73 U	75 U	74 U	70 U	76 U	75 U
Aroclor-1242	--	--		72 U	73 U	75 U	74 U	70 U	76 U	75 U
Aroclor-1248	--	--		72 U	85	75 U	74 U	70 U	76 U	75 U
Aroclor-1254	--	--		72 U	73 U	75 U	74 U	70 U	76 U	75 U
Aroclor-1260	--	--		72 U	73 U	75 U	74 U	70 U	76 U	75 U
Aroclor-1262	--	--		72 U	73 U	75 U	74 U	70 U	76 U	75 U
Aroclor-1268	--	--		72 U	73 U	75 U	74 U	70 U	76 U	75 U
Aroclor (Total)	100	1000		72 U	85	75 U	74 U	70 U	76 U	75 U

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
D - A secondary analysis after dilution due to exceedance
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Soil Cleanup Objective available
of the calibration range in the original sample
Bold data indicates that parameter was detected above the NYSDEC
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Table 5. Summary of Polychlorinated Biphenyls in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	P-23	P-24	P-24	P-24	P-24	P-24	P-27
			Sample Date:	6/20/2014	6/23/2014	6/23/2014	6/23/2014	6/24/2014	6/24/2014	6/20/2014
			Sample Depth (ft bls):	8 - 12	4 - 8	8 - 12	12 - 16	16 - 20	28 - 32	28 - 32
Aroclor-1016	--	--		74 U	73 U	76 U	72 U	73 U	82 U	79 U
Aroclor-1221	--	--		74 U	73 U	76 U	72 U	73 U	82 U	79 U
Aroclor-1232	--	--		74 U	73 U	76 U	72 U	73 U	82 U	79 U
Aroclor-1242	--	--		74 U	73 U	76 U	72 U	73 U	82 U	79 U
Aroclor-1248	--	--		74 U	73 U	76 U	72 U	73 U	82 U	79 U
Aroclor-1254	--	--		74 U	73 U	76 U	72 U	73 U	82 U	79 U
Aroclor-1260	--	--		74 U	73 U	76 U	72 U	73 U	82 U	79 U
Aroclor-1262	--	--		74 U	73 U	76 U	72 U	73 U	82 U	79 U
Aroclor-1268	--	--		74 U	73 U	76 U	72 U	73 U	82 U	79 U
Aroclor (Total)	100	1000		74 U	73 U	76 U	72 U	73 U	82 U	79 U

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
D - A secondary analysis after dilution due to exceedance
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Soil Cleanup Objective available
of the calibration range in the original sample
Bold data indicates that parameter was detected above the NYSDEC
Part 375 Unrestricted Use Soil Cleanup Objectives
Shaded data indicates that parameter was detected above the NYSDEC
Part 375 Commercial Soil Cleanup Objectives
Soil samples were collected by Environmental Assessment and Remediations in 2014

Table 5. Summary of Polychlorinated Biphenyls in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	P-27	P-27	P-27	P-27	P-28	P-28	P-28
			Sample Date:	6/20/2014	6/20/2014	6/20/2014	6/20/2014	6/19/2014	6/19/2014	6/19/2014
			Sample Depth (ft bls):	4 - 8	8 - 12	12 - 16	16 - 20	4 - 8	8 - 12	12 - 16
Aroclor-1016	--	--		72 U	72 U	75 U	74 U	72 U	72 U	73 U
Aroclor-1221	--	--		72 U	72 U	75 U	74 U	72 U	72 U	73 U
Aroclor-1232	--	--		72 U	72 U	75 U	74 U	72 U	72 U	73 U
Aroclor-1242	--	--		72 U	72 U	75 U	74 U	72 U	72 U	73 U
Aroclor-1248	--	--		72 U	72 U	75 U	74 U	72 U	72 U	73 U
Aroclor-1254	--	--		72 U	72 U	75 U	74 U	72 U	72 U	73 U
Aroclor-1260	--	--		72 U	72 U	75 U	74 U	72 U	72 U	73 U
Aroclor-1262	--	--		72 U	72 U	75 U	74 U	72 U	72 U	73 U
Aroclor-1268	--	--		72 U	72 U	75 U	74 U	72 U	72 U	73 U
Aroclor (Total)	100	1000		72 U	72 U	75 U	74 U	72 U	72 U	73 U

J - Estimated value
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D - A secondary analysis after dilution due to exceedance
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Table 5. Summary of Polychlorinated Biphenyls in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	P-28	P-28	P-29	P-29	P-29	P-29	P-29
			Sample Date:	6/19/2014	6/19/2014	6/19/2014	6/19/2014	6/19/2014	6/19/2014	6/19/2014
			Sample Depth (ft bls):	16 - 20	28 - 32	28 - 32	4 - 8	8 - 12	12 - 16	16 - 20
Aroclor-1016	--	--		74 U	75 U	79 U	73 U	74 U	73 U	77 U
Aroclor-1221	--	--		74 U	75 U	79 U	73 U	74 U	73 U	77 U
Aroclor-1232	--	--		74 U	75 U	79 U	73 U	74 U	73 U	77 U
Aroclor-1242	--	--		74 U	75 U	79 U	73 U	74 U	73 U	77 U
Aroclor-1248	--	--		74 U	75 U	79 U	73 U	74 U	73 U	77 U
Aroclor-1254	--	--		74 U	75 U	79 U	73 U	74 U	73 U	77 U
Aroclor-1260	--	--		74 U	75 U	79 U	73 U	74 U	73 U	77 U
Aroclor-1262	--	--		74 U	75 U	79 U	73 U	74 U	73 U	77 U
Aroclor-1268	--	--		74 U	75 U	79 U	73 U	74 U	73 U	77 U
Aroclor (Total)	100	1000		74 U	75 U	79 U	73 U	74 U	73 U	77 U

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Table 5. Summary of Polychlorinated Biphenyls in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	P-30	P-30	P-30	P-30	P-30	P-31	P-31
			Sample Date:	6/26/2014	6/26/2014	6/26/2014	6/26/2014	6/26/2014	6/19/2014	6/19/2014
			Sample Depth (ft bls):	8 - 12	12 - 16	16 - 20	28 - 32	4 - 8	4 - 8	8 - 12
Aroclor-1016	--	--		73 U	71 U	74 U	74 U	73 U	74 U	74 U
Aroclor-1221	--	--		73 U	71 U	74 U	74 U	73 U	74 U	74 U
Aroclor-1232	--	--		73 U	71 U	74 U	74 U	73 U	74 U	74 U
Aroclor-1242	--	--		73 U	71 U	74 U	74 U	73 U	74 U	74 U
Aroclor-1248	--	--		73 U	71 U	74 U	74 U	73 U	74 U	87
Aroclor-1254	--	--		73 U	71 U	74 U	74 U	73 U	74 U	74 U
Aroclor-1260	--	--		73 U	71 U	74 U	74 U	73 U	74 U	74 U
Aroclor-1262	--	--		73 U	71 U	74 U	74 U	73 U	74 U	74 U
Aroclor-1268	--	--		73 U	71 U	74 U	74 U	73 U	74 U	74 U
Aroclor (Total)	100	1000		73 U	71 U	74 U	74 U	73 U	74 U	87

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
D - A secondary analysis after dilution due to exceedance
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
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Table 5. Summary of Polychlorinated Biphenyls in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	P-31	P-31	P-32	P-32	P-32	P-32	P-32
			Sample Date:	6/19/2014	6/19/2014	6/26/2014	6/26/2014	6/26/2014	6/26/2014	6/26/2014
			Sample Depth (ft bls):	12 - 16	28 - 32	4 - 8	8 - 12	12 - 16	16 - 20	28 - 32
Aroclor-1016	--	--		71 U	75 U	71 U	70 U	72 U	75 U	78 U
Aroclor-1221	--	--		71 U	75 U	71 U	70 U	72 U	75 U	78 U
Aroclor-1232	--	--		71 U	75 U	71 U	70 U	72 U	75 U	78 U
Aroclor-1242	--	--		71 U	75 U	71 U	70 U	72 U	75 U	78 U
Aroclor-1248	--	--		76	75 U	71 U	70 U	72 U	75 U	78 U
Aroclor-1254	--	--		71 U	75 U	71 U	70 U	72 U	75 U	78 U
Aroclor-1260	--	--		71 U	75 U	71 U	70 U	72 U	75 U	78 U
Aroclor-1262	--	--		71 U	75 U	71 U	70 U	72 U	75 U	78 U
Aroclor-1268	--	--		71 U	75 U	71 U	70 U	72 U	75 U	78 U
Aroclor (Total)	100	1000		76	75 U	71 U	70 U	72 U	75 U	78 U

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
D - A secondary analysis after dilution due to exceedance
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
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Table 5. Summary of Polychlorinated Biphenyls in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	P-33	P-33	P-33	P-50	P-50	P-50	P-50
			Sample Date:	6/25/2014	6/25/2014	6/25/2014	7/1/2014	7/1/2014	7/1/2014	7/1/2014
			Sample Depth (ft bls):	4 - 8	8 - 12	16 - 20	4 - 8	8 - 12	12 - 16	16 - 20
Aroclor-1016	--	--		72 U	71 U	74 U	82 U	88 U	75 U	73 U
Aroclor-1221	--	--		72 U	71 U	74 U	82 U	88 U	75 U	73 U
Aroclor-1232	--	--		72 U	71 U	74 U	82 U	88 U	75 U	73 U
Aroclor-1242	--	--		72 U	71 U	74 U	82 U	88 U	75 U	73 U
Aroclor-1248	--	--		72 U	71 U	74 U	330	550	280	64 J
Aroclor-1254	--	--		72 U	71 U	74 U	82 U	88 U	75 U	73 U
Aroclor-1260	--	--		65 J	130	130	82 U	88 U	75 U	73 U
Aroclor-1262	--	--		72 U	71 U	74 U	82 U	88 U	75 U	73 U
Aroclor-1268	--	--		72 U	71 U	74 U	82 U	88 U	75 U	73 U
Aroclor (Total)	100	1000		65 J	**130**	**130**	**330**	**550**	**280**	64 J

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
D - A secondary analysis after dilution due to exceedance
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
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Table 5. Summary of Polychlorinated Biphenyls in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	P-50	P-51	P-51	P-51	P-51	P-51	P-52
			Sample Date:	7/1/2014	7/1/2014	7/1/2014	7/1/2014	7/1/2014	7/1/2014	7/1/2014
			Sample Depth (ft bls):	28 - 32	4 - 8	8 - 12	12 - 16	16 - 20	28 - 32	4 - 8
Aroclor-1016	--	--		75 U	70 U	71 U	72 U	71 U	80 U	73 U
Aroclor-1221	--	--		75 U	70 U	71 U	72 U	71 U	80 U	73 U
Aroclor-1232	--	--		75 U	70 U	71 U	72 U	71 U	80 U	73 U
Aroclor-1242	--	--		75 U	70 U	71 U	72 U	71 U	80 U	73 U
Aroclor-1248	--	--		75 U	70 U	71 U	72 U	71 U	210	73 U
Aroclor-1254	--	--		75 U	70 U	71 U	72 U	71 U	80 U	73 U
Aroclor-1260	--	--		75 U	47 J	71 U	54 J	45 J	80 U	75
Aroclor-1262	--	--		75 U	70 U	71 U	72 U	71 U	80 U	73 U
Aroclor-1268	--	--		75 U	70 U	71 U	72 U	71 U	80 U	73 U
Aroclor (Total)	100	1000		75 U	47 J	71 U	54 J	45 J	**210**	75

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
D - A secondary analysis after dilution due to exceedance
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
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Part 375 Commercial Soil Cleanup Objectives
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Table 5. Summary of Polychlorinated Biphenyls in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	P-52	P-52	P-52	P-52	P-54	P-54	P-54
			Sample Date:	7/1/2014	7/1/2014	7/1/2014	7/1/2014	7/1/2014	7/1/2014	7/1/2014
			Sample Depth (ft bls):	8 - 12	12 - 16	16 - 20	28 - 32	8 - 12	12 - 16	16 - 20
Aroclor-1016	--	--		71 U	74 U	79 U	73 U	72 U	71 U	73 U
Aroclor-1221	--	--		71 U	74 U	79 U	73 U	72 U	71 U	73 U
Aroclor-1232	--	--		71 U	74 U	79 U	73 U	72 U	71 U	73 U
Aroclor-1242	--	--		71 U	74 U	79 U	73 U	72 U	71 U	73 U
Aroclor-1248	--	--		71 U	74 U	520	82	72 U	71 U	73 U
Aroclor-1254	--	--		71 U	74 U	79 U	73 U	72 U	71 U	73 U
Aroclor-1260	--	--		53 J	74 U	79 U	73 U	55 J	49 J	48 J
Aroclor-1262	--	--		71 U	74 U	79 U	73 U	72 U	71 U	73 U
Aroclor-1268	--	--		71 U	74 U	79 U	73 U	72 U	71 U	73 U
Aroclor (Total)	100	1000		53 J	74 U	**520**	82	55 J	49 J	48 J

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
D - A secondary analysis after dilution due to exceedance
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
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of the calibration range in the original sample
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Table 5. Summary of Polychlorinated Biphenyls in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	P-54	P-54	P-60	P-60	P-60	P-60	P-60
			Sample Date:	7/1/2014	7/1/2014	7/3/2014	7/3/2014	7/3/2014	7/3/2014	7/3/2014
			Sample Depth (ft bls):	4 - 8	28 - 32	4 - 8	8 - 12	12 - 16	16 - 20	28 - 32
Aroclor-1016	--	--		71 U	73 U	74 U	73 U	91 U	77 U	75 U
Aroclor-1221	--	--		71 U	73 U	74 U	73 U	91 U	77 U	75 U
Aroclor-1232	--	--		71 U	73 U	74 U	73 U	91 U	77 U	75 U
Aroclor-1242	--	--		71 U	73 U	74 U	73 U	91 U	77 U	75 U
Aroclor-1248	--	--		71 U	270	74 U	73 U	91 U	160	75 U
Aroclor-1254	--	--		71 U	73 U	74 U	91 J	91 U	77 U	75 U
Aroclor-1260	--	--		66 J	73 U	74 U	73 U	91 U	77 U	75 U
Aroclor-1262	--	--		71 U	73 U	74 U	73 U	91 U	77 U	75 U
Aroclor-1268	--	--		71 U	73 U	74 U	73 U	91 U	77 U	75 U
Aroclor (Total)	100	1000		66 J	**270**	74 U	91 J	91 U	**160**	75 U

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
D - A secondary analysis after dilution due to exceedance
µg/kg - Micrograms per kilogram
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Table 5. Summary of Polychlorinated Biphenyls in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	P-61	P-61	P-61	P-61	P-61	P-62	P-62
			Sample Date:	7/3/2014	7/3/2014	7/3/2014	7/3/2014	7/3/2014	7/3/2014	7/3/2014
			Sample Depth (ft bls):	4 - 8	8 - 12	12 - 16	16 - 20	28 - 32	4 - 8	8 - 12
Aroclor-1016	--	--		71 U	73 U	75 U	73 U	75 U	71 U	73 U
Aroclor-1221	--	--		71 U	73 U	75 U	73 U	75 U	71 U	73 U
Aroclor-1232	--	--		71 U	73 U	75 U	73 U	75 U	71 U	73 U
Aroclor-1242	--	--		71 U	73 U	75 U	73 U	75 U	71 U	73 U
Aroclor-1248	--	--		71 U	73 U	75 U	73 U	100	71 U	73 U
Aroclor-1254	--	--		71 U	73 U	75 U	73 U	75 U	71 U	73 U
Aroclor-1260	--	--		69 J	49 J	75 U	73 U	75 U	59 J	73 U
Aroclor-1262	--	--		71 U	73 U	75 U	73 U	75 U	71 U	73 U
Aroclor-1268	--	--		71 U	73 U	75 U	73 U	75 U	71 U	73 U
Aroclor (Total)	100	1000		69 J	49 J	75 U	73 U	100	59 J	73 U

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
D - A secondary analysis after dilution due to exceedance
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
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Table 5. Summary of Polychlorinated Biphenyls in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	P-62	P-62	P-62	P-70	P-70	P-70	P-70
			Sample Date:	7/3/2014	7/3/2014	7/3/2014	7/3/2014	7/3/2014	7/3/2014	7/3/2014
			Sample Depth (ft bls):	12 - 16	16 - 20	28 - 32	4 - 8	8 - 12	12 - 16	16 - 20
Aroclor-1016	--	--		73 U	74 U	86 U	71 U	69 U	70 U	71 U
Aroclor-1221	--	--		73 U	74 U	86 U	71 U	69 U	70 U	71 U
Aroclor-1232	--	--		73 U	74 U	86 U	71 U	69 U	70 U	71 U
Aroclor-1242	--	--		73 U	74 U	86 U	71 U	69 U	70 U	71 U
Aroclor-1248	--	--		73 U	74 U	86 U	71 U	69 U	70 U	71 U
Aroclor-1254	--	--		73 U	74 U	86 U	71 U	69 U	70 U	71 U
Aroclor-1260	--	--		93	74 U	86 U	71 U	69 U	70 U	71 U
Aroclor-1262	--	--		73 U	74 U	86 U	71 U	69 U	70 U	71 U
Aroclor-1268	--	--		73 U	74 U	86 U	71 U	69 U	70 U	71 U
Aroclor (Total)	100	1000		93	74 U	86 U	71 U	69 U	70 U	71 U

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
D - A secondary analysis after dilution due to exceedance
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
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Table 5. Summary of Polychlorinated Biphenyls in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	P-70	P-71	P-71	P-71	P-71	P-71	P-72
			Sample Date:	7/3/2014	7/7/2014	7/7/2014	7/7/2014	7/7/2014	7/7/2014	7/7/2014
			Sample Depth (ft bls):	28 - 32	4 - 8	8 - 12	12 - 16	16 - 20	28 - 32	4 - 8
Aroclor-1016	--	--		77 U	77 U	74 U	75 U	150 U	75 U	77 U
Aroclor-1221	--	--		77 U	77 U	74 U	75 U	150 U	75 U	77 U
Aroclor-1232	--	--		77 U	77 U	74 U	75 U	150 U	75 U	77 U
Aroclor-1242	--	--		77 U	77 U	74 U	75 U	150 U	75 U	77 U
Aroclor-1248	--	--		77 U	77 U	74 U	75 U	1400	75 U	77 U
Aroclor-1254	--	--		77 U	77 U	74 U	75 U	150 U	75 U	77 U
Aroclor-1260	--	--		77 U	200	960	1000	150 U	75 U	120
Aroclor-1262	--	--		77 U	77 U	74 U	75 U	150 U	75 U	77 U
Aroclor-1268	--	--		77 U	77 U	74 U	75 U	150 U	75 U	77 U
Aroclor (Total)	100	1000		77 U	**200**	**960**	**1000**	**1400**	75 U	**120**

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
D - A secondary analysis after dilution due to exceedance
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
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of the calibration range in the original sample
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Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	P-72	P-72	P-72	P-72	P-73	P-73	P-73
			Sample Date:	7/7/2014	7/7/2014	7/7/2014	7/7/2014	7/7/2014	7/7/2014	7/7/2014
			Sample Depth (ft bls):	8 - 12	12 - 16	16 - 20	28 - 32	4 - 8	8 - 12	12 - 16
Aroclor-1016	--	--		73 U	80 U	81 U	88 U	73 U	75 U	78 U
Aroclor-1221	--	--		73 U	80 U	81 U	88 U	73 U	75 U	78 U
Aroclor-1232	--	--		73 U	80 U	81 U	88 U	73 U	75 U	78 U
Aroclor-1242	--	--		73 U	80 U	81 U	88 U	73 U	75 U	78 U
Aroclor-1248	--	--		73 U	80 U	81 U	1300	73 U	75 U	560
Aroclor-1254	--	--		73 U	80 U	81 U	88 U	73 U	75 U	78 U
Aroclor-1260	--	--		310	210 J	230	88 U	950	360	78 U
Aroclor-1262	--	--		73 U	80 U	81 U	88 U	73 U	75 U	78 U
Aroclor-1268	--	--		73 U	80 U	81 U	88 U	73 U	75 U	78 U
Aroclor (Total)	100	1000		**310**	**210 J**	**230**	**1300**	**950**	**360**	**560**

J - Estimated value
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ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Soil Cleanup Objective available
of the calibration range in the original sample
Bold data indicates that parameter was detected above the NYSDEC
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Part 375 Commercial Soil Cleanup Objectives
Soil samples were collected by Environmental Assessment and Remediations in 2014

Table 5. Summary of Polychlorinated Biphenyls in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	P-73	P-73	P-74	P-74	P-74	P-74	P-74
			Sample Date:	7/7/2014	7/7/2014	7/7/2014	7/7/2014	7/7/2014	7/7/2014	7/7/2014
			Sample Depth (ft bls):	16 - 20	28 - 32	4 - 8	8 - 12	12 - 16	16 - 20	28 - 32
Aroclor-1016	--	--		78 U	97 U	70 U	75 U	70 U	73 U	100 U
Aroclor-1221	--	--		78 U	97 U	70 U	75 U	70 U	73 U	100 U
Aroclor-1232	--	--		78 U	97 U	70 U	75 U	70 U	73 U	100 U
Aroclor-1242	--	--		78 U	97 U	70 U	75 U	70 U	73 U	100 U
Aroclor-1248	--	--		78 U	880	70 U	130	70 U	340	400 J
Aroclor-1254	--	--		78 U	97 U	70 U	75 U	70 U	73 U	100 U
Aroclor-1260	--	--		190	97 U	150	130	87	73 U	100 U
Aroclor-1262	--	--		78 U	97 U	70 U	75 U	70 U	73 U	100 U
Aroclor-1268	--	--		78 U	97 U	70 U	75 U	70 U	73 U	100 U
Aroclor (Total)	100	1000		**190**	**880**	**150**	**260**	87	**340**	**400 J**

J - Estimated value
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Table 5. Summary of Polychlorinated Biphenyls in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	P-75	P-75	P-75	P-75	P-75	P-80	P-80
			Sample Date:	7/7/2014	7/7/2014	7/7/2014	7/7/2014	7/7/2014	7/8/2014	7/8/2014
			Sample Depth (ft bls):	8 - 12	12 - 16	16 - 20	28 - 32	4 - 8	4 - 8	8 - 12
Aroclor-1016	--	--		74 U	73 U	75 U	73 U	73 U	72 U	70 U
Aroclor-1221	--	--		74 U	73 U	75 U	73 U	73 U	72 U	70 U
Aroclor-1232	--	--		74 U	73 U	75 U	73 U	73 U	72 U	70 U
Aroclor-1242	--	--		74 U	73 U	75 U	73 U	73 U	72 U	70 U
Aroclor-1248	--	--		74 U	73 U	75 U	73 U	73 U	72 U	70 U
Aroclor-1254	--	--		74 U	73 U	75 U	73 U	73 U	72 U	740
Aroclor-1260	--	--		41 J	67 J	48 J	73 U	66 J	950	70 U
Aroclor-1262	--	--		74 U	73 U	75 U	73 U	73 U	72 U	70 U
Aroclor-1268	--	--		74 U	73 U	75 U	73 U	73 U	72 U	70 U
Aroclor (Total)	100	1000		41 J	67 J	48 J	73 U	66 J	**950**	**740**

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
D - A secondary analysis after dilution due to exceedance
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
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Table 5. Summary of Polychlorinated Biphenyls in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	P-80	P-80	P-81	P-81	P-81	P-81	P-81
			Sample Date:	7/8/2014	7/8/2014	7/8/2014	7/8/2014	7/8/2014	7/8/2014	7/8/2014
			Sample Depth (ft bls):	16 - 20	28 - 32	4 - 8	8 - 12	12 - 16	16 - 20	28 - 32
Aroclor-1016	--	--		72 U	74 U	68 U	71 U	77 U	79 U	80 U
Aroclor-1221	--	--		72 U	74 U	68 U	71 U	77 U	79 U	80 U
Aroclor-1232	--	--		72 U	74 U	68 U	71 U	77 U	79 U	80 U
Aroclor-1242	--	--		72 U	74 U	68 U	71 U	77 U	79 U	80 U
Aroclor-1248	--	--		72 U	74 U	68 U	71 U	77 U	850	80 U
Aroclor-1254	--	--		230	74 U	68 U	71 U	77 U	79 U	80 U
Aroclor-1260	--	--		72 U	74 U	480	380	1000	130	80 U
Aroclor-1262	--	--		72 U	74 U	68 U	71 U	77 U	79 U	80 U
Aroclor-1268	--	--		72 U	74 U	68 U	71 U	77 U	79 U	80 U
Aroclor (Total)	100	1000		**230**	74 U	**480**	**380**	**1000**	**980**	80 U

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D - A secondary analysis after dilution due to exceedance
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
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Table 5. Summary of Polychlorinated Biphenyls in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	P-82	P-82	P-82	P-82	P-82	P-90	P-90
			Sample Date:	7/8/2014	7/8/2014	7/8/2014	7/8/2014	7/8/2014	7/8/2014	7/8/2014
			Sample Depth (ft bls):	4 - 8	8 - 12	12 - 16	16 - 20	28 - 32	4 - 8	8 - 12
Aroclor-1016	--	--		73 U	70 U	72 U	74 U	95 U	71 U	71 U
Aroclor-1221	--	--		73 U	70 U	72 U	74 U	95 U	71 U	71 U
Aroclor-1232	--	--		73 U	70 U	72 U	74 U	95 U	71 U	71 U
Aroclor-1242	--	--		73 U	70 U	72 U	74 U	95 U	71 U	71 U
Aroclor-1248	--	--		73 U	70 U	72 U	74 U	570	71 U	71 U
Aroclor-1254	--	--		73 U	70 U	72 U	74 U	95 U	71 U	71 U
Aroclor-1260	--	--		73 U	70 U	72 U	74 U	95 U	71 U	71 U
Aroclor-1262	--	--		73 U	70 U	72 U	74 U	95 U	71 U	71 U
Aroclor-1268	--	--		73 U	70 U	72 U	74 U	95 U	71 U	71 U
Aroclor (Total)	100	1000		73 U	70 U	72 U	74 U	**570**	71 U	71 U

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D - A secondary analysis after dilution due to exceedance
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
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Table 5. Summary of Polychlorinated Biphenyls in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	P-90	P-90	P-90	P-91	P-91	P-91	P-91
			Sample Date:	7/8/2014	7/9/2014	7/9/2014	7/9/2014	7/9/2014	7/9/2014	7/9/2014
			Sample Depth (ft bls):	12 - 16	16 - 20	28 - 32	4 - 8	8 - 12	12 - 16	16 - 20
Aroclor-1016	--	--		69 U	73 U	76 U	72 U	72 U	71 U	76 U
Aroclor-1221	--	--		69 U	73 U	76 U	72 U	72 U	71 U	76 U
Aroclor-1232	--	--		69 U	73 U	76 U	72 U	72 U	71 U	76 U
Aroclor-1242	--	--		69 U	73 U	76 U	72 U	72 U	71 U	76 U
Aroclor-1248	--	--		69 U	73 U	76 U	72 U	72 U	71 U	76 U
Aroclor-1254	--	--		69 U	73 U	76 U	72 U	770	71 U	76 U
Aroclor-1260	--	--		69 U	73 U	76 U	57 J	72 U	71 U	76 U
Aroclor-1262	--	--		69 U	73 U	76 U	72 U	72 U	71 U	76 U
Aroclor-1268	--	--		69 U	73 U	76 U	72 U	72 U	71 U	76 U
Aroclor (Total)	100	1000		69 U	73 U	76 U	57 J	**770**	71 U	76 U

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
D - A secondary analysis after dilution due to exceedance
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
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Table 5. Summary of Polychlorinated Biphenyls in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	P-91	P-92	P-92	P-92	P-92	P-92	P-93
			Sample Date:	7/9/2014	7/9/2014	7/9/2014	7/9/2014	7/9/2014	7/9/2014	7/9/2014
			Sample Depth (ft bls):	28 - 32	16 - 20	28 - 32	4 - 8	8 - 12	12 - 16	4 - 8
Aroclor-1016	--	--		76 U	570 U	84 U	71 U	74 U	73 U	69 U
Aroclor-1221	--	--		76 U	570 U	84 U	71 U	74 U	73 U	69 U
Aroclor-1232	--	--		76 U	570 U	84 U	71 U	74 U	73 U	69 U
Aroclor-1242	--	--		76 U	570 U	84 U	71 U	74 U	73 U	69 U
Aroclor-1248	--	--		76 U	5400	84 U	71 U	74 U	73 U	69 U
Aroclor-1254	--	--		76 U	570 U	84 U	71 U	790	73 U	69 U
Aroclor-1260	--	--		76 U	570 U	84 U	100	74 U	110	250
Aroclor-1262	--	--		76 U	570 U	84 U	71 U	74 U	73 U	69 U
Aroclor-1268	--	--		76 U	570 U	84 U	71 U	74 U	73 U	69 U
Aroclor (Total)	100	1000		76 U	**5400**	84 U	100	**790**	**110**	**250**

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
D - A secondary analysis after dilution due to exceedance
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
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Table 5. Summary of Polychlorinated Biphenyls in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	P-93	P-93	P-93	P-93
			Sample Date:	7/9/2014	7/9/2014	7/9/2014	7/9/2014
			Sample Depth (ft bls):	8 - 12	12 - 16	16 - 20	28 - 32
Aroclor-1016	--	--		71 U	72 U	74 U	74 U
Aroclor-1221	--	--		71 U	72 U	74 U	74 U
Aroclor-1232	--	--		71 U	72 U	74 U	74 U
Aroclor-1242	--	--		71 U	72 U	74 U	74 U
Aroclor-1248	--	--		71 U	72 U	74 U	74 U
Aroclor-1254	--	--		88	120	74 U	74 U
Aroclor-1260	--	--		71 U	72 U	74 U	74 U
Aroclor-1262	--	--		71 U	72 U	74 U	74 U
Aroclor-1268	--	--		71 U	72 U	74 U	74 U
Aroclor (Total)	100	1000		88	**120**	74 U	74 U

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
D - A secondary analysis after dilution due to exceedance
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
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Table 6. Summary of Pesticides in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	Sample Designation:	BUD-01	BUD-01	BUD-02	BUD-02	BUD-03	BUD-03	CR-10
			Sample Date:	6/26/2014	6/26/2014	6/26/2014	6/26/2014	6/26/2014	6/26/2014	7/15/2014
			Sample Depth (ft bls):	14 - 18	18 - 22	14 - 18	18 - 22	22 - 26	14 - 18	0 - 1
4,4'-DDD	3.3	92000		7.2 U	6.9 U	7.0 U	7.0 U	7.1 U	6.9 U	1.7 U
4,4'-DDE	3.3	62000		7.2 U	6.9 U	7.0 U	7.0 U	7.1 U	6.9 U	1.7 U
4,4'-DDT	3.3	47000		7.2 U	6.9 U	7.0 U	7.0 U	7.1 U	6.9 U	1.7 U
Aldrin	5	680		7.2 U	6.9 U	7.0 U	7.0 U	7.1 U	6.9 U	1.7 U
alpha-BHC	20	3400		7.2 U	6.9 U	7.0 U	7.0 U	7.1 U	6.9 U	1.7 U
beta-BHC	36	3000		7.2 U	6.9 U	7.0 U	7.0 U	7.1 U	6.9 U	3.3 U
Chlordane	--	--		72 U	69 U	70 U	70 U	71 U	69 U	67 U
delta-BHC	40	500000		7.2 U	6.9 U	7.0 U	7.0 U	7.1 U	6.9 U	1.7 U
Dieldrin	5	1400		7.2 U	6.9 U	7.0 U	7.0 U	7.1 U	6.9 U	1.7 U
Endosulfan I	2400	200000		7.2 U	6.9 U	7.0 U	7.0 U	7.1 U	6.9 U	1.7 U
Endosulfan II	2400	200000		7.2 U	6.9 U	7.0 U	7.0 U	7.1 U	6.9 U	1.7 U
Endosulfan sulfate	2400	200000		7.2 U	6.9 U	7.0 U	7.0 U	7.1 U	6.9 U	1.7 U
Endrin aldehyde	--	--		7.2 U	6.9 U	7.0 U	7.0 U	7.1 U	6.9 U	1.7 U
Endrin ketone	--	--		7.2 U	6.9 U	7.0 U	7.0 U	7.1 U	6.9 U	1.7 U
Endrin	14	89000		7.2 U	6.9 U	7.0 U	7.0 U	7.1 U	6.9 U	1.7 U
gamma-BHC (Lindane)	100	9200		7.2 U	6.9 U	7.0 U	7.0 U	7.1 U	6.9 U	1.7 U
Heptachlor epoxide	--	--		7.2 U	6.9 U	7.0 U	7.0 U	7.1 U	6.9 U	1.7 U
Heptachlor	42	15000		7.2 U	6.9 U	7.0 U	7.0 U	7.1 U	6.9 U	1.7 U
Methoxychlor	--	--		7.2 U	6.9 U	7.0 U	7.0 U	7.1 U	6.9 U	3.3 U
Toxaphene	--	--		72 U	69 U	70 U	70 U	71 U	69 U	67 U

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
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Table 6. Summary of Pesticides in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	Sample Designation:	CR-11	CR-5	G-01	G-01_SURF	G-02	G-02_SURF	G-03
			Sample Date:	6/18/2014	7/15/2014	7/16/2014	7/16/2014	7/16/2014	7/16/2014	7/16/2014
			Sample Depth (ft bls):	24 - 29	0 - 1	0 - 1	-	0 - 1	-	0 - 1
4,4'-DDD	3.3	92000		7.7 U	1.8 U	7.5 U	7.6 U	7.4 U	7.5 U	7.2 U
4,4'-DDE	3.3	62000		7.7 U	1.8 U	7.5 U	7.6 U	7.4 U	7.5 U	7.2 U
4,4'-DDT	3.3	47000		7.7 U	1.8 U	7.5 U	7.6 U	7.4 U	7.5 U	7.2 U
Aldrin	5	680		7.7 U	1.8 U	7.5 U	7.6 U	7.4 U	7.5 U	7.2 U
alpha-BHC	20	3400		7.7 U	1.8 UJ	7.5 U	7.6 U	7.4 U	7.5 U	7.2 U
beta-BHC	36	3000		7.7 U	3.4 U	7.5 U	7.6 U	7.4 U	7.5 U	7.2 U
Chlordane	--	--		77 U	69 U	75 U	76 U	74 U	75 U	72 U
delta-BHC	40	500000		7.7 U	1.8 U	7.5 U	7.6 U	7.4 U	7.5 U	7.2 U
Dieldrin	5	1400		7.7 U	1.8 U	7.5 U	7.6 U	7.4 U	7.5 U	7.2 U
Endosulfan I	2400	200000		7.7 U	1.8 U	7.5 U	7.6 U	7.4 U	7.5 U	7.2 U
Endosulfan II	2400	200000		7.7 U	1.8 U	7.5 U	7.6 U	7.4 U	7.5 U	7.2 U
Endosulfan sulfate	2400	200000		7.7 U	1.8 U	7.5 U	7.6 U	7.4 U	7.5 U	7.2 U
Endrin aldehyde	--	--		7.7 U	1.8 U	7.5 U	7.6 U	7.4 U	7.5 U	7.2 U
Endrin ketone	--	--		7.7 U	1.8 U	7.5 U	7.6 U	7.4 U	7.5 U	7.2 U
Endrin	14	89000		7.7 U	1.8 U	7.5 U	7.6 U	7.4 U	7.5 U	7.2 U
gamma-BHC (Lindane)	100	9200		7.7 U	1.8 UJ	7.5 U	7.6 U	7.4 U	7.5 U	7.2 U
Heptachlor epoxide	--	--		7.7 U	1.8 U	7.5 U	7.6 U	7.4 U	7.5 U	7.2 U
Heptachlor	42	15000		7.7 U	1.8 U	7.5 U	7.6 U	7.4 U	7.5 U	7.2 U
Methoxychlor	--	--		7.7 U	3.4 U	7.5 U	7.6 U	7.4 U	7.5 U	7.2 U
Toxaphene	--	--		77 U	69 U	75 U	76 U	74 U	75 U	72 U

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
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Table 6. Summary of Pesticides in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	G-03_SURF	G-04	G-04_SURF	G-05	G-05_SURF	G-06
			Sample Date:	7/16/2014	7/16/2014	7/16/2014	7/16/2014	7/16/2014	7/16/2014
			Sample Depth (ft bls):	-	0 - 1	-	0 - 1	-	0 - 1
4,4'-DDD	3.3	92000		7.2 U	7.4 U	7.8 U	7.3 U	7.8 U	7.2 U
4,4'-DDE	3.3	62000		7.2 U	7.4 U	7.8 U	7.3 U	7.8 U	7.2 U
4,4'-DDT	3.3	47000		7.2 U	7.4 U	7.8 U	7.3 U	7.8 U	7.2 U
Aldrin	5	680		7.2 U	7.4 U	7.8 U	7.3 U	7.8 U	7.2 U
alpha-BHC	20	3400		7.2 U	7.4 U	7.8 U	7.3 U	7.8 U	7.2 U
beta-BHC	36	3000		7.2 U	7.4 U	7.8 U	7.3 U	7.8 U	7.2 U
Chlordane	--	--		72 U	74 U	78 U	73 U	78 U	72 U
delta-BHC	40	500000		7.2 U	7.4 U	7.8 U	7.3 U	7.8 U	7.2 U
Dieldrin	5	1400		7.2 U	7.4 U	7.8 U	7.3 U	7.8 U	7.2 U
Endosulfan I	2400	200000		7.2 U	7.4 U	7.8 U	7.3 U	7.8 U	7.2 U
Endosulfan II	2400	200000		7.2 U	7.4 U	7.8 U	7.3 U	7.8 U	7.2 U
Endosulfan sulfate	2400	200000		7.2 U	7.4 U	7.8 U	7.3 U	7.8 U	7.2 U
Endrin aldehyde	--	--		7.2 U	7.4 U	7.8 U	7.3 U	7.8 U	7.2 U
Endrin ketone	--	--		7.2 U	7.4 U	7.8 U	7.3 U	7.8 U	7.2 U
Endrin	14	89000		7.2 U	7.4 U	7.8 U	7.3 U	7.8 U	7.2 U
gamma-BHC (Lindane)	100	9200		7.2 U	7.4 U	7.8 U	7.3 U	7.8 U	7.2 U
Heptachlor epoxide	--	--		7.2 U	7.4 U	7.8 U	7.3 U	7.8 U	7.2 U
Heptachlor	42	15000		7.2 U	7.4 U	7.8 U	7.3 U	7.8 U	7.2 U
Methoxychlor	--	--		7.2 U	7.4 U	7.8 U	7.3 U	7.8 U	7.2 U
Toxaphene	--	--		72 U	74 U	78 U	73 U	78 U	72 U

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
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Bold data indicates that parameter was detected above the NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives
Shaded data indicates that parameter was detected above the NYSDEC Part 375 Commercial Soil Cleanup Objectives
Soil samples were collected by Environmental Assessment and Remediations in 2014

Table 6. Summary of Pesticides in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	G-06_SURF	G-07	G-07_SURF	G-08	G-08_SURF	G-09
			Sample Date:	7/16/2014	7/17/2014	7/17/2014	7/17/2014	7/17/2014	7/17/2014
			Sample Depth (ft bls):	-	0 - 1	-	0 - 1	-	0 - 1
4,4'-DDD	3.3	92000		7.3 U	7.5 U	7.4 U	7.4 U	7.5 U	7.3 U
4,4'-DDE	3.3	62000		7.3 U	7.5 U	7.4 U	7.4 U	7.5 U	7.3 U
4,4'-DDT	3.3	47000		7.3 U	7.5 U	7.4 U	7.4 U	7.5 U	7.3 U
Aldrin	5	680		7.3 U	7.5 U	7.4 U	7.4 U	7.5 U	7.3 U
alpha-BHC	20	3400		7.3 U	7.5 U	7.4 U	7.4 U	7.5 U	7.3 U
beta-BHC	36	3000		7.3 U	7.5 U	7.4 U	7.4 U	7.5 U	7.3 U
Chlordane	--	--		73 U	75 U	74 U	74 U	75 U	73 U
delta-BHC	40	500000		7.3 U	7.5 U	7.4 U	7.4 U	7.5 U	7.3 U
Dieldrin	5	1400		7.3 U	7.5 U	7.4 U	7.4 U	7.5 U	7.3 U
Endosulfan I	2400	200000		7.3 U	7.5 U	7.4 U	7.4 U	7.5 U	7.3 U
Endosulfan II	2400	200000		7.3 U	7.5 U	7.4 U	7.4 U	7.5 U	7.3 U
Endosulfan sulfate	2400	200000		7.3 U	7.5 U	7.4 U	7.4 U	7.5 U	7.3 U
Endrin aldehyde	--	--		7.3 U	7.5 U	7.4 U	7.4 U	7.5 U	7.3 U
Endrin ketone	--	--		7.3 U	7.5 U	7.4 U	7.4 U	7.5 U	7.3 U
Endrin	14	89000		7.3 U	7.5 U	7.4 U	7.4 U	7.5 U	7.3 U
gamma-BHC (Lindane)	100	9200		7.3 U	7.5 U	7.4 U	7.4 U	7.5 U	7.3 U
Heptachlor epoxide	--	--		7.3 U	7.5 U	7.4 U	7.4 U	7.5 U	7.3 U
Heptachlor	42	15000		7.3 U	7.5 U	7.4 U	7.4 U	7.5 U	7.3 U
Methoxychlor	--	--		7.3 U	7.5 U	7.4 U	7.4 U	7.5 U	7.3 U
Toxaphene	--	--		73 U	75 U	74 U	74 U	75 U	73 U

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Soil Cleanup Objective available
Bold data indicates that parameter was detected above the NYSDEC
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Shaded data indicates that parameter was detected above the NYSDEC
Part 375 Commercial Soil Cleanup Objectives
Soil samples were collected by Environmental Assessment and Remediations in 2014

Table 6. Summary of Pesticides in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	G-09_SURF	G-10	G-10_SURF	G-11	G-11_SURF	G-12	G-12
			Sample Date:	7/17/2014	7/17/2014	7/17/2014	7/17/2014	7/17/2014	6/17/2014	6/17/2014
			Sample Depth (ft bls):	-	0 - 1	-	0 - 1	-	28 - 32	0 - 1
4,4'-DDD	3.3	92000		7.5 U	7.2 U	7.2 U	7.4 U	7.7 U	8.0 U	7.0 U
4,4'-DDE	3.3	62000		7.5 U	7.2 U	7.2 U	7.4 U	7.7 U	8.0 U	7.0 U
4,4'-DDT	3.3	47000		7.5 U	7.2 U	7.2 U	7.4 U	7.7 U	8.0 U	7.0 U
Aldrin	5	680		7.5 U	7.2 U	7.2 U	7.4 U	7.7 U	8.0 U	7.0 U
alpha-BHC	20	3400		7.5 U	7.2 U	7.2 U	7.4 U	7.7 U	8.0 U	7.0 U
beta-BHC	36	3000		7.5 U	7.2 U	7.2 U	7.4 U	7.7 U	8.0 U	7.0 U
Chlordane	--	--		75 U	72 U	72 U	74 U	77 U	80 U	70 U
delta-BHC	40	500000		7.5 U	7.2 U	7.2 U	7.4 U	7.7 U	8.0 U	7.0 U
Dieldrin	5	1400		7.5 U	7.2 U	7.2 U	7.4 U	7.7 U	8.0 U	7.0 U
Endosulfan I	2400	200000		7.5 U	7.2 U	7.2 U	7.4 U	7.7 U	8.0 U	7.0 U
Endosulfan II	2400	200000		7.5 U	7.2 U	7.2 U	7.4 U	7.7 U	8.0 U	7.0 U
Endosulfan sulfate	2400	200000		7.5 U	7.2 U	7.2 U	7.4 U	7.7 U	8.0 U	7.0 U
Endrin aldehyde	--	--		7.5 U	7.2 U	7.2 U	7.4 U	7.7 U	8.0 U	7.0 U
Endrin ketone	--	--		7.5 U	7.2 U	7.2 U	7.4 U	7.7 U	8.0 U	7.0 U
Endrin	14	89000		7.5 U	7.2 U	7.2 U	7.4 U	7.7 U	8.0 U	7.0 U
gamma-BHC (Lindane)	100	9200		7.5 U	7.2 U	7.2 U	7.4 U	7.7 U	8.0 U	7.0 U
Heptachlor epoxide	--	--		7.5 U	7.2 U	7.2 U	7.4 U	7.7 U	8.0 U	7.0 U
Heptachlor	42	15000		7.5 U	7.2 U	7.2 U	7.4 U	7.7 U	8.0 U	7.0 U
Methoxychlor	--	--		7.5 U	7.2 U	7.2 U	7.4 U	7.7 U	8.0 U	7.0 U
Toxaphene	--	--		75 U	72 U	72 U	74 U	77 U	80 U	70 U

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Table 6. Summary of Pesticides in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	G-12_SURF	G-13	G-13_SURF	G-14	G-14_SURF	G-15
			Sample Date:	6/17/2014	7/16/2014	7/16/2014	7/16/2014	7/16/2014	7/17/2014
			Sample Depth (ft bls):	-	0 - 1	-	0 - 1	-	0 - 1
4,4'-DDD	3.3	92000		7.0 U	8.1 U	10 U	7.4 U	7.8 U	7.2 U
4,4'-DDE	3.3	62000		7.0 U	8.1 U	10 U	7.4 U	7.8 U	7.2 U
4,4'-DDT	3.3	47000		7.0 U	8.1 U	10 U	7.4 U	7.8 U	7.2 U
Aldrin	5	680		7.0 U	8.1 U	10 U	7.4 U	7.8 U	7.2 U
alpha-BHC	20	3400		7.0 U	8.1 U	10 U	7.4 U	7.8 U	7.2 U
beta-BHC	36	3000		7.0 U	8.1 U	10 U	7.4 U	7.8 U	7.2 U
Chlordane	--	--		70 U	81 U	100 U	74 U	78 U	72 U
delta-BHC	40	500000		7.0 U	8.1 U	10 U	7.4 U	7.8 U	7.2 U
Dieldrin	5	1400		7.0 U	8.1 U	10 U	7.4 U	7.8 U	7.2 U
Endosulfan I	2400	200000		7.0 U	8.1 U	10 U	7.4 U	7.8 U	7.2 U
Endosulfan II	2400	200000		7.0 U	8.1 U	10 U	7.4 U	7.8 U	7.2 U
Endosulfan sulfate	2400	200000		7.0 U	8.1 U	10 U	7.4 U	7.8 U	7.2 U
Endrin aldehyde	--	--		7.0 U	8.1 U	10 U	7.4 U	7.8 U	7.2 U
Endrin ketone	--	--		7.0 U	8.1 U	10 U	7.4 U	7.8 U	7.2 U
Endrin	14	89000		7.0 U	8.1 U	10 U	7.4 U	7.8 U	7.2 U
gamma-BHC (Lindane)	100	9200		7.0 U	8.1 U	10 U	7.4 U	7.8 U	7.2 U
Heptachlor epoxide	--	--		7.0 U	8.1 U	10 U	7.4 U	7.8 U	7.2 U
Heptachlor	42	15000		7.0 U	8.1 U	10 U	7.4 U	7.8 U	7.2 U
Methoxychlor	--	--		7.0 U	8.1 U	10 U	7.4 U	7.8 U	7.2 U
Toxaphene	--	--		70 U	81 U	100 U	74 U	78 U	72 U

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Soil samples were collected by Environmental Assessment and Remediations in 2014

Table 6. Summary of Pesticides in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	G-15_SURF	G-16	G-16_SURF	G-17	G-17	G-17_SURF	G-18
			Sample Date:	7/17/2014	7/17/2014	7/17/2014	6/16/2014	6/16/2014	6/16/2014	7/16/2014
			Sample Depth (ft bls):	-	0 - 1	-	0 - 1	8 - 12	-	0 - 1
4,4'-DDD	3.3	92000		7.3 U	6.9 U	7.0 U	7.4 U	7.9 U	7.5 U	7.2 U
4,4'-DDE	3.3	62000		7.3 U	6.9 U	7.0 U	7.4 U	7.9 U	7.5 U	7.2 U
4,4'-DDT	3.3	47000		7.3 U	6.9 U	7.0 U	7.4 U	7.9 U	7.5 U	7.2 U
Aldrin	5	680		7.3 U	6.9 U	7.0 U	7.4 U	7.9 U	7.5 U	7.2 U
alpha-BHC	20	3400		7.3 U	6.9 U	7.0 U	7.4 U	7.9 U	7.5 U	7.2 U
beta-BHC	36	3000		7.3 U	6.9 U	7.0 U	7.4 U	7.9 U	7.5 U	7.2 U
Chlordane	--	--		73 U	69 U	70 U	74 U	79 U	75 U	72 U
delta-BHC	40	500000		7.3 U	6.9 U	7.0 U	7.4 U	7.9 U	7.5 U	7.2 U
Dieldrin	5	1400		7.3 U	6.9 U	7.0 U	7.4 U	7.9 U	7.5 U	7.2 U
Endosulfan I	2400	200000		7.3 U	6.9 U	7.0 U	7.4 U	7.9 U	7.5 U	7.2 U
Endosulfan II	2400	200000		7.3 U	6.9 U	7.0 U	7.4 U	7.9 U	7.5 U	7.2 U
Endosulfan sulfate	2400	200000		7.3 U	6.9 U	7.0 U	7.4 U	7.9 U	7.5 U	7.2 U
Endrin aldehyde	--	--		7.3 U	6.9 U	7.0 U	7.4 U	7.9 U	7.5 U	7.2 U
Endrin ketone	--	--		7.3 U	6.9 U	7.0 U	7.4 U	7.9 U	7.5 U	7.2 U
Endrin	14	89000		7.3 U	6.9 U	7.0 U	7.4 U	7.9 U	7.5 U	7.2 U
gamma-BHC (Lindane)	100	9200		7.3 U	6.9 U	7.0 U	7.4 U	7.9 U	7.5 U	7.2 U
Heptachlor epoxide	--	--		7.3 U	6.9 U	7.0 U	7.4 U	7.9 U	7.5 U	7.2 U
Heptachlor	42	15000		7.3 U	6.9 U	7.0 U	7.4 U	7.9 U	7.5 U	7.2 U
Methoxychlor	--	--		7.3 U	6.9 U	7.0 U	7.4 U	7.9 U	7.5 U	7.2 U
Toxaphene	--	--		73 U	69 U	70 U	74 U	79 U	75 U	72 U

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µg/kg - Micrograms per kilogram
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Table 6. Summary of Pesticides in Soil
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial Use	**Sample Designation:**	G-18_SURF	P-06	P-08	P-27
			Sample Date:	7/16/2014	6/27/2014	6/24/2014	6/20/2014
			Sample Depth (ft bls):	-	28 - 32	28 - 32	28 - 32
4,4'-DDD	3.3	92000		8.3 U	7.2 U	7.5 U	7.9 U
4,4'-DDE	3.3	62000		8.3 U	7.2 U	7.5 U	7.9 U
4,4'-DDT	3.3	47000		8.3 U	7.2 U	7.5 U	7.9 U
Aldrin	5	680		8.3 U	7.2 U	7.5 U	7.9 U
alpha-BHC	20	3400		8.3 U	7.2 U	7.5 U	7.9 U
beta-BHC	36	3000		8.3 U	7.2 U	7.5 U	7.9 U
Chlordane	--	--		83 U	72 U	75 U	79 U
delta-BHC	40	500000		8.3 U	7.2 U	7.5 U	7.9 U
Dieldrin	5	1400		8.3 U	7.2 U	7.5 U	7.9 U
Endosulfan I	2400	200000		8.3 U	7.2 U	7.5 U	7.9 U
Endosulfan II	2400	200000		8.3 U	7.2 U	7.5 U	7.9 U
Endosulfan sulfate	2400	200000		8.3 U	7.2 U	7.5 U	7.9 U
Endrin aldehyde	--	--		8.3 U	7.2 U	7.5 U	7.9 U
Endrin ketone	--	--		8.3 U	7.2 U	7.5 U	7.9 U
Endrin	14	89000		8.3 U	7.2 U	7.5 U	7.9 U
gamma-BHC (Lindane)	100	9200		8.3 U	7.2 U	7.5 U	7.9 U
Heptachlor epoxide	--	--		8.3 U	7.2 U	7.5 U	7.9 U
Heptachlor	42	15000		8.3 U	7.2 U	7.5 U	7.9 U
Methoxychlor	--	--		8.3 U	7.2 U	7.5 U	7.9 U
Toxaphene	--	--		83 U	72 U	75 U	79 U

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U - Indicates that the compound was analyzed for but not detected
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
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Table 7. Summary of Volatile Organic Compounds in Groundwater
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** / **Sample Date:**	BAW-06C 7/28/2014	MW-1 7/28/2014	MW-1A 7/28/2014	MW-2 7/28/2014	MW-3 7/28/2014	MW-4 7/28/2014	FIELD BLANK 7/28/2014
1,1,1-Trichloroethane	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	1		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,3-Trichlorobenzene	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromoethane	--		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	3		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	0.6		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	1		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	3		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	3		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dioxane	--		50 U	50 U	50 U	50 U	50 U	50 U	50 U
2-Butanone (MEK)	50		5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
2-Hexanone	50		5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
4-Methyl-2-pentanone (MIBK)	--		5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Acetone	50		5.0 U	5.0 UJ	5.0 UJ	5.0 U	5.0 U	5.0 U	5.0 UJ
Benzene	1		1.0 U	1.0 U	1.0 U	0.1 J	1.0 U	0.17 J	1.0 U
Bromochloromethane	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromodichloromethane	50		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	50		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon disulfide	60		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	5		1.0 U	1.0 U	1.0 U	0.32 J	1.0 U	1.0 U	1.0 U
Chloroethane	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform	7		1.0 U	0.17 J	1.0 U	1.0 U	1.0 U	0.16 J	1.0 U
Chloromethane	--		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	5		1.0 U	1.0 U	1	1.0 U	0.62 J	0.53 J	1.0 U
cis-1,3-Dichloropropene	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Cyclohexane	--		1.0 U	1.0 U	1.0 U	0.17 J	1.0 U	1.0 U	1.0 U

Table 7. Summary of Volatile Organic Compounds in Groundwater
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** / **Sample Date:**	BAW-06C 7/28/2014	MW-1 7/28/2014	MW-1A 7/28/2014	MW-2 7/28/2014	MW-3 7/28/2014	MW-4 7/28/2014	FIELD BLANK 7/28/2014
Dibromochloromethane	50		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibromochloropropane	--		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.23 J	1.0 U
Freon 113	--		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Isopropylbenzene	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m+p-Xylene	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methyl acetate	--		5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylcyclohexane	--		1.0 U	1.0 U	1.0 U	0.18 J	1.0 U	1.0 U	1.0 U
Methylene chloride	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
MTBE	10		1.0 U	1.0 U	1.0 U	0.76 J	0.29 J	1.0 U	1.0 U
o-Xylene	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Styrene	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.27 J	1.0 U
Tetrachloroethene	5		0.56 J	0.57 J	0.63 J	1.0 U	**6**	1.1	1.0 U
Toluene	5		1.0 U	0.23 J	1.0 U	0.17 J	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.33 J	1.0 U
trans-1,3-Dichloropropene	--		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	5		0.89 J	0.15 J	0.59 J	1.0 U	2.4	0.34 J	1.0 U
Trichlorofluoromethane	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl chloride	2		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.54 J	1.0 U

NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
- - No NYSDEC AWQSGV available
Bold data indicates that parameter was detected above the NYSDEC AWQSGVs
Groundwater were samples collected by Environmental Assessment and Remediations in 2014

Table 8. Summary of Semivolatile Organic Compounds in Groundwater
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** **Sample Date:**	BAW-06C 7/28/2014	MW-1 7/28/2014	MW-1A 7/28/2014	MW-2 7/28/2014	MW-3 7/28/2014	MW-4 7/28/2014
1,1'-Biphenyl	--		10 U	10 U	10 U	10 U	10 U	10 U
1,2,4,5-Tetrachlorobenzene	--		10 U	10 U	10 U	10 U	10 U	10 U
2,2'-oxybis (1-chloropropane)	5		10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
2,3,4,6-Tetrachlorophenol	--		10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	--		10 U	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol	--		10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol	5		10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	50		10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol	10		30 U	30 U	30 U	30 U	30 U	30 U
2,4-Dinitrotoluene	5		2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
2,6-Dinitrotoluene	5		2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
2-Chloronaphthalene	10		10 U	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol	--		10 U	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene	--		10 U	10 U	10 U	10 U	10 U	10 U
2-Methylphenol	--		10 U	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline	5		20 U	20 U	20 U	20 U	20 U	20 U
2-Nitrophenol	--		10 U	10 U	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine	5		20 U	20 U	20 U	20 U	20 U	20 U
3-Nitroaniline	5		20 U	20 U	20 U	20 U	20 U	20 U
4,6-Dinitro-2-methylphenol	--		30 U	30 U	30 U	30 U	30 U	30 U
4-Bromophenyl phenyl ether	--		10 U	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-methylphenol	--		10 U	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Chlorophenyl phenyl ether	--		10 U	10 U	10 U	10 U	10 U	10 U
4-Methylphenol	--		10 U	10 U	10 U	10 U	10 U	10 U
4-Nitroaniline	5		20 UJ	20 UJ	20 UJ	20 UJ	20 UJ	20 UJ
4-Nitrophenol	--		30 U	30 U	30 U	30 U	30 U	30 U
Acenaphthene	20		10 U	10 U	10 U	3.1 J	10 U	10 U
Acenaphthylene	20		10 U	10 U	10 U	10 U	10 U	10 U
Acetophenone	--		10 U	10 U	10 U	10 U	10 U	10 U
Anthracene	50		10 U	10 U	10 U	10 U	10 U	10 U
Atrazine	--		10 U	10 U	10 U	10 U	10 U	10 U

Table 8. Summary of Semivolatile Organic Compounds in Groundwater
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** **Sample Date:**	BAW-06C 7/28/2014	MW-1 7/28/2014	MW-1A 7/28/2014	MW-2 7/28/2014	MW-3 7/28/2014	MW-4 7/28/2014
Benzaldehyde	--		10 U	10 U	10 U	10 U	10 U	10 U
Benzo[a]anthracene	0.002		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzo[a]pyrene	0		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzo[b]fluoranthene	0.002		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzo[g,h,i]perylene	--		10 U	10 U	10 U	10 U	10 U	10 U
Benzo[k]fluoranthene	0.002		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bis(2-chloroethoxy)methane	5		10 U	10 U	10 U	10 U	10 U	10 U
Bis(2-chloroethyl) ether	--		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bis(2-ethylhexyl) phthalate	5		10 U	10 U	10 U	10 U	10 U	10 U
Butylbenzyl phthalate	50		10 U	10 U	10 U	10 U	10 U	10 U
Caprolactam	--		10 U	10 U	10 U	10 U	10 U	10 U
Carbazole	--		10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	0.002		10 U	10 U	10 U	10 U	10 U	10 U
Dibenzo[a,h]anthracene	--		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibenzofuran	--		10 U	10 U	10 U	10 U	10 U	10 U
Diethyl phthalate	50		10 U	10 U	10 U	10 U	10 U	10 U
Dimethyl phthalate	50		10 U	10 U	10 U	10 U	10 U	10 U
Di-n-butyl phthalate	50		10 U	10 U	10 U	10 U	10 U	10 U
Di-n-octyl phthalate	--		10 U	10 U	10 U	10 U	10 U	10 U
Fluoranthene	50		10 U	10 U	10 U	10 U	10 U	10 U
Fluorene	50		10 U	10 U	10 U	1.9 J	10 U	10 U
Hexachlorobenzene	0.04		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Hexachlorobutadiene	0.5		2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Hexachlorocyclopentadiene	5		10 U	10 U	10 U	10 U	10 U	10 U
Hexachloroethane	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Indeno[1,2,3-cd]pyrene	0.002		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Isophorone	50		10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene	10		10 U	10 U	10 U	10 U	10 U	10 U
Nitrobenzene	0.4		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
n-Nitrosodi-n-propylamine	--		1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ
n-Nitrosodiphenylamine	50		10 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol	1		30 U	30 U	30 U	30 U	30 U	30 U

Table 8. Summary of Semivolatile Organic Compounds in Groundwater
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** **Sample Date:**	BAW-06C 7/28/2014	MW-1 7/28/2014	MW-1A 7/28/2014	MW-2 7/28/2014	MW-3 7/28/2014	MW-4 7/28/2014
Phenanthrene	50		10 U	10 U	10 U	10 U	10 U	10 U
Phenol	1		10 U	10 U	10 U	10 U	10 U	10 U
Pyrene	50		10 U	10 U	10 U	10 U	10 U	10 U

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µg/L -Micrograms per liter
J - Estimated Value
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Groundwater were samples collected by Environmental Assessment and Remediations in 2014

Table 9. Summary of Metals in Groundwater
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** / **Sample Date:**	BAW-06C 7/28/2014	MW-1 7/28/2014	MW-1A 7/28/2014	MW-2 7/28/2014	MW-3 7/28/2014	MW-4 7/28/2014	FIELD BLANK 7/28/2014
Aluminum	--		200 U	200 U	106 J	128 J	200 U	255	200 U
Antimony	3		20.0 U	20.0 U	20.0 U	20.0 U	20.0 U	20.0 U	20.0 U
Arsenic	25		15.0 U	15.0 U	4.9 J	15.0 U	15.0 U	15.0 U	15.0 U
Barium	1000		23.3 J	57.7 J	71.3 J	114 J	32 J	16.9 J	200 U
Beryllium	3		2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Cadmium	5		4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
Calcium	--		48700	25800	48100	150000	59200	39400	5000 U
Chromium	50		10.0 U	11.3	10.0 U	6 J	10.0 U	10.0 U	10.0 U
Cobalt	--		50.0 U	50.0 U	50.0 U	50.0 U	50.0 U	50.0 U	50.0 U
Copper	200		25.0 U	25.0 U	25.0 U	25.0 U	25.0 U	25.0 U	25.0 U
Iron	300		69.6 J	150 U	**6070**	**14300**	150 U	**6900**	150 U
Lead	25		10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Magnesium	--		4170 J	4020 J	5050	9440	5480	2170 J	5000 U
Manganese	300		67	15.0 U	**1040**	**713**	187	**1160**	15.0 U
Mercury	0.7		0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Nickel	100		40.0 U	40.0 U	40.0 U	40.0 U	40.0 U	40.0 U	40.0 U
Potassium	--		3160 J	2960 J	3290 J	10100	6320	3500 J	5000 U
Selenium	10		20.0 U	20.0 U	20.0 U	20.0 U	20.0 U	20.0 U	20.0 U
Silver	50		10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Sodium	20000		14700	**24000**	17900	14800	18000	14900	5000 U
Thallium	0.5		20.0 U	20.0 U	20.0 U	20.0 U	20.0 U	20.0 U	20.0 U
Vanadium	--		50.0 U	50.0 U	50.0 U	50.0 U	50.0 U	50.0 U	50.0 U
Zinc	2000		30.0 U	30.0 U	8 J	7.7 J	6.6 J	30.0 U	30.0 U

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Groundwater were samples collected by Environmental Assessment and Remediations in 2014

Table 10. Summary of Polychlorinated Biphenyls in Groundwater
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** / **Sample Date:**	BAW-06C 7/28/2014	MW-1 7/28/2014	MW-1A 7/28/2014	MW-2 7/28/2014	MW-3 7/28/2014	MW-4 7/28/2014	FIELD BLANK 7/28/2014
Aroclor-1016	--		0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U
Aroclor-1221	--		0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U
Aroclor-1232	--		0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U
Aroclor-1242	--		0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U
Aroclor-1248	--		0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U
Aroclor-1254	--		0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U
Aroclor-1260	--		0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U
Aroclor-1262	--		0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U
Aroclor-1268	--		0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U
Aroclor (Total)	0.09		0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U

NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
- - No NYSDEC AWQSGV available
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Groundwater were samples collected by Environmental Assessment and Remediations in 2014

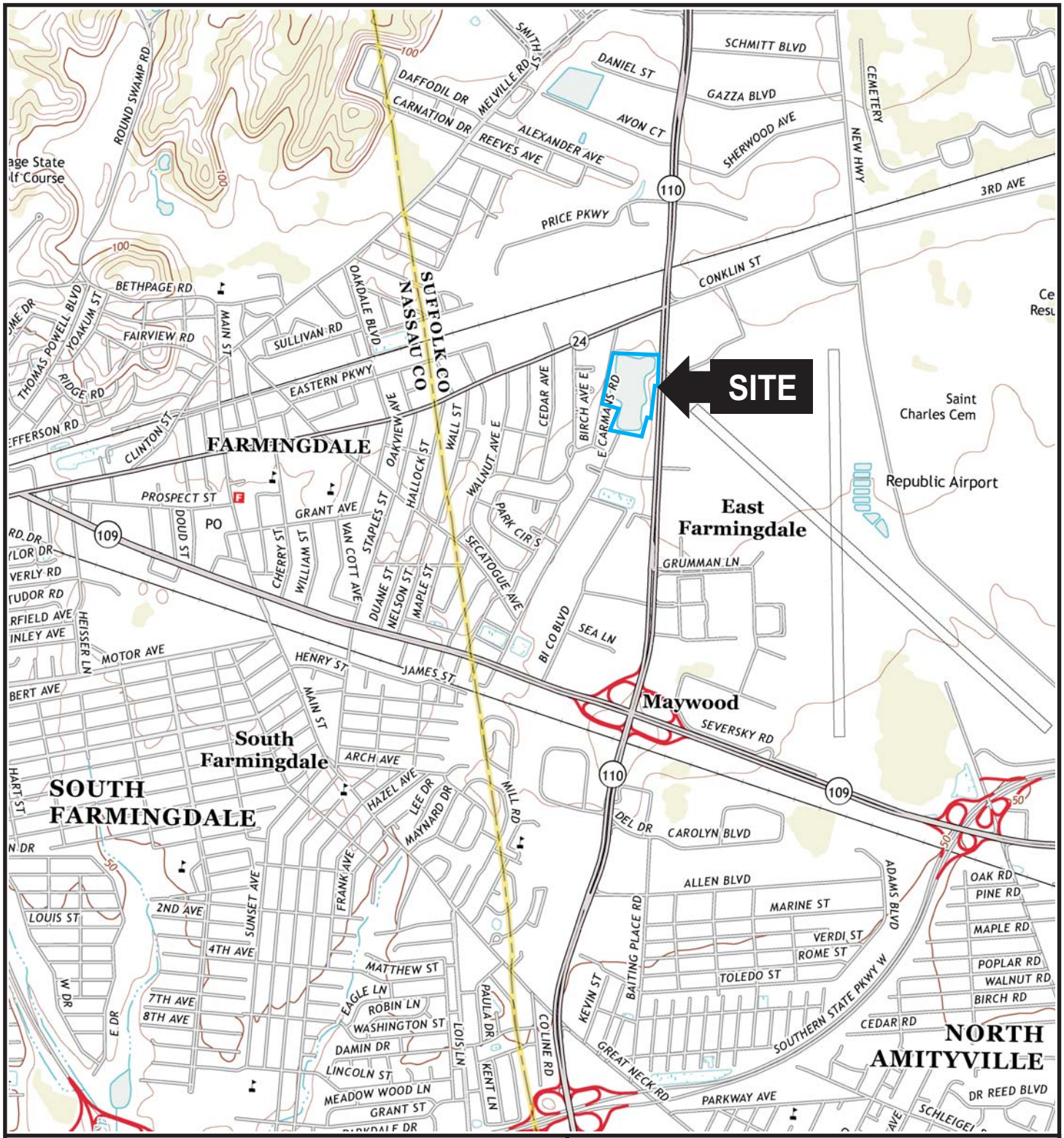
Table 11. Summary of Pesticides in Groundwater
Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** **Sample Date:**	BAW-06C 7/28/2014	MW-1 7/28/2014	MW-1A 7/28/2014	MW-2 7/28/2014	MW-3 7/28/2014	MW-4 7/28/2014
4,4'-DDD	0.3		0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
4,4'-DDE	0.2		0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
4,4'-DDT	0.2		0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Aldrin	0		0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
alpha-BHC	--		0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
beta-BHC	--		0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Chlordane	0.05		0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
delta-BHC	--		0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Dieldrin	0.004		0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Endosulfan I	--		0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Endosulfan II	--		0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Endosulfan sulfate	--		0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Endrin aldehyde	5		0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Endrin ketone	--		0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Endrin	0		0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
gamma-BHC (Lindane)	--		0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Heptachlor epoxide	0.03		0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Heptachlor	0.04		0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Methoxychlor	35		0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Toxaphene	0.06		0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U

NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
- - No NYSDEC AWQSGV available
Bold data indicates that parameter was detected above the NYSDEC AWQSGVs
Groundwater were samples collected by Environmental Assessment and Remediations in 2014

FIGURES

1. Site Location Map
2. Site Layout Map (Boundaries, Tax Parcels, etc.)
3. Engineering Controls Location (Cover System)



QUADRANGLE LOCATION



SOURCE:
USGS; 2013, AMITYVILLE, NY
7.5 Minute Topographic Quadrangle

N

0 2000’

Title:

SITE LOCATION MAP

FAIRCHILD REPUBLIC AIRPORT; OLD SUMP SITE
EAST FARMINGDALE, NEW YORK

Prepared for:

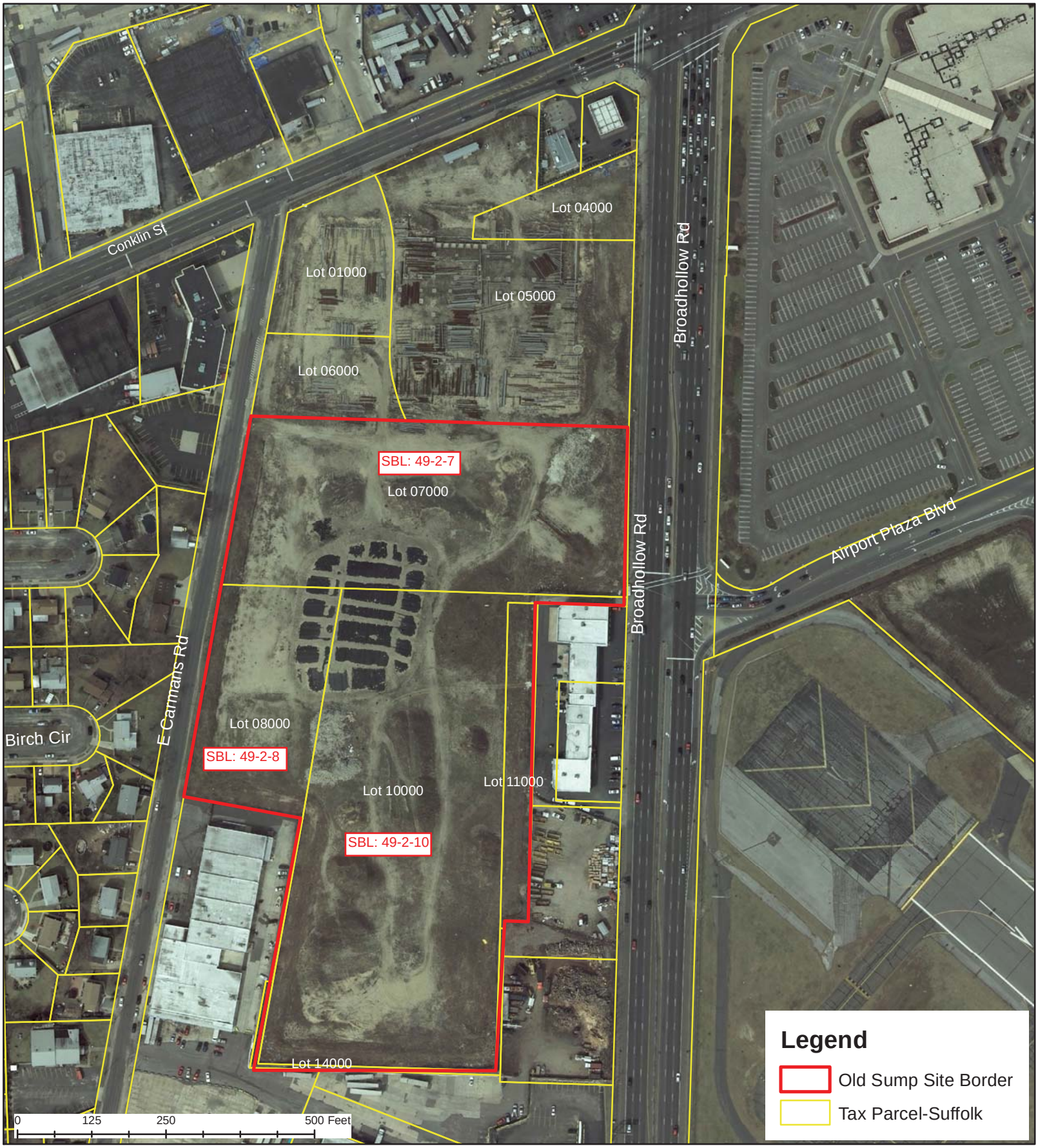
ACADIA REPUBLIC FARMINGDALE, LLC

ROUX

ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled by: J.W.	Date: 31JUL15	FIGURE
Prepared by: J.A.D.	Scale: AS SHOWN	1
Project Mgr.: J.W.	Project No.: 2422.0001Y000	
File: 2422.0001Y104.01.CDR		

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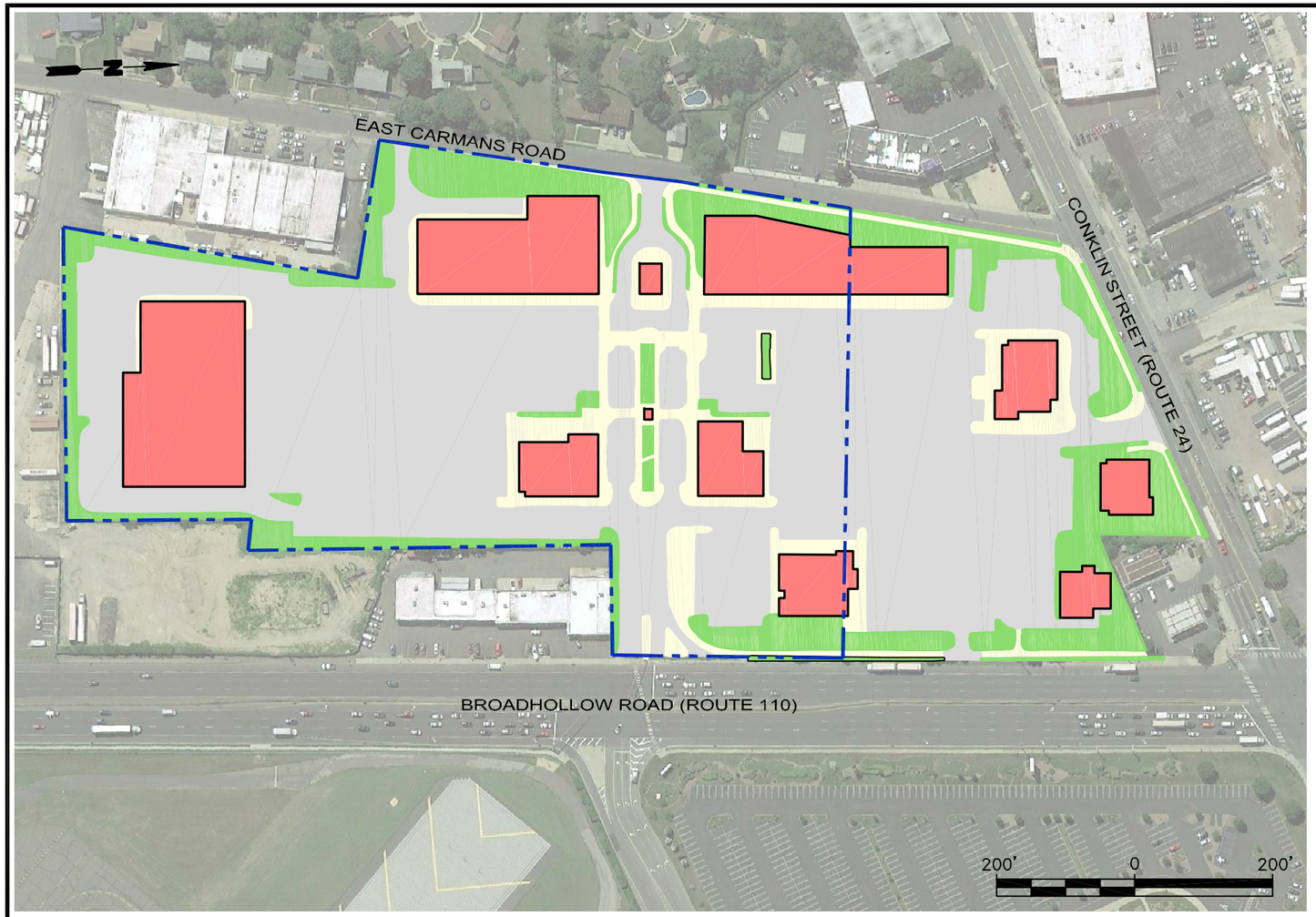


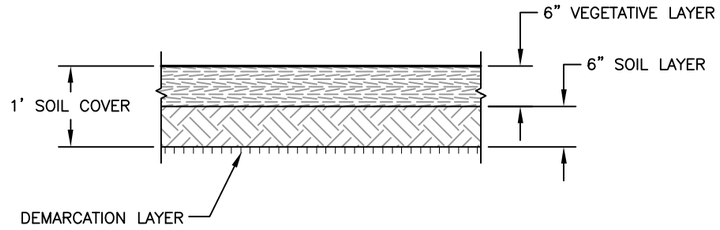


Fairchild Old Sump Site (class 2) Site No. 152004
Broad Hollow Rd (Rt 110) E. Farmingdale, NY 11530
Town of Babylon, Suffolk County, New York

Figure 2: Tax Parcel Map

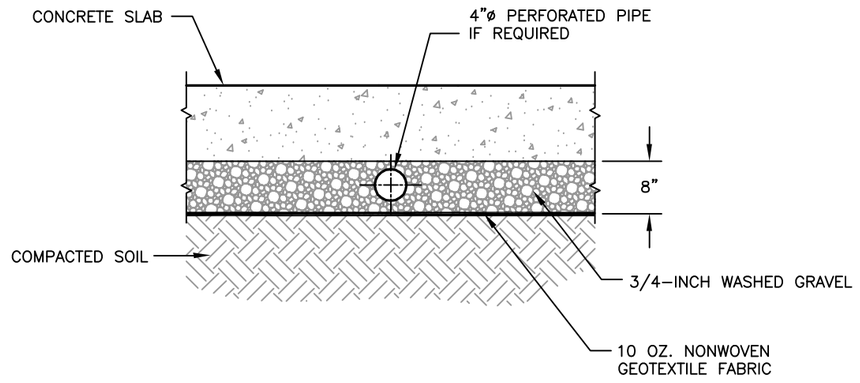
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SOIL COVER/DEMARCATION LAYER DETAIL

SCALE: NOT TO SCALE



SUB-SLAB DEPRESSURIZATION SYSTEM - PIPE DETAIL

SCALE: NOT TO SCALE

LEGEND

- SITE BOUNDARY
- BUILDING/RETAIL AREA
- PAVING/ASPHALT AREA
- LANDSCAPING AREA
- CONCRETE SIDEWALK/WALKWAY

DEVELOPMENT PROGRAM

BUILDING/RETAIL: 120.8K SF

PAVING/ASPHALT: 357.1K SF

LANDSCAPING: 122.5K SF

K = THOUSAND
SF = SQUARE FEET

Title:

SITE-WIDE COVER DESIGN PLAN

FAIRCHILD REPUBLIC AIRCRAFT; OLD SUMP

Prepared For:
ACADIA REPUBLIC FARMINGDALE, LLC

ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled by: J.W.	Date: 08DEC15	FIGURE
Prepared by: J.A.D.	Scale: AS SHOWN	3
Project Mgr: J.W.	Project: 2422.0001Y000	
File: 2422.0001Y104.02.DWG		

V:\CAD\PROJECTS\2422Y\0001Y\104\2422.0001Y104.02.DWG

APPENDICES

A. Environmental Easement
B. Soil Boring/Monitoring Well Construction Logs (EAR, 2014)
C. List of Site Contacts
D. Site-Wide Cover Design Plan
E. Excavation Work Plan
F. Health and Safety Plan
G. Site Management Forms

APPENDIX A

Environmental Easement







SUFFOLK COUNTY CLERK
RECORDS OFFICE
RECORDING PAGE

Type of Instrument: EASEMENT
Number of Pages: 11
Receipt Number : 16-0064523
TRANSFER TAX NUMBER: 15-26912

Recorded: 04/26/2016
At: 02:26:35 PM

LIBER: D00012862
PAGE: 084

District:	Section:	Block:	Lot:
0100	049.00	02.00	007.000

EXAMINED AND CHARGED AS FOLLOWS

Deed Amount: $0.00

Received the Following Fees For Above Instrument

		Exempt			Exempt
Page/Filing	$55.00	NO	Handling	$20.00	NO
COE	$5.00	NO	NYS SRCHG	$15.00	NO
TP-584	$5.00	NO	Notation	$0.00	NO
Cert.Copies	$0.00	NO	RPT	$1,000.00	NO
Transfer tax	$0.00	NO			
			Fees Paid	$1,100.00	

TRANSFER TAX NUMBER: 15-26912

THIS PAGE IS A PART OF THE INSTRUMENT
THIS IS NOT A BILL

JUDITH A. PASCALE
County Clerk, Suffolk County

1 | 2

Number of pages 11

This document will be public record. Please remove all Social Security Numbers prior to recording.

RECORDED
2016 Apr 26 02:26:35 PM
JUDITH A. PASCALE
CLERK OF
SUFFOLK COUNTY
L D00012862
P 084
DT# 15-26912

Deed / Mortgage Instrument	Deed / Mortgage Tax Stamp	Recording / Filing Stamps

3 FEES

Page / Filing Fee	55	Sub Total	80-
Handling	20. 00		
TP-584	5		
Notation			
EA-52 17 (County)			
EA-5217 (State)			
R.P.T.S.A.	1000.00		
Comm. of Ed.	5. 00		
Affidavit			
Certified Copy			
NYS Surcharge	15. 00	Sub Total	1020
Other		Grand Total	1100

Mortgage Amt. _____
1. Basic Tax _____
2. Additional Tax _____
Sub Total _____
Spec./Assit.
or
Spec. /Add. _____
TOT. MTG. TAX _____
Dual Town ____ Dual County ____
Held for Appointment _____
Transfer Tax _____
Mansion Tax _____

The property covered by this mortgage is or will be improved by a one or two family dwelling only.
YES _____ or NO _____

If NO, see appropriate tax clause on page # _____ of this instrument.

4 Dist. 10 3142156

Real Property Tax Service Agency Verification

PTS RSMI A 25-APR-16

5 Community Preservation Fund

Consideration Amount $ _____

CPF Tax Due $ _____

Improved _____
Vacant Land _____
TD _____
TD _____
TD _____

6 Satisfactions/Discharges/Releases List Property Owners Mailing Address

RECORD & RETURN TO:

First American Title Insurance Company
666 Third Avenue 5th fl
New York, N.Y. 10017
Phone: (212) 922-9700
Fax: (212) 922-0881

Mail to: Judith A. Pascale, Suffolk County Clerk
310 Center Drive, Riverhead, NY 11901
www.suffolkcountyny.gov/clerk

7 Title Company Information

Co. Name First American
Title # 3020-760516

8 **Suffolk County Recording & Endorsement Page**

This page forms part of the attached Environmental Easement made by:
(SPECIFY TYPE OF INSTRUMENT)

Acadia Republic Farmingdale LLC

TO

The People of the State of New York

The premises herein is situated in SUFFOLK COUNTY, NEW YORK.

In the TOWN of Babylon
In the VILLAGE
or HAMLET of _____

BOXES 6 THRU 8 MUST BE TYPED OR PRINTED IN BLACK INK ONLY PRIOR TO RECORDING OR FILING.

(over)

Stat ID: 3142156

PTS
R SMI A
25-APR-16

Tax Maps

District	Secton	Block	Lot	School District
0100	04900	0200	007000	
0100	04900	0200	008000	
0100	04900	0200	010000	
0100	04900	0200	011000	
0100	04900	0200	014000	



3020-767516

ENVIRONMENTAL EASEMENT GRANTED PURSUANT TO ARTICLE 71, TITLE 36 OF THE NEW YORK STATE ENVIRONMENTAL CONSERVATION LAW

THIS INDENTURE made this 24th day of March, 2016 between Owner(s) Acadia Republic Farmingdale LLC, having an office at 411 Theodore Fremd Avenue, Suite 300, Rye, NY 10580, County of Westchester, State of New York (the "Grantor"), and The People of the State of New York (the "Grantee."), acting through their Commissioner of the Department of Environmental Conservation (the "Commissioner", or "NYSDEC" or "Department" as the context requires) with its headquarters located at 625 Broadway, Albany, New York 12233,

district 100 section 49.00 block 2.00 lots 7, 8, 10, 11+14

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to encourage the remediation of abandoned and likely contaminated properties ("sites") that threaten the health and vitality of the communities they burden while at the same time ensuring the protection of public health and the environment; and

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to establish within the Department a statutory environmental remediation program that includes the use of Environmental Easements as an enforceable means of ensuring the performance of operation, maintenance, and/or monitoring requirements and the restriction of future uses of the land, when an environmental remediation project leaves residual contamination at levels that have been determined to be safe for a specific use, but not all uses, or which includes engineered structures that must be maintained or protected against damage to perform properly and be effective, or which requires groundwater use or soil management restrictions; and

WHEREAS, the Legislature of the State of New York has declared that Environmental Easement shall mean an interest in real property, created under and subject to the provisions of Article 71, Title 36 of the New York State Environmental Conservation Law ("ECL") which contains a use restriction and/or a prohibition on the use of land in a manner inconsistent with engineering controls which are intended to ensure the long term effectiveness of a site remedial program or eliminate potential exposure pathways to hazardous waste or petroleum; and

WHEREAS, Grantor, is the owner of real property located at the address of 950 Conklin Street in the Hamlet of East Farmingdale, Town of Babylon, County of Suffolk and State of New York, known and designated on the tax map of the County Clerk of Suffolk as tax map parcel numbers: Section 49.00 Block 2.00 Lots 7, 8, 10, 11 and 14, being the same as that property conveyed to Grantor by deed dated August 27, 2012 and recorded in the Suffolk County Clerk's Office in Liber and Page 12708/009. The property subject to this Environmental Easement (the "Controlled Property") comprises approximately 13.249 +/- acres, and is hereinafter more fully described in the Land Title Survey dated October 17, 2012 and last revised March 2, 2016 prepared by John P. Lynch, NYSPLS, which will be attached to the Site Management Plan. The Controlled Property description is set forth in and attached hereto as Schedule A; and

WHEREAS, the Department accepts this Environmental Easement in order to ensure the protection of public health and the environment and to achieve the requirements for remediation

established for the Controlled Property until such time as this Environmental Easement is extinguished pursuant to ECL Article 71, Title 36; and

NOW THEREFORE, in consideration of the mutual covenants contained herein and the terms and conditions of Order on Consent Index Numbers: W1-0461-90-02 and W1-0705-94-08, Grantor conveys to Grantee a permanent Environmental Easement pursuant to ECL Article 71, Title 36 in, on, over, under, and upon the Controlled Property as more fully described herein ("Environmental Easement").

1. Purposes. Grantor and Grantee acknowledge that the Purposes of this Environmental Easement are: to convey to Grantee real property rights and interests that will run with the land in perpetuity in order to provide an effective and enforceable means of encouraging the reuse and redevelopment of this Controlled Property at a level that has been determined to be safe for a specific use while ensuring the performance of operation, maintenance, and/or monitoring requirements; and to ensure the restriction of future uses of the land that are inconsistent with the above-stated purpose.

2. Institutional and Engineering Controls. The controls and requirements listed in the Department approved Site Management Plan ("SMP") including any and all Department approved amendments to the SMP are incorporated into and made part of this Environmental Easement. These controls and requirements apply to the use of the Controlled Property, run with the land, are binding on the Grantor and the Grantor's successors and assigns, and are enforceable in law or equity against any owner of the Controlled Property, any lessees and any person using the Controlled Property.

A. (1) The Controlled Property may be used for:

Commercial as described in 6 NYCRR Part 375-1.8(g)(2)(iii) and Industrial as described in 6 NYCRR Part 375-1.8(g)(2)(iv)

(2) All Engineering Controls must be operated and maintained as specified in the Site Management Plan (SMP);

(3) All Engineering Controls must be inspected at a frequency and in a manner defined in the SMP;

(4) The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the Suffolk County Department of Health to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department;

(5) Groundwater and other environmental or public health monitoring must be performed as defined in the SMP;

(6) Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in the SMP;

(7) All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with the SMP;

(8) Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in the SMP;

(9) Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy shall be performed as defined in the SMP;

(10) Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by this Environmental Easement.

B. The Controlled Property shall not be used for Residential or Restricted Residential purposes as defined in 6NYCRR 375-1.8(g)(2)(i) and (ii), and the above-stated engineering controls may not be discontinued without an amendment or extinguishment of this Environmental Easement.

C. The SMP describes obligations that the Grantor assumes on behalf of Grantor, its successors and assigns. The Grantor's assumption of the obligations contained in the SMP which may include sampling, monitoring, and/or operating a treatment system, and providing certified reports to the NYSDEC, is and remains a fundamental element of the Department's determination that the Controlled Property is safe for a specific use, but not all uses. The SMP may be modified in accordance with the Department's statutory and regulatory authority. The Grantor and all successors and assigns, assume the burden of complying with the SMP and obtaining an up-to-date version of the SMP from:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, New York 12233
Phone: (518) 402-9553

D. Grantor must provide all persons who acquire any interest in the Controlled Property a true and complete copy of the SMP that the Department approves for the Controlled Property and all Department-approved amendments to that SMP.

E. Grantor covenants and agrees that until such time as the Environmental Easement is extinguished in accordance with the requirements of ECL Article 71, Title 36 of the ECL, the property deed and all subsequent instruments of conveyance relating to the Controlled Property shall state in at least fifteen-point bold-faced type:

This property is subject to an Environmental Easement held

by the New York State Department of Environmental Conservation pursuant to Title 36 of Article 71 of the Environmental Conservation Law.

F. Grantor covenants and agrees that this Environmental Easement shall be incorporated in full or by reference in any leases, licenses, or other instruments granting a right to use the Controlled Property.

G. Grantor covenants and agrees that it shall, at such time as NYSDEC may require, submit to NYSDEC a written statement by an expert the NYSDEC may find acceptable certifying under penalty of perjury, in such form and manner as the Department may require, that:

(1) the inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under the direction of the individual set forth at 6 NYCRR Part 375-1.8(h)(3).

(2) the institutional controls and/or engineering controls employed at such site:

(i) are in-place;

(ii) are unchanged from the previous certification, or that any identified changes to the controls employed were approved by the NYSDEC and that all controls are in the Department-approved format; and

(iii) that nothing has occurred that would impair the ability of such control to protect the public health and environment;

(3) the owner will continue to allow access to such real property to evaluate the continued maintenance of such controls;

(4) nothing has occurred that would constitute a violation or failure to comply with any site management plan for such controls;

(5) the report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

(6) to the best of his/her knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and

(7) the information presented is accurate and complete.

3. Right to Enter and Inspect. Grantee, its agents, employees, or other representatives of the State may enter and inspect the Controlled Property in a reasonable manner and at reasonable times to assure compliance with the above-stated restrictions.

4. Reserved Grantor's Rights. Grantor reserves for itself, its assigns, representatives, and successors in interest with respect to the Property, all rights as fee owner of the Property, including:

A. Use of the Controlled Property for all purposes not inconsistent with, or limited by the terms of this Environmental Easement;

B. The right to give, sell, assign, or otherwise transfer part or all of the underlying fee interest to the Controlled Property, subject and subordinate to this Environmental Easement;

5. Enforcement

A. This Environmental Easement is enforceable in law or equity in perpetuity by Grantor, Grantee, or any affected local government, as defined in ECL Section 71-3603, against the owner of the Property, any lessees, and any person using the land. Enforcement shall not be defeated because of any subsequent adverse possession, laches, estoppel, or waiver. It is not a defense in any action to enforce this Environmental Easement that: it is not appurtenant to an interest in real property; it is not of a character that has been recognized traditionally at common law; it imposes a negative burden; it imposes affirmative obligations upon the owner of any interest in the burdened property; the benefit does not touch or concern real property; there is no privity of estate or of contract; or it imposes an unreasonable restraint on alienation.

B. If any person violates this Environmental Easement, the Grantee may revoke the Certificate of Completion with respect to the Controlled Property.

C. Grantee shall notify Grantor of a breach or suspected breach of any of the terms of this Environmental Easement. Such notice shall set forth how Grantor can cure such breach or suspected breach and give Grantor a reasonable amount of time from the date of receipt of notice in which to cure. At the expiration of such period of time to cure, or any extensions granted by Grantee, the Grantee shall notify Grantor of any failure to adequately cure the breach or suspected breach, and Grantee may take any other appropriate action reasonably necessary to remedy any breach of this Environmental Easement, including the commencement of any proceedings in accordance with applicable law.

D. The failure of Grantee to enforce any of the terms contained herein shall not be deemed a waiver of any such term nor bar any enforcement rights.

6. Notice. Whenever notice to the Grantee (other than the annual certification) or approval from the Grantee is required, the Party providing such notice or seeking such approval shall identify the Controlled Property by referencing the following information:

County, NYSDEC Site Number, NYSDEC Brownfield Cleanup Agreement, State Assistance Contract or Order Number, and the County tax map number or the Liber and Page or computerized system identification number.

Parties shall address correspondence to:

Site Number: 152004
Office of General Counsel
NYSDEC
625 Broadway
Albany New York 12233-5500

With a copy to:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, NY 12233

All notices and correspondence shall be delivered by hand, by registered mail or by Certified mail

and return receipt requested. The Parties may provide for other means of receiving and communicating notices and responses to requests for approval.

7. Recordation. Grantor shall record this instrument, within thirty (30) days of execution of this instrument by the Commissioner or her/his authorized representative in the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

8. Amendment. Any amendment to this Environmental Easement may only be executed by the Commissioner of the New York State Department of Environmental Conservation or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

9. Extinguishment. This Environmental Easement may be extinguished only by a release by the Commissioner of the New York State Department of Environmental Conservation, or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

10. Joint Obligation. If there are two or more parties identified as Grantor herein, the obligations imposed by this instrument upon them shall be joint and several.

Remainder of Page Intentionally Left Blank

IN WITNESS WHEREOF, Grantor has caused this instrument to be signed in its name.

Acadia Republic Farmingdale LLC:

By: _____

Print Name: Robert Masters

Title: Senior V.P. Date: March 17, 2016

Grantor's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF WESTCHESTER)

On the 17th day of March, in the year 2016, before me, the undersigned, personally appeared Robert Masters, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

Debra M Leibler
Notary Public - State of New York

DEBRA M. LEIBLER
NOTARY PUBLIC-STATE OF NEW YORK
No. 01LE6005994
Qualified in Dutchess County
My Commission Expires April 20, 2018

THIS ENVIRONMENTAL EASEMENT IS HEREBY ACCEPTED BY THE PEOPLE OF THE STATE OF NEW YORK, Acting By and Through the Department of Environmental Conservation as Designee of the Commissioner,

By: _____
Robert W. Schick, Director
Division of Environmental Remediation

Grantee's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF ALBANY)

On the 24th day of March, in the year 2016 before me, the undersigned, personally appeared Robert W. Schick, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/ executed the same in his/her/ capacity as Designee of the Commissioner of the State of New York Department of Environmental Conservation, and that by his/her/ signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

_____
Notary Public - State of New York

David J. Chiusano
Notary Public, State of New York
No. 01CH5032146
Qualified in Schenectady County
Commission Expires August 22, 2016

SCHEDULE "A" PROPERTY DESCRIPTION

METES AND BOUNDS DESCRIPTION
ENVIRONMENTAL EASEMENT - LOTS 7, 8, 10, 11 & 14, BLOCK 2
EAST FARMINGDALE, TOWN OF BABYLON
SUFFOLK COUNTY, STATE OF NEW YORK

BEGINNING AT A POINT, SAID POINT BEING SOUTH 11 DEGREES 00 MINUTES 16 SECONDS WEST, A DISTANCE OF 348.24 FEET FROM THE CORNER FORMED BY THE INTERSECTION OF THE EASTERLY LINE OF EAST CARMANS ROAD (50 FEET WIDE) AND THE SOUTHERLY LINE OF CONKLIN STREET (A.K.A. ROUTE 24, 70 FEET WIDE) AND FROM SAID POINT AND PLACE OF BEGINNING RUNNING THENCE;

1. ALONG THE DIVIDING LINE OF LOT 7 WITH LOT 6 & LOT 5, BLOCK 2, SOUTH 87 DEGREES 39 MINUTES 24 SECONDS EAST, A DISTANCE OF 635.68 FEET TO A POINT;

2. ALONG THE WESTERLY LINE OF BROAD HOLLOW ROAD (A.K.A. ROUTE 110, 140 FEET WIDE), SOUTH 02 DEGREES 20 MINUTES 06 SECONDS WEST, A DISTANCE OF 274.13 FEET TO A POINT, RUNNING THENCE ALONG A LINE THROUGH THE INTERIOR OF LOT 7, BLOCK 2 THE FOLLOWING THREE (3) COURSES:

3. NORTH 48 DEGREES 07 MINUTES 17 SECONDS WEST, A DISTANCE OF 210.00 FEET TO A POINT, THENCE;

4. SOUTH 41 DEGREES 52 MINUTES 43 SECONDS WEST, A DISTANCE OF 25.00 FEET TO A POINT, THENCE;

5. SOUTH 48 DEGREES 07 MINUTES 17 SECONDS EAST, A DISTANCE OF 220.36 FEET TO A POINT, THENCE;

6. ALONG THE DIVIDING LINE OF LOT 7 AND LOT 10, BLOCK 2, SOUTH 87 DEGREES 54 MINUTES 25 SECONDS EAST, A DISTANCE OF 7.92 FEET TO A POINT, THENCE;

7. ALONG THE WESTERLY LINE OF BROAD HOLLOW ROAD, SOUTH 02 DEGREES 20 MINUTES 06 MINUTES WEST, A DISTANCE OF 15.00 FEET TO A POINT, THENCE;

8. ALONG THE DIVIDING LINE OF LOT 10 AND LOT 13.1, BLOCK 2, NORTH 87 DEGREES 39 MINUTES 54 SECONDS WEST, A DISTANCE OF 150.00 FEET TO A POINT, THENCE;

9. ALONG THE DIVIDING LINE OF LOT 11 WITH LOT 13.1 & LOT 13.2, BLOCK 2, SOUTH 02 DEGREES 20 MINUTES 06 SECONDS WEST, A DISTANCE OF 535.00 FEET TO A POINT, RUNNING THENCE ALONG THE DIVIDING LINE OF LOT 11 AND LOT 9.6, BLOCK 2 THE FOLLOWING TWO (2) COURSES:

10. NORTH 87 DEGREES 39 MINUTES 54 SECONDS WEST, A DISTANCE OF 40.00 FEET TO A POINT, THENCE;

11. SOUTH 02 DEGREES 20 MINUTES 06 SECONDS WEST, A DISTANCE OF 260.00 FEET TO A POINT, THENCE;

12. ALONG THE DIVIDING LINE OF LOT 11 WITH LOT 9.7 & LOT 9, BLOCK 2, NORTH 87 DEGREES 39 MINUTES 54 SECONDS WEST, A DISTANCE OF 421.17 FEET TO A POINT, RUNNING THENCE ALONG THE DIVIDING LINE BETWEEN LOT 11 AND LOT 9 THE FOLLOWING TWO (2) COURSES:

13. NORTH 10 DEGREES 56 MINUTES 26 SECONDS EAST, A DISTANCE OF 148.54 FEET TO A POINT, THENCE;

14. SOUTH 79 DEGREES 03 MINUTES 34 SECONDS EAST, A DISTANCE OF 9.00 FEET TO A POINT, THENCE;

15. ALONG THE DIVIDING LINE OF LOT 10 AND LOT 9, BLOCK 2, NORTH 10 DEGREES 56 MINUTES 26 SECONDS EAST, A DISTANCE OF 280.00 FEET TO A POINT, THENCE;

16. ALONG THE DIVIDING LINE OF LOT 8 AND LOT 9, BLOCK 2, NORTH 78 DEGREES 59 MINUTES 14 SECONDS WEST, A DISTANCE OF 200.22 FEET TO A POINT, THENCE;

17. ALONG THE EASTERLY LINE OF EAST CARMANS ROAD, NORTH 11 DEGREES 00 MINUTES 46 SECONDS EAST, A DISTANCE OF 665.10 FEET TO THE POINT AND PLACE OF BEGINNING.

First American Title Insurance Company
666 Third Avenue 5th fl
New York, N.Y. 10017
Phone: (212) 922-9700
Fax: (212) 922-0881

APPENDIX B

Soil Boring/Monitoring Well Construction Logs
(EAR, 2014)

225 Atlantic Avenue
Patchogue, New York 11772
Tel (631) 447-6400
Fax (631) 447-6497
Email Info@Enviro-Asmnt.com
www.Enviro-Asmnt.com

Installation Date 6/26/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-EASTFARMINGDALE
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	1-52-004
BORING I.D.	BUD-01
PURPOSE	Investigation
DRILLING METHOD	Direct Push
DRILLING COMPANY	Clearwater Drilling, Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	N/A
TOTAL BORING DEPTH	22'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 14'-18', 18'-22'

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	Direct push, no lithology logged.				
4'-8'	2.7' Brown/black fine sand, some medium sand, trace coarse sand, trace gravel, trace red brick; dry, odor.	MC	4'-8'	21.3ppm	68
8'-12'	2.2' Brown/black fine sand, some medium sand, trace coarse sand, trace gravel; dry, odor.	MC	8'-12'	25.8ppm	55
12'-16'	1.7' Black fine sand, some medium sand, trace coarse sand, trace gravel; dry, odor. 1.0' Concrete, little brown fine sand, trace medium sand; dry. 0.3' Tan fine sand, some medium sand, little coarse sand, trace gravel; dry, no odor.	MC	12'-16'	23.2ppm	75
16'-20'	0.5' Black fine sand, some medium sand, trace coarse sand; dry, odor. 0.4' Brown fine sand, some medium sand, little coarse sand; dry, no odor. 1.5' Tan fine sand, some medium sand, little coarse sand, trace gravel; dry, no odor.	MC	16'-20'	40.4ppm	60
20'-22'	0.6' Brown fine sand, some medium sand, little coarse sand; dry. 0.3' Concrete	MC	20'-22'	2.1ppm	45

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

225 Atlantic Avenue
Patchogue, New York 11772
Tel (631) 447-6400
Fax (631) 447-6497
Email Info@Enviro-Asmnt.com
www.Enviro-Asmnt.com

Installation Date 6/26/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-EASTFARMINGDALE
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	1-52-004
BORING I.D.	BUD-02
PURPOSE	Investigation
DRILLING METHOD	Direct Push
DRILLING COMPANY	Clearwater Drilling, Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	N/A
TOTAL BORING DEPTH	22'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 14'-18', 18'-22'

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-14'	Direct push, no lithology logged.				
14'-18'	0.1' Black fine sand, little medium sand; dry, odor. 2.6' Tan fine sand, some medium sand, some coarse sand, trace gravel; dry, odor.	MC	14'-18'	25.1ppm	68
18'-22'	0.9' Tan fine sand, some medium sand, trace coarse sand, trace gravel; dry.	MC	18'-22'	1.4ppm	23

"Trace", 1 - 10%
"Little", 10 - 20%
"Some", 20 - 30%
"And", 30 - 50%

225 Atlantic Avenue
Patchogue, New York 11772
Tel (631) 447-6400
Fax (631) 447-6497
Email Info@Enviro-Asmnt.com
www.Enviro-Asmnt.com

Installation Date 6/26/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-EASTFARMINGDALE
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	1-52-004
BORING I.D.	BUD-03
PURPOSE	Investigation
DRILLING METHOD	Direct Push
DRILLING COMPANY	Clearwater Drilling, Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	N/A
TOTAL BORING DEPTH	26'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 14'-18', 22'-26'

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-14'	Direct push, no lithology logged.				
14'-18'	2.5' Brown fine sand, some medium sand, little coarse sand, trace gravel.	MC	14'-18'	15.9ppm	63
18'-22'	0.3' Black clay, some fine sand, some medium sand; moist.	MC	18'-22'	10.3ppm	43
	1.1' Tan fine sand, some medium sand, little coarse sand, trace gravel; moist.				
	0.3' Black clay; moist, odor.				
22'-26'	2.1' Tan fine and medium sand, little coarse sand, trace gravel; moist.	MC	22'-26'	0.8ppm	53

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 06/17/14

DRILLING LOG - Monitoring Well Installation

DRILLING DETAILS

PROJECT/SITE NAME: DEC-EASTFARMINGDALE
SITE ADDRESS: Fairchild Republic Aircraft,Old Sump
Broad Hollow Rd.
East Farmingdale, NY
SITE NUMBER: 152004
WELL I.D.: MW-1 (G-17)
DRILLING METHOD: Direct Push
DRILLING COMPANY: Clearwater Drilling, Inc.
HEAD DRILLER: B. Vigliotta
LOGGED BY: J. Lohan
BOREHOLE DIAMETER: 4"
SAMPLE METHOD: Macro Core
DEPTH-TO-WATER: 16'
TOTAL WELL DEPTH: 50'

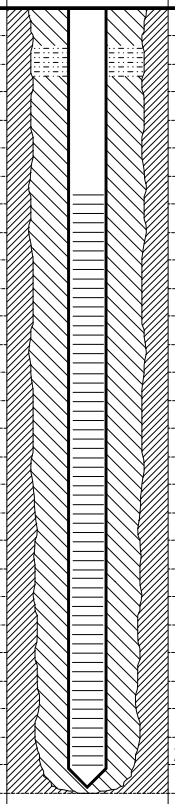
WELL CONSTRUCTION

CASING
Type PVC Diameter 0.75" Length 40'

SCREEN
Type PVC Diameter 0.75" Slot .010" Length 10'

GRAVEL PACK: Pre-Packed Screen
CASING SEAL: Bentonite (Hydrated Pellets) (13'-18' BGS)
FILL: Native (0'-13' BGS & 18'-32' BGS)
SECURITY: Locking Well Cap / J Plug
3753 Master Lock
FINISH: N/A - Stick-Up
COMMENTS: * Pre-packed screens - 0.75" PVC screen packed w/ 20/40 mesh, silica sand enclosed by 0.011" stainless steel mesh at 1.4" OD

Depth Below Grade	Well Design	Soil Lithology/Field Observations				
		Depth	Description/Classification	Sample Type	Screening Interval	PID Reading
		Surf	Brown fine sand, some medium sand, trace coarse sand, trace gravel: dry.	HA	Surf	1.3ppm
		0'-1'	1' Brown fine sand, some medium sand, trace coarse sand, trace gravel: dry.	HA	0'-1'	0.3ppm
16'		1'-4'	3' Brown fine sand, some medium sand, little coarse sand, trace gravel: dry.	MC	1'-4'	0.1ppm
			0.2' Concrete			
			0.3' Brown fine sand, some medium sand, little coarse sand, trace gravel: dry.			
			0.2' Concrete			
		4'-8'	0.8' Brown fine sand, some medium sand, little coarse sand, trace gravel:	MC	4'-8'	0.3ppm
		8'-12'	dry.	MC	8'-12'	0.0ppm
			0.5' Black fine sand, trace medium sand; moist			
			Tan fine sand, little medium sand , little coarse sand, trace gravel; moist			
		12'-16'	0.2' Brown fine sand, some medium sand, little coarse sand, trace gravel; dry.	MC	12'-16'	0.0ppm
			1.2' Tan fine and medium sand, little coarse sand; moist			
			1.6' Tan fine sand, some medium sand, little coarse sand, little gravel; moist			
		16-20'	1.2' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	16-20'	0.5ppm
		20-24'	1.8' Tan fine and medium sand, little coarse sand; moist	MC	20-24'	0.3ppm
TWD 50'		24-28'	1.8' Tan fine and medium sand, little coarse sand; moist	MC	24-28'	0.2ppm
	NOT TO SCALE					



Backfill  Bentonite 

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DRILLING LOG - Monitoring Well Installation

WELL I.D. MW-1

Soil Lithology/Field Observations

		Sample Type	Screening Interval	PID Reading
28-32'	0.3' Tan fine sand, little medium sand, tr coarse sand; wet.	MC	28-32'	0.3ppm
	0.2' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.			
	1.5' Tan fine sand, some medium sand, trace coarse sand, trace gravel; wet.			
32'-36'	0.4' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	32'-36'	0.2ppm
	0.2' Tan fine sand, some medium sandl; wet.			
	0.2' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.			
36'-40'	1.2' Tan fine sand, little medium sand, tr coarse sand; wet.	MC	36'-40'	0.4ppm
	1' Tan fine sand, little medium sand, some coarse sand, trace gravel; wet.			
40'-44'	1.9' Tan fine and medium sand, little coarse sand, trace gravel; wet.	MC	40'-44'	0.3ppm
44'-48'	1.1' Tan fine sand, some medium sand, trace coarse sandl; wet.	MC	44'-48'	0.3ppm
	0.6' Tan fine and medium sand, some coarse sand, trace gravel; wet.			
	0.8' Tan fine sand, some medium sand, little coarse sand; wet.			
48'-52'	1.1' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	48'-52'	0.6ppm
	0.5' Tan fine and medium sand, some coarse sand, trace gravel; wet.			
	0.8' Tan fine sand, some medium sand, trace coarse sand, trace gravel; wet.			

Cement/ Bentonite Grout  Gravel  Backfill 

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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DRILLING LOG - Monitoring Well Installation

DRILLING DETAILS

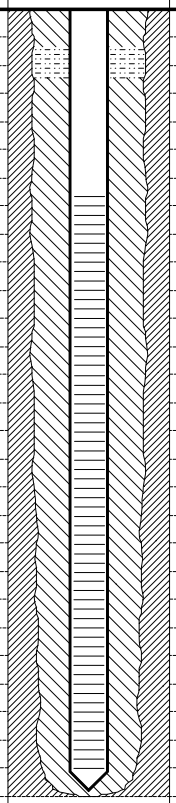
PROJECT/SITE NAME	DEC-EASTFARMINGDALE
SITE ADDRESS	Fairchild Republic Aircraft, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE NUMBER	152004
WELL I.D.	MW-2 (G-12)
DRILLING METHOD	Direct Push
DRILLING COMPANY	Clearwater Drilling, Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
SAMPLE METHOD	Macro Core
DEPTH-TO-WATER	18'
TOTAL WELL DEPTH	29'

WELL CONSTRUCTION

CASING
Type PVC Diameter 0.75" Length 19'

SCREEN
Type PVC Diameter 0.75" Slot .010" Length 10'

GRAVEL PACK	Pre-Packed Screen
CASING SEAL	Bentonite (Hydrated Pellets) (13'-18' BGS)
FILL	Native (0'-13' BGS & 18'-32' BGS)
SECURITY	Locking well Cap / J Plug
	3753 Master Lock
FINISH	N/A - Stand-Up
COMMENTS	* Pre-packed screens - 0.75" PVC screen packed w/ 20/40 mesh, silica sand enclosed by 0.011" stainless steel mesh at 1.4" OD



Soil Lithology/Field Observations

Depth Below Grade	Depth	Description/Classification	Sample Type	Screening Interval	PID Reading
	Surf	Brown fine sand, some medium sand, trace coarse sand, trace gravel: dry.		Surf	1.3ppm
	0'-1'	1' Brown fine sand, some medium sand, trace coarse sand, trace gravel: dry.	HA	0'-1'	0.3ppm
	1'-4'	3' Brown fine sand, some medium sand, little coarse sand, trace gravel: dry.	MC	1'-4'	0.1ppm
18'		0.2' Concrete.			
		0.3' Brown fine sand, some medium sand, little coarse sand, trace gravel: dry.			
		0.2' Concrete.			
	4'-8'	0.8' Brown fine sand, some medium sand, little coarse sand, trace gravel: dry.	MC	4'-8'	0.3ppm
		1.2' Dark brown fine sand, some medium sand, little coarse sand, trace gravel; dry.			
		0.5' Light brown fine sand, some medium sand, little coarse sand, trace gravel; dry.			
	8'-12'	0.6' Tan fine sand, some medium sand, little coarse sand; dry.	MC	8'-12'	0.1ppm
		0.6' Dark brown fine sand,little medium sand, trace coarse sand, trace gravel; moist.			
		0.6' Tan/light brown fine and medium sand, little coarse sand, trace gravel: moist.			
	12'-16'	0.6' Brown fine sand, some medium sand, little coarse sand, trace gravel gravel: dry.	MC	12'-16'	0.2ppm
TWD		0.6' Tan fine and medium sand, little coarse sand, trace gravel; moist			
29'		0.3 Dark brown fine and medium sand; moist			
		0.4' concrete.			
		1.5' Dark brown to tan fine sand some medium sand, little coarse sand; moist.			

Backfill Bentonite

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DRILLING LOG - Monitoring Well Installation

WELL I.D. MW-2

Soil Lithology/Field Observations

		Sample Type	Screening Interval	PID Reading
16-20'	1.7' Brown fine sand, little medium sand, trace coarse sand, trace gravel; moist.	MC	16-20'	0.5ppm
	0.5' Concrete.			
	1.5' Grey/brown fine and medium sand, some coarse sand, little gravel; wet.			
20-24'	1.2' Dark grey medium sand, some fine sand, little coarse sand; wet.	MC	20-24'	0.3ppm
24-28'	Dark grey/black fine and medium sand, little coarse sand, trace gravel; wet. Unable	MC	24-28'	1.1ppm
	to measure due to wetness			
28-32'	1.5' Dark grey medium sand, some fine sand, some coarse sand; wet.	MC	28-32'	0.9ppm

Cement/ Bentonite Grout  Gravel  Backfill 

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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DRILLING LOG - Monitoring Well Installation

DRILLING DETAILS

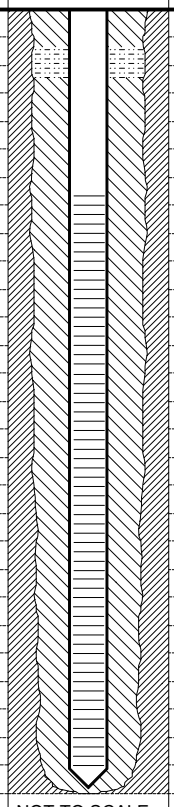
PROJECT/SITE NAME	DEC-EASTFARMINGDALE
SITE ADDRESS	Fairchild Republic Aircraft, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE NUMBER	152004
WELL I.D.	MW-3
DRILLING METHOD	Direct Push
DRILLING COMPANY	Clearwater Drilling, Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
SAMPLE METHOD	Macro Core
DEPTH-TO-WATER	15'
TOTAL WELL DEPTH	30'

WELL CONSTRUCTION

CASING
Type PVC Diameter 0.75" Length 20'

SCREEN
Type PVC Diameter 0.75" Slot .010" Length 10'

GRAVEL PACK	Pre-Packed Screen
CASING SEAL	Bentonite (Hydrated Pellets) (7'-13' BGS)
FILL	Native (0'-7' BGS & 13-40' BGS)
SECURITY	Locking well Cap / J Plug
	3753 Master Lock
FINISH	N/A - Stand-Up
COMMENTS	* Pre-packed screens - 0.75" PVC screen packed w/ 20/40 mesh, silica sand enclosed by 0.011" stainless steel mesh at 1.4" OD



Soil Lithology/Field Observations

Depth Below Grade	Depth	Description/Classification	Sample Type	Screening Interval	PID Reading
	0'-4'	1.5' Light brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.	MC	1'-4'	0.8ppm
		0.5' Brown fine and medium sand, trace coarse sand, trace grave; dry.			
		1.5' Tan fine sand, little medium sand, trace coarse sand, trace gravel; dry.			
	4'-8'	1.1' Tan fine and medium sand, little coarse sand, trace gravel; dry.	MC	4'-8'	0.1ppm
		0.3' Brown fine and medium sand, little coarse sand, trace gravel; dry.			
15'		0.8' Tan medium sand, some fine sand, little coarse sand, trace gravel; dry.			
	8'-12'	0.8' Tan fine sand, some medium sand, trace coarse sand, trace gravel; dry.	MC	8'-12'	0.1ppm
		3' Brown fine sand, little medium sand, trace coarse sand; dry.			
	12'-16'	0.5' Light brown fine sand, some medium sand, trace coarse sand, trace gravel; moist.	MC	12'-16'	0.2ppm
		3' Brown fine and medium sand, little coarse sand, trace gravel; wet.			
	16-20'	1' Brown fine sand, little medium sand, trace coarse sand, trace gravel; wet.	MC	16-20'	0.3ppm
		0.9' Tan/grey fine sand, some medium sand, trace coarse sand, trace gravel; wet.			
	20-24'	1.2' Tan medium and coarse sand, some fine sand, little gravel; wet.	MC	20-24'	0.1ppm
		0.5' Tan medium sand, some fine sand, little coarse sand, trace gravel; wet.			
	24-28'	1.4' Tan fine sand, some medium sand, trace coarse sand, trace gravel; wet.	MC	24-28'	0.2ppm

Backfill Bentonite

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Installation Date 6/17/14 - 6/18/14

DRILLING LOG - Monitoring Well Installation

WELL I.D. MW-3

Soil Lithology/Field Observations

		Sample Type	Screening Interval	PID Reading
28-32'	1.5' Tan medium and coarse sand, some fine sand, little gravel; wet.	MC	28-32'	0.3ppm
32'-36'	0.2' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	32'-36'	0.3ppm
	0.6' Tan fine sind, some medium sand, trace coarse sand; wet.			
	0.5' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.			
	0.6' Tan fine sand, some medium sand, trace coarse sand; wet.			
36'-40'	0.5' Tan fine and medium sand, some coarse sand, trace gravel: wet.	MC	36'-40'	0.3ppm
	0.5' Tan medium and coarse sand, little fine sand, little gravel; wet.			
	0.5' Tan fine and medium sand, some coarse sand, trace gravel: wet.			
	0.3' Tan medium and coarse sand, little fine sand, little gravel; wet.			
	0.5' Tan fine and medium sand, some coarse sand, trace gravel: wet.			

Cement/ Bentonite Grout | Gravel | Backfill

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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DRILLING LOG - Monitoring Well Installation

DRILLING DETAILS

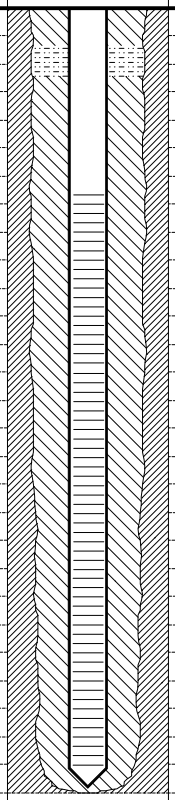
PROJECT/SITE NAME: DEC-EASTFARMINGDALE
SITE ADDRESS: Fairchild Republic Aircraft,Old Sump
Broad Hollow Rd.
East Farmingdale, NY
SITE NUMBER: 152004
WELL I.D.: MW-4 (CR-11)
DRILLING METHOD: Direct Push
DRILLING COMPANY: Clearwater Drilling, Inc.
HEAD DRILLER: B. Vigliotta
LOGGED BY: J. Lohan
BOREHOLE DIAMETER: 4"
SAMPLE METHOD: Macro Core
DEPTH-TO-WATER: 14'
TOTAL WELL DEPTH: 32'

WELL CONSTRUCTION

CASING
Type PVC Diameter 0.75" Length 22'

SCREEN
Type PVC Diameter 0.75" Slot .010" Length 10'

GRAVEL PACK: Pre-Packed Screen
CASING SEAL: Bentonite (Hydrated Pellets) (7.5'-12.5' BGS)
FILL: Native (0'-12.5' BGS & 12.5'-32' BGS)
SECURITY: Locking well Cap / J Plug
3753 Master Lock
FINISH: N/A - Stand-Up
COMMENTS: * Pre-packed screens - 0.75" PVC screen packed w/ 20/40 mesh, silica sand enclosed by 0.011" stainless steel mesh at 1.4" OD



Soil Lithology/Field Observations

Depth	Description/Classification	Sample Type	Screening Interval	PID Reading
Surf	Brown fine sand, some medium sand, trace coarse sand, trace gravel: dry.	HA	Surf	0.3ppm
0'-1'	1' Brown fine sand, some medium sand, trace coarse sand, trace gravel: dry.	HA	0'-1'	0.5ppm
1'-4'	2.3' Brown fine sand, some medium snad, trace coarse sand, trace gravel dry.	MC	1'-4'	1.5ppm
4'-8'	3.3' Brown fine sand, some medium sand, trace coarse sand, trace gravel dry.	MC	4'-8'	0.6ppm
8'-12'	0.6' Brown fine sand, little medium sand, trace coarse sand, trace greavel; dry. 2.5' Brown fine sand, little medium sand, trace coarse sand, trace greavel; moist.	MC	8'-12'	0.1ppm
12'-16'	1.0' Tan fine and medium sand, some coarse sand, trace gravel; moist. 1.5' Tan fine and medium sand, some coarse sand, trace gravel; wet.	MC	12'-16'	0.6ppm
16-20'	1' Tan fine and medium sand, some coarse sand, trace gravel; wet.	MC	16-20'	1.1ppm
20-24'	0.4' Tan fine and medium sand, trace coarse sand, trace gravel; wet. 0.3' Black fine and medium sand, trace coarse sand, trace gravel; wet. 0.3' Tan fine sand, some medium sand, trace coarse sand, trace gravel; wet.	MC	20-24'	1.3ppm
24-28'	Tan fine and medium sand, some coarse sand, trace gravel; wet. 0.2' Black clay, little fine sand, little medium sand, wet. 0.4' Tan fine and medium sand, some coarse sand, trace gravel; wet. 1.2 Black clay, some fine sand, little coarse sand, trace gravel; wet. 0.8' Tan fine and medium sand, little coarse sand, trace gravel; wet. 0.7' Black clay, little fine sand; wet.	MC	24-28'	1.4ppm

Backfill Bentonite

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DRILLING LOG - Monitoring Well Installation

WELL I.D. MW-4

Soil Lithology/Field Observations

		Sample Type	Screening Interval	PID Reading
28-32'	0.1' Black clay, some fine sand, trace medium sand; wet.	MC	28-32'	0.6ppm
	1.8' Tan fine and medium sand, little coarse sand, trace gravel; wet.			

Cement/ Bentonite Grout  Gravel  Backfill 

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/27/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME: DEC-Eastfarmingdale
SITE ADDRESS: Fairchild Republic Airport, Old Sump
Broad Hollow Rd.
East Farmingdale, NY
SITE ID NUMBER: 152004
BORING I.D.: P-06
PURPOSE: Direct Push
DRILLING METHOD: Macro Core
DRILLING COMPANY: Clearwater Drilling Inc.
HEAD DRILLER: B. Vigliotta
LOGGED BY: J. Lohan
BOREHOLE DIAMETER: 4"
DEPTH-TO-WATER: ~19'
TOTAL BORING DEPTH: 32'

SOIL SAMPLING METHOD
Type: Macro Core

GROUNDWATER SAMPLING METHOD
Type: N/A

BACKFILL: Native Fill
FINISH: N/A

COMMENTS: Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'. relocated to P-53 location following refusal at original location.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	1.8' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry. 0.2' Red brick; dry.	MC	0'-4'	0.5ppm	50
4'-8'	2.4' Brown fine sand, some medium sand, little coarse sand, trace gravel, trace red brick, trace cement; dry.	MC	4'-8'	0.7ppm	60
8'-12'	0.2' Brown fine sand, some medium sand, trace coarse sand, trace gravel; dry. 0.3' Red brick; dry. 0.2' Concrete, some fine sand, little medium sand; dry. 1.5' Brown fine sand, some medium sand, little coarse sand, trace gravel; dry.	MC	8'-12'	0.7ppm	55
12'-16'	1.3' Brown fine sand, some coarse sand, little medium sand, trace gravel; dry. 1.0' Black fine sand, some medium sand, little coarse sand, trace gravel; moist.	MC	12'-16'	1.0ppm	58
16'-20'	0.9' Brown fine sand, little medium sand, trace coarse sand; dry. 0.2' Red brick; dry. 0.2' Black fine sand, little medium sand; moist.	MC	16'-20'	4.9ppm	33
20'-24'	0.3' Red brick, some fine brown sand; wet.	MC	20'-24'	0.2ppm	8
24'-28'	0.4' Black clay; wet, odor. 0.2' Red brick; wet. 0.9' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	24'-28'	12.1ppm	38
28'-32'	0.6' Tan fine and medium sand, little coarse sand; wet.	MC	28'-32'	1.4ppm	15

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/25/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-07
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~16'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	0.5' Brown fine sand, trace medium sand, trace gravel; dry.	MC	0'-4'	0.4ppm	88
	0.4' Red brick; dry.				
	0.3' Brown fine sand, trace medium sand, trace coarse sand; dry.				
	0.3' Concrete; dry.				
	0.5'Brown fine sand, little medium sand, trace coarse sand, trace gravel, trace red brick; dry.				
	0.4' Concrete; dry.				
	0.4' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.				
	0.8' Concrete; dry.				
4'-8'	0.2' Concrete; dry.	MC	4'-8'	0.2ppm	85
	0.6' Brown fine sand, little medium sand, trace gravel; dry.				
	0.5' Concrete; dry.				
	2.1' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.				
8'-12'	1.6' Brown fine sand, little medium sand, trace coarse sand, trace gravel; moist.	MC	8'-12'	0.3ppm	50
	0.4' Black clay; sheen, moist, odor.				
12'-16'	2.6' Brown fine sand, little medium sand, trace coarse sand; moist.	MC	12'-16'	0.3ppm	65
16'-20'	1.7' Dark brown fine sand, little medium sand, trace coarse sand; wet.	MC	16'-20'	0.1ppm	100
	2.3' Brown fine sand, little medium sand, trace coarse sand, trace gravel; wet.				
20'-24'	1.9' Brown clayey fine sand, little medium sand, trace coarse sand ; wet.	MC	20'-24'	0.5ppm	48
24'-28'	0.7' Tan fine and medium sand, trace coarse sand; wet.	MC	24'-28'	0.6ppm	18

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/25/14

DRILLING LOG - Direct Push Temporary Borehole Installation

Boring I.D. P-07

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
28'-32'	0.6' Brown fine sand, little medium sand, trace coarse sand; wet. 2.0' Dark brown fine sand, trace medium sand, trace coarse sand; wet.	MC	28'-32'	0.6ppm	65

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/24/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-08
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~17'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	1.6' Brown fine sand, trace medium sand, trace coarse sand; dry.	MC	0'-4'	0.3ppm	63
	0.6' Brown clay.				
	0.3' Brown fine sand, trace medium sand, trace coarse snad; dry.				
4'-8'	0.6' Brown fine sand, little medium sand, trace coarse sand; dry.	MC	4'-8'	0.8ppm	88
	0.5 Brown clay; moist.				
8'-12'	0.4' Brown clay; moist.	MC	8'-12'	6.2ppm	50
	0.3' Brown fine sand, little medium sand, trace coarse sand; dry.				
	1.3' Black clay, some brown fine sand, trace medium sand; sheen, moist, odor.				
12'-16'	2.2' Brown fine sand, little medium sand, trace coarse sand, trace gravel; moist.	MC	12'-16'	0.7ppm	55
16'-20'	1.1' Brown clayey fine sand, little medium sand, trace coarse sand; moist.	MC	16'-20'	1.9ppm	28
20'-24'	0.5' Brown fine sand, little medium sand, trace coarse sand; moist.	MC	20'-24'	0.4ppm	68
	1.4' Brown clay, some fine sand, little medium sand, trace coarse sand; wet.				
	0.8' Brown clayey fine sand, little medium sand, trace coarse sand; wet.				
24'-28'	0.7' Brown fine sand, little medium sand, trace coarse sand, trace gravel; wet.	MC	24'-28'	0.7ppm	18
28'-32'	0.4 Brown/black fine sand some medium sand, trace coarse sand; wet.	MC	28'-32'	0.7ppm	23
	0.5' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.				

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/23/14
Page 1 of 1

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME: DEC-Eastfarmingdale
SITE ADDRESS: Fairchild Republic Airport, Old Sump
Broad Hollow Rd.
East Farmingdale, NY
SITE ID NUMBER: 152004
BORING I.D.: P-11
PURPOSE: Direct Push
DRILLING METHOD: Macro Core
DRILLING COMPANY: Clearwater Drilling Inc.
HEAD DRILLER: B. Vigliotta
LOGGED BY: J. Lohan
BOREHOLE DIAMETER: 4"
DEPTH-TO-WATER: ~17'
TOTAL BORING DEPTH: 32'

SOIL SAMPLING METHOD
Type: Macro Core

GROUNDWATER SAMPLING METHOD
Type: N/A

BACKFILL: Native Fill
FINISH: N/A

COMMENTS: Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	0.2' Brown fine sand, trace medium sand, trace coarse sand; dry. 0.1' concrete; dry. 2.6' Dark brown fine sand, little medium sand, trace coarse sand trace gravel, trace concrete; dry.	MC	0'-4'	35ppm	73
4'-8'	0.3' Black fine sand, trace medium sand; dry, no odor. 1.7' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry. 0.3' concrete; dry. 0.5' Brown fine sand, little medium sand, trace coarse sand, trace gravel; moist.	MC	4'-8'	0.9ppm	70
8'-12'	0.9' Brown fine sand, little medium sand, trace coarse sand; moist. 0.9' Brown fine sand little medium sand, trace coarse sand, trace gravel; moist.	MC	8'-12'	2.7ppm	50
12'-16'	0.6' Brown fine sand, little medium sand; dry. 0.2' Concrete; dry.	MC	12'-16'	3.1ppm	20
16'-20'	0.2' Brown fine sand, some medium sand, trace coarse sand; moist. 1.1' Black clay; sheen, moist, odor. 2.5' Tan medium sand, some fine sand, some coarse sand, trace gravel; wet.	MC	16'-20'	6.7ppm	95
20'-24'	2.0' Tan fine and medium sand, some coarse sand, trace gravel; wet.	MC	20'-24'	0.9ppm	50
24'-28'	1.9' Tan fine and medium sand, little coarse sand, trace gravel; wet.	MC	24'-28'	0.7ppm	48
28'-32'	2.0' Tan fine and medium sand, some coarse sand; wet.	MC	28'-32'	0.4ppm	50

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/27/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-12
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~16'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	2.5' Brown fine sand, little medium sand, little coarse sand, trace gravel; dry.	MC	0'-4'	0.4ppm	63
4'-8'	1.9' Brown fine sand, little medium sand, trace coarse sand; dry.	MC	4'-8'	0.9ppm	48
8'-12'	1.9' Brown fine sand, some medium sand, trace coarse sand, trace gravel; dry.	MC	8'-12'	0.9ppm	48
12'-16'	1.3' Brown fine sand, little medium sand, trace coarse sand, trace clay; moist. 0.2' Black clay; moist, odor.	MC	12'-16'	0.8ppm	38
16'-20'	0.2' Black clay, some fine sand, some medium sand, trace coarse sand; wet, odor. 0.4' Brown fine sand, some medium sand, some coarse sand, trace gravel; wet, odor. 1.1 Black/grey fine and medium sand, little coarse sand, trace gravel; wet.	MC	16'-20'	1.2ppm	43
20'-24'	1.9' Tan fine and medium sand, little coarse sand, trace gravel; wet.	MC	20'-24'	0.8ppm	48
24'-28'	1.7' Tan fine and medium sand, some fine sand, little coarse sand, trace gravel; wet.	MC	24'-28'	0.9ppm	43
28'-32'	2.1' Tan medium sand, some coarse sand, little fine sand, trace gravel; wet.	MC	28'-32'	0.7ppm	53

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/27/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-13
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~11'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', and 28'-32'. 16'-20' interval not sampled due to low recovery.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	1.1' Brown fine sand, little medium sand, trace coarse sand; dry.	MC	0'-4'	1.8ppm	33
	0.7' Brown fine sand, little medium sand, trace coarse sand, trace concrete; dry.				
	0.5' Dark brown fine sand, some medium sand, trace coarse sand, trace red brock; dry.				
4'-8'	0.2' Brown fine sand, little medium sand, little red clay; moist.	MC	4'-8'	2.3ppm	35
	0.8' Black clay, little fine sand, trace medium sand; wet, odor.				
	gravel; dry.				
	0.2' Red brick; dry.				
	0.2' Brown fine sand, some coarse sand, little medium sand; moist.				
8'-12'	0.3' Black clay; moist, odor.	MC	8'-12'	8.8ppm	53
	0.5' Brown fine sand, little medium sand, little coarse sand, trace gravel; dry.				
	0.7' Brown fine sand, little medium sand, little coarse sand, trace gravel; moist.				
	0.2' Black clay; wet, odor.				
	0.4' Brown fine sand, little medium sand, little coarse sand, trace gravel; wet.				
12'-16'	0.4' Brown clay, little fine sand, little medium sand; wet.	MC	12'-16'	15.2ppm	43
	0.6' Brown fine and medium sand, little coarse sand, trace gravel; wet.				
	0.7' Black clay; wet, odor.				
16'-20'	Black clay, some fine sand, trace medium sand; moist, slight odor. Low recovery, sample baged directly from rod.	MC	16'-20'	6.5ppm	-
20'-24'	1.0' Black clay; wet, odor.	MC	20'-24'	9.3ppm	30
	0.2' Black clay, trace medium sand, trace coarse sand; wet.				
24'-28'	1.1' Brown fine sand, some medium sand, little clay, trace coarse sand, trace gravel; wet.	MC	24'-28'	3.0ppm	28

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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DRILLING LOG - Direct Push Temporary Borehole Installation

Boring I.D. P-13

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
28'-32'	0.1' Black medium sand, some fine sand, trace coarse sand; wet. 1.0' Brown fine sand, some medium sand, trace coarse sand, trace gravel; wet.	MC	28'-32'	6.1ppm	28

"Trace", 1 - 10%
"Little", 10 - 20%
"Some", 20 - 30%
"And", 30 - 50%

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Installation Date 6/25/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-14
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~16'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	2.2' Brown fine sand, little medium sand, trace coarse sand; dry.	MC	0'-4'	0.3ppm	55
4'-8'	0.3' Brown fine sand, little medium sand, trace coarse sand; dry.	MC	4'-8'	0.5ppm	68
	0.2' Red brick; dry.				
	1.2'Brown fine sand, little medium sand, trace coarse sand; dry.				
	1.0' Concrete; dry.				
8'-12'	0.7' Brown fine sand, little medium sand, little coarse sand; moist.	MC	8'-12'	0.5ppm	58
	0.3' Concrete; dry.				
	1.2' Brown fine sand, little medium sand, trace coarse sand; moist.				
	0.1' Black fine sand, little medium sand, trace coarse sand; moist.				
12'-16'	0.3' Brown fine sand, little medium sand, trace coarse sand, trace gravel; moist.	MC	16'-20'	1.0ppm	65
	0.5' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.				
	0.9' Brown fine sand, little medium sand, trace coarse sand, trace gravel; moist.				
	0.5' Brown fine sand, little medium sand, trace coarse sand, trace black clay; wet.				
16'-20'	0.3' Black clay; sheen, wet, odor.	MC	12'-16'	1.7ppm	63
	0.3' Brown fine sand, little medium sand, little coarse sand, trace gravel; wet.				
	0.3' Black clay, trace fine sand, trace medium sand; sheen, wet, odor.				
	0.4' Brown fine sand, trace medium sand, trace coarse sand, trace gravel; wet.				
20'-24'	0.5' Tan medium sand, little fine sand, little coarse sand, trace gravel; wet.	MC	20'-24'	0.6ppm	13
24'-28'	0.7' Tan fine sand, little medium sand, trace coarse sand; wet.	MC	24'-28'	0.5ppm	20

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/25/14

DRILLING LOG - Direct Push Temporary Borehole Installation

Boring I.D. P-14

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
28'-32'	0.3' Black clay; sheen, wet, odor. 1.8' Tan fine sand, some medium sand, trace coarse sand, trace gravel; wet. 0.3' Black clay; sheen, wet, odor.	MC	28'-32'	0.6ppm	60

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/30/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME: DEC-Eastfarmingdale
SITE ADDRESS: Fairchild Republic Airport, Old Sump
Broad Hollow Rd.
East Farmingdale, NY
SITE ID NUMBER: 152004
BORING I.D.: P-15
PURPOSE: Direct Push
DRILLING METHOD: Macro Core
DRILLING COMPANY: Clearwater Drilling Inc.
HEAD DRILLER: B. Vigliotta
LOGGED BY: J. Lohan
BOREHOLE DIAMETER: 4"
DEPTH-TO-WATER: ~18'
TOTAL BORING DEPTH: 32'

SOIL SAMPLING METHOD
Type: Macro Core

GROUNDWATER SAMPLING METHOD
Type: N/A

BACKFILL: Native Fill
FINISH: N/A

COMMENTS: Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	1.6' Brown fine sand, little medium sand, little coarse sand, trace gravel, trace asphalt, trace red brick; dry. 0.4' Concrete; dry.	MC	0'-4'	0.7ppm	50
4'-8'	0.4' Brown fine sand, little medium sand, trace coarse sand; dry. 0.1' Concrete; dry. 0.8' Black fine sand, little medium sand, trace coarse sand; dry. 0.5' Cement; dry. 0.3' Black fine sand, little medium sand, trace coarse sand, trace red brick; dry.	MC	4'-8'	0.8ppm	53
8'-12'	0.2' Concrete; dry. 1.8' Brown fine sand, little medium sand, little coarse sand, trace concrete; dry. 0.4' Black fine sand, some red brick, little medium sand, trace coarse sand; dry.	MC	8'-12'	0.8ppm	60
12'-16'	0.5' Brown fine sand, some coarse sand, little medium sand, little concrete; dry. 0.3' Red brick; dry. 1.1' Black fine sand, some red brick, little medium sand, trace coarse sand; dry.	MC	12'-16'	0.9ppm	48
16'-20'	0.4' Brown fine sand, little medium sand, trace coarse sand; moist. 0.4' Black fine sand, some medium sand, little coarse sand; wet.	MC	16'-20'	4.7ppm	20
20'-24'	1.7' Black clay, some fine sand, little medium sand, trace coarse sand, trace gravel; wet, odor.	MC	20'-24'	4.1ppm	43
24'-28'	0.9' Black clay, some fine sand, little medium sand, trace coarse sand, trace gravel; wet.	MC	24'-28'	0.8ppm	23
28'-32'	1.4' Black fine sand, some medium sand, little coarse sand; wet. gravel; wet.	MC	28'-32'	0.5ppm	35

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/30/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-16
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~17'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	2.5' Brown fine sand, little medium sand, little coarse sand, trace gravel; dry.	MC	0'-4'	0.7ppm	70
	0.1' Red brick; dry.				
	0.2' Brown fine sand, little medium sand, trace coarse sand,; dry.				
4'-8'	0.8' Brown/black fine sand, little medium sand, trace coarse sand, trace red brick; dry.	MC	4'-8'	0.8ppm	50
	0.5' Concrete; dry.				
	0.7' Browm fine sand, little medium sand, trace coarse sand, trace red brick, trace cement; dry.				
8'-12'	0.4' Brown fine sand, little coarse sand, trace medium sand, trace red brick, trace cement; dry.	MC	8'-12'	2.1ppm	633
	0.2' Black fine sand, little medium sand, trace coarse sand; dry.				
	1.9' Brown fine sand, little medium sand, trace coarse sand; dry.				
12'-16'	0.6' Brown fine sand, little medium sand, trace coarse sand, trace concrete; dry.	MC	12'-16'	0.8ppm	15
16'-20'	0.7' Brown clay, some fine sand, little medium sand, little coarse sand; wet.	MC	16'-20'	0.7ppm	18
20'-24'	0.5' Black medium sand, some coarse sand, little fine sand; wet.	MC	20'-24'	N/A	53
	0.5' Black/brown clay, some fine sand, trace medium sand, trace wood; wet.				
	0.1' Black clay, little fine sand, trace medium sand, trace wood; wet.				
24'-28'	No recovery, only a few pieces of black wood, no sand, clay, or gravel.	MC	24'-28'	0.9ppm	0
28'-32'	1.2' Black clay, some fine sand, some medium sand, trace coarse sand, trace wood; wet.	MC	28'-32'	0.6ppm	30

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/25/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-17
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~16'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	1.7' Brown fine sand, some medium sand, trace coarse sand, trace gravel; dry.	MC	0'-4'	2.1ppm	43
4'-8'	1.0' Brown fine sand, trace medium sand, trace coarse sand; dry. 0.8' Brown fine sand, little medium sand, trace coarse sand; dry.	MC	4'-8'	1.3ppm	45
8'-12'	1.4' Brown fine sand, little gravel, trace medium sand, trace coarse sand; dry. 0.5' Brown fine sand, little medium sand, trace coarse sand, trace gravel; moist.	MC	8'-12'	1.0ppm	48
12'-16'	0.4' Brown fine sand, little medium sand, little gravel, trace coarse sand; dry. 0.6' Brown fine sand, little gravel, trace medium sand, trace coarse sand; dry. 0.5' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.	MC	16'-20'	0.9ppm	38
16'-20'	0.4' Tan fine sand, some medium sand, little coarse sand; wet. 0.5' Brown fine sand, little medium sand, trace coarse sand; dry.	MC	12'-16'	0.5ppm	23
20'-24'	0.7' Brown fine sand, little medium sand, trace coarse sand; moist. 0.2' Grey fine sand, some medium sand, trace coarse sand; wet.	MC	20'-24'	0.8ppm	23
24'-28'	0.9' Grey fine sand, some medium sand, little coarse sand; wet.	MC	24'-28'	0.7ppm	23
28'-32'	0.4' Grey fine sand, little medium sand, trace coarse sand, trace gravel; wet. 0.6' Brown clay, some fine sand, little medium sand; wet. 1.0 Grey fine sand, some medium sand, trace coarse sand, trace gravel; wet.	MC	28'-32'	0.9ppm	50

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/30/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-18
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~16'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	2.2' Brown fine sand, little medium sand, little coarse sand, trace gravel, trace red brick; dry.	MC	0'-4'	0.4ppm	55
4'-8'	0.9' Brown fine sand, little medium sand, little coarse sand, trace gravel; dry. 0.2' Concrete; dry. 0.9" Brown find sand, little clay, little medium sand, trace gravel; dry.	MC	4'-8'	0.2ppm	50
8'-12'	0.3' Brown/black clay, some fine sand, little coarse sand, trace medium sand; moist. 0.6' Brown fine and medium sand, little coarse sand; dry. 0.5' Brown clay, some fine sand, little medium sand, trace coarse sand; moist.	MC	8'-12'	0.3ppm	35
12'-16'	0.5' Brown fine sand, little medium sand, trace coarse sand; dry. 0.3' Brown fine sand, some clay, little medium sand: wet.	MC	12'-16'	0.2ppm	20
16'-20'	0.5' Brown fine sand, come clay, trace medium sand, trace coarse sand; wet. 1.6' Black clay, trace fine sand, trace medium sand; wet, odor.	MC	16'-20'	2.1ppm	53
20'-24'	1.5' Black/tan fine sand, some medium sand, little coarse sand; wet, slight odor. 0.2' Tan fine sand, little coarse sand, trace medium sand, trace gravel; wet.	MC	20'-24'	0.6ppm	43
24'-28'	1.7' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	24'-28'	0.2ppm	43
28'-32'	1.0' Tan fine and medium sand, little coarse sand, trace gravel; wet.	MC	28'-32'	0.3ppm	25

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/30/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME: DEC-Eastfarmingdale
SITE ADDRESS: Fairchild Republic Airport, Old Sump
Broad Hollow Rd.
East Farmingdale, NY
SITE ID NUMBER: 152004
BORING I.D.: P-19
PURPOSE: Direct Push
DRILLING METHOD: Macro Core
DRILLING COMPANY: Clearwater Drilling Inc.
HEAD DRILLER: B. Vigliotta
LOGGED BY: J. Lohan
BOREHOLE DIAMETER: 4"
DEPTH-TO-WATER: ~16'
TOTAL BORING DEPTH: 32'

SOIL SAMPLING METHOD
Type: Macro Core

GROUNDWATER SAMPLING METHOD
Type: N/A

BACKFILL: Native Fill
FINISH: N/A

COMMENTS: Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	1.7' Brown fine sand, some coarse sand, trace medium sand, trace gravel; dry. 0.1' Concrete; dry. 0.4' Brown fine sand, little coarse sand, trace medium sand; dry.	MC	0'-4'	0.3ppm	55
4'-8'	2.1' Brown fine sand, little medium sand, little coarse sand, trace trace red brick; dry.	MC	4'-8'	0.2ppm	53
8'-12'	1.2' Brown fine sand, little medium sand, little coarse sand, trace gravel; dry. 0.3' Brown fine sand, some clay, little medium sand, little coarse sand; moist. 0.1' Asphalt; moist 0.3' Red brick; dry. 0.2' Cement; dry. 0.5' Tan fine sand, some medium sand, trace coarse sand; moist.	MC	8'-12'	1.3ppm	65
12'-16'	1.5' Brown fine sand, little medium sand, little coarse sand; dry. 2.0' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	12'-16'	0.6ppm	93
16'-20'	1.9' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	16'-20'	0.3ppm	48
20'-24'	1.5' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	20'-24'	0.4ppm	38
24'-28'	1.6' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	24'-28'	0.3ppm	40
28'-32'	1.6' Tan fine sand, some medium sand, some coarse sand, trace gravel; wet.	MC	28'-32'	0.3ppm	40

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/27/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-20
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~17'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	1.2' Brown fine sand, little medium sand, little coarse sand, trace gravel; dry.	MC	0'-4'	0.3ppm	58
	0.4' Concrete; dry.				
	0.7' Brown fine sand, little medium sand, trace coarse sand; dry.				
4'-8'	0.2' Brown fine sand, little medium sand, trace coarse sand; dry.	MC	4'-8'	1.1ppm	20
	0.2' Concrete; dry.				
	0.4' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.				
8'-12'	1.0' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.	MC	8'-12'	0.8ppm	43
	0.2' Concrete; dry.				
	0.2' Brown fine sand, trace coarse sand, trace red brick; dry.				
	0.3' Tan fine sand, little medium sand, little coarse sand, trace gravel; dry.				
12'-16'	0.7' Brown fine sand, some medium sand, little coarse sand, trace gravel; moist.	MC	12'-16'	0.4ppm	73
	1.2' Tan fine sand, some medium sand, little coarse sand, trace gravel; dry.				
	1.0' Tan medium sand, some fine sand, little coarse sand, trace gravel; moist.				
16'-20'	0.2' Tan fine sand, some medium sand, some coarse sand; moist.	MC	16'-20'	0.6ppm	70
	0.6' Brown fine sand, some medium sand, little coarse sand; moist.				
	2.0' Tan fine and medium sand, some coarse sand, trace gravel; wet.				
20'-24'	2.0' Tan fine and medium sand, little coarse sand, trace gravel; wet.	MC	20'-24'	0.9ppm	50
24'-28'	1.7' Tan fine sand, some medium sand, trace coarse sand, trace gravel; wet.	MC	24'-28'	1.0ppm	43

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/27/14

DRILLING LOG - Direct Push Temporary Borehole Installation

Boring I.D. P-20

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
28'-32'	1.9' Tan medium sand, some fine sand, little coarse sand, trace gravel; wet.	MC	28'-32'	0.6ppm	48

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/23/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-21
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~18'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	0.4' Light brown fine sand, trace medium sand, trace coarse sand, trace gravel; dry. Piece of tarp at the bottom.	MC	0'-4'	0.2ppm	35
	1.0' Brown fine sand, trace medium sand, trace coarse sand, trace gravel; dry.				
4'-8'	0.1' Concrete.	MC	4'-8'	0.1ppm	68
	0.7' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.				
	0.4' Concrete.				
	0.2' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.				
	0.4' Concrete.				
	0.4' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.				
	0.3' Red brick.				
	0.2' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.				
8'-12'	0.4' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.	MC	8'-12'	0.8ppm	70
	0.8' Concrete.				
	1.1' Black clay; sheen, moist, odor.				
	0.5' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.				
12'-16'	1.7' Brown fine sand, little medium sand, trace coarse sand, trace gravel; moist.	MC	12'-16'	0.6ppm	100
	2.3' Tan fine sand, some medium sand, trace coarse sand, trace gravel; moist.				
16'-20'	0.1' Black clay; sheen, moist, odor.	MC	16'-20'	0.8ppm	100
	0.3 Tan fine sand, some medium sand, trace coarse sand,trace gravel; moist.				
	1.1' Brown fine sand, some medium sand, trace coarse sand, trace				

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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DRILLING LOG - Direct Push Temporary Borehole Installation

Boring I.D. P-21

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
	gravel; moist.				
	2.5' Tan fine sand, some medium sand, trace coarse sand; wet.				
20'-24'	1.8' Tan fine and medium sand, trace coarse sand, trace gravel; wet.	MC	20'-24'	0.6ppm	45
24'-28'	0.9' Tan fine and medium sand, trace coarse sand, trace gravel; wet.	MC	24'-28'	0.4ppm	23
28'-32'	1.8' Tan medium and coarse sand, little fine sand, trace gravel; wet.	MC	28'-32'	0.4ppm	20

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/20/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-23
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~18'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	0.6' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry. 0.8' Black fine sand, little medium sand, little coarse sand; moist. 1.4' Brown fine snad, little medium sand, trace coarse sand, trace gravel; dry.	MC	0'-4'	1.8ppm	70
4'-8'	0.3' Black fine sand, little medium sand, little coarse sand; moist. 0.6' Brown fine sand, little medium sand, trace coarse sand, trace gravel; moist. 0.5' Concrete; dry. 0.2' Brown fine sand, some medium sand, trace coarse sand, trace gracel; moist. 0.5' Concrete; moist. 0.1' Brown fine sand, some medium sand, trace coarse sand; moist.	MC	4'-8'	0.6ppm	55
8'-12'	0.3' Brown fine sand, some medium sand, trace coarse sand, trace gravel; dry. 0.2' Black fine sand, some medium sand, trace coarse sand, trace gravel; moist. 0.8' Light brown fine sand, trace medium sand; moist.	MC	8'-12'	0.5ppm	33
12'-16'	1.1' Brown fine sand, some medium sand, trace coarse sand, trace gravel; moist. 0.1' Tan fine sand, little medium sand, trace coarse sand, trace gravel; moist. 0.5' Brown fine sand, some medium sand, trace coarse sand, trace red brick; moist. 2.8' Tan fine sand, some medium sand, trace coarse sand, trace gravel; moist,	MC	12'-16'	0.5ppm	95
16'-20'	0.4' Tan fine and medium sand, some coarse sand, trace gravel; moist. 0.8' Brown fine sand, little medium sand, trace coarse sand,	MC	16'-20'	0.4ppm	95

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/20/14

DRILLING LOG - Direct Push Temporary Borehole Installation

Boring I.D. P-23

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
	trace red brick; moist.				
	2.6' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.				
20'-24'	2.1' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	20'-24'	0.4ppm	53
24'-28'	2.0' Tan fine and medium sand, little coarse sand, trace gravel; wet.	MC	24'-28'	0.4ppm	50
28'-32'	1.0' Tan fine and medium sand, trace coarse sand, trace gravel; wet.	MC	28'-32'	0.8ppm	25

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/23/14-6/24/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-24
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~14'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	2.0' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.	MC	0'-4'	0.3ppm	68
	0.5' Concrete; dry.				
	0.2' Brown fine sand, little medium sand, trace coarse sand; dry.				
4'-8'	0.5' Brown fine sand, little medium sand, trace coarse sand; dry.	MC	4'-8'	1.1ppm	53
	1.1' Concrete; dry.				
	0.5' Brown fine sand, trace medium sand, trace coarse sand; dry.				
8'-12'	1.6' Brown fine sand, little medium sand, trace coarse sand, trace gravel, trace concrete; dry.	MC	8'-12'	0.4ppm	40
12'-16'	1.8' Brown fine sand, little medium sand, trace coarse sand, trace gravel; moist.	MC	12'-16'	0.8ppm	98
	2.1' Tan fine and medium sand, little coarse sand, trace gravel; wet.				
16'-20'	0.2' Grey fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	16'-20'	0.7ppm	25
	0.8' Tan fine sand, little coarse sand, trace gravel; wet.				
20'-24'	1.8' Tan fine and medium sand, little coarse sand; wet.	MC	20'-24'	0.3ppm	45
24'-28'	0.2' Tan medium and coarse sand, little fine sand, trace gravel; wet.	MC	24'-28'	0.5ppm	50
	0.6' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.				
	1.2' Tan mediumsand, some coarse sand, little fine sand, trace gravel; wet.				
28'-32'	1.9' Tan medium sand, some fine sand, some coarse sand, trace gravel; wet.	MC	28'-32'	0.4ppm	48

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/20/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-27
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~20'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	2.2' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry. 0.5' Concrete; dry. 0.4' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.	MC	0'-4'	5.3ppm	78
4'-8'	1.2' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry. 0.6' Concrete; dry. 0.7' Tan fine sand, some medium sand, little coarse sand, trace gravel; moist. 1.0' Brown fine sand, trace medium sand; moist.	MC	4'-8'	0.2ppm	88
8'-12'	2.4' Brown fine sand, little medium sand, trace coarse sand, trace gravel; moist. 0.5' Concrete; moist.	MC	8'-12'	1.2ppm	90
12'-16'	0.4' Brown fine sand, some medium sand, trace coarse sand, trace gravel; moist 0.5' Concrete; moist. 0.9' Tan fine sand, some medium sand, trace coarse sand, trace gravel; moist.	MC	12'-16'	0.4ppm	45
16'-20'	0.8' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry. 1.8' Tan fine and medium sand, little coarse sand, trace gravel; moist.	MC	16'-20'	0.4ppm	65
20'-24'	1.0' Tan medium and coarse sand, some fine sand, little gravel; wet.	MC	20'-24'	0.3ppm	43
24'-28'	1.5' Tan fine sand, some medium sand, trace coarse sand; wet. 0.5' Tan medium sand, some fine sand, little coarse sand, trace gravel; wet.	MC	24'-28'	0.6ppm	50

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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DRILLING LOG - Direct Push Temporary Borehole Installation

Boring I.D. P-27

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
28'-32'	2.1' Tan medium and coarse sand, some fine sand, trace gravel; wet.	MC	28'-32'	0.3ppm	53

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/19/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-28
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~15'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	2.0' Brown fine sand, little medium sand, trace coarse sand; dry.	MC	0'-4'	0.3ppm	80
	0.5' Tan fine sand, some medium sand, little coarse sand, trace gravel; dry.				
	0.7' Brown fine sand, little medium sand, trace coarse sand; dry.				
4'-8'	2.8' Brown fine sand, little medium sand, trace coarse sand, trace gravel, trace concrete; dry.	MC	4'-8'	0.1ppm	88
	0.3' Concrete; dry.				
	0.4' Brown fine sand, little medium sand, trace coarse sand; dry.				
8'-12'	0.5' Brown fine sand, some medium sand, trace coarse sand; moist.	MC	8'-12'	0.2ppm	73
	0.5' Tan fine sand, some medium sand, trace coarse sand; moist.				
	0.2' Concrete; dry.				
	0.3' Brown fine sand, some medium sand, trace coarse sand; moist.				
	1.8' Concrete with brown fine sand, little medium sand; moist.				
12'-16'	0.3' Brown fine sand, little medium sand, trace coarse sand; moist.	MC	12'-16'	0.3ppm	60
	0.4' Concrete; dry.				
	0.9' Light brown fine and medium snad, little coarse sand, trace gravel; wet.				
	0.7' Tan fine and medium sand, little coarse sand, trace gravel; wet.				
16'-20'	1.3' Grey fine and medium sand, little coarse sand, trace gravel; wet.	MC	16'-20'	0.5ppm	63
	1.2' Tan medium and coarse sand, some fine sand, trace gravel; wet.				
20'-24'	1.5' Tan fine and medium sand, little coarse sand, trace gravel; wet.	MC	20'-24'	0.4ppm	38

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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DRILLING LOG - Direct Push Temporary Borehole Installation

Boring I.D. P-28

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
24'-28'	2.2' Tan fine and medium sand, little coarse sand, trace gravel; wet.	MC	24'-28'	0.2ppm	55
28'-32'	1.4' Tan fine and medium sand, little coarse sand, trace gravel; wet.	MC	28'-32'	0.4ppm	35

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/19/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-29
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~14'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	0.5' Brown fine sand, some medium sand, trace coarse sand, trace gravel; dry.	MC	0'-4'	0.2ppm	85
	1.3' Dark brown fine sand, some medium sand, trace coarse sand, trace gravel; dry.				
	0.8' Brown fine sand, some medium sand, trace coarse sand, concrete; dry.				
	0.8' Concrete and red brick; dry.				
4'-8'	0.6' Brown fine sand, some medium sand, trace coarse sand; dry.	MC	4'-8'	0.2ppm	45
	0.6' Concrete and red brick; dry.				
	0.6' Brown fine sand, some medium sand, trace coarse sand; dry.				
8'-12'	1.8' Brown fine sand, some medium sand, trace coarse sand, trace gravel, trace red brick; moist.	MC	8'-12'	0.1ppm	90
	0.6' Concrete; dry.				
	1.2' Brown fine sand, some medium sand, trace coarse sand, trace gravel; moist.				
12'-16'	1.5' Brown fine sand, some medium sand, trace coarse sand, trace gravel, trace red brick; moist.	MC	12'-16'	0.1ppm	98
	0.2' Concrete; dry.				
	1.2' Tan fine and medium sand, little coarse sand, trace gravel; wet.				
	1.0' Tan medium and coarse sand, some fine sand, trace gravel; wet.				
16'-20'	0.5' Tan medium sand, some fine sand, litle coarse sand, trace gravel; wet.	MC	16'-20'	0.4ppm	43
	0.3' Tan fine sand, some medium sand, litle coarse sand, trace gravel; wet.				
	0.4' Tan medium sand, some fine sand, litle coarse sand, trace gravel; wet.				
	0.5' Tan fine sand, some medium sand, litle coarse sand, trace gravel; wet.				

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/19/14

DRILLING LOG - Direct Push Temporary Borehole Installation

Boring I.D. P-29

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
20'-24'	0.2' Grey medium and coarse sand, some fine sand; wet.	MC	20'-24'	0.3ppm	43
	0.5' Tan medium and coarse sand, some fine sand, trace gravel; wet.				
	0.5' Tan fine sand, some medium sand, trace coarse sand; wet.				
	0.3' Tan medium and coarse sand, some fine sand, trace gravel; wet.				
24'-28'	0.7' Tan medium and coarse sand, some fine sand, trace gravel; wet.	MC	24'-28'	0.6ppm	18
28'-32'	0.9' Tan fine and medium sand, trace coarse sand, trace gravel; wet.	MC	28'-32'	0.3ppm	43
	0.3' Tan medium and coarse sand, little fine sand, trace gravel; wet.				
	0.5' Tan fine sand, some medium sand, trace coarse sand; wet.				

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/26/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME: DEC-Eastfarmingdale
SITE ADDRESS: Fairchild Republic Airport, Old Sump
Broad Hollow Rd.
East Farmingdale, NY
SITE ID NUMBER: 152004
BORING I.D.: P-30
PURPOSE: Direct Push
DRILLING METHOD: Macro Core
DRILLING COMPANY: Clearwater Drilling Inc.
HEAD DRILLER: B. Vigliotta
LOGGED BY: J. Lohan
BOREHOLE DIAMETER: 4"
DEPTH-TO-WATER: ~16'
TOTAL BORING DEPTH: 32'

SOIL SAMPLING METHOD
Type: Macro Core

GROUNDWATER SAMPLING METHOD
Type: N/A

BACKFILL: Native Fill
FINISH: N/A

COMMENTS: Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	1.0' Brown fine sand, little clay, little medium sand, trace coarse sand; moist. 0.9' Brown fine sand, little medium sand, trace coarse sand; dry. 0.3' Concrete; dry.	MC	0'-4'	0.3ppm	55
4'-8'	0.4' Cement, trace brown fine sand; dry. 0.3' Red brick, little brown fine sand, trace medium sand; dry. 0.8' Cement, some fine sand, little medium sand, trace coarse sand; dry.	MC	4'-8'	0.5ppm	38
8'-12'	0.4' Brown fine sand, some medium sand, trace coarse sand, trace gravel; dry. 1.0' Concrete; dry. 0.3' Brown fine sand, some medium sand, trace coarse sand; dry.	MC	8'-12'	0.3ppm	43
12'-16'	1.1' Brown fine sand, some medium sand, trace coarse sand, trace gravel; dry. 1.2' Tan fine sand, some medium sand, little coarse sand, trace gravel; moist.	MC	12'-16'	0.4ppm	58
16'-20'	0.7' Brown fine sand, little medium sand, trace coarse sand, trace gravel; wet. 1.4' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	16'-20'	0.3ppm	53
20'-24'	2.1' Tan fine sand, some medium sand, some coarse sand, trace gravel; wet.	MC	20'-24'	1.0ppm	53
24'-28'	1.8' Tan medium sand, some fine sand, some coarse sand, little gravel; wet.	MC	24'-28'	1.1ppm	45
28'-32'	1.4' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	28'-32'	1.7ppm	35

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/19/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-31
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~15'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	2.9' Brown fine sand, some medium sand, trace coarse sand, trace gravel; dry.	MC	0'-4'	0.3ppm	73
4'-8'	1.5' Brown fine sand, some medium sand, trace coarse sand, trace gravel; dry. 0.4' Red brick. 0.5' Brown fine sand, some medium sand, trace coarse sand, trace gravel; dry. 0.4' Concrete. 0.3' Red brick.	MC	4'-8'	0.3ppm	78
8'-12'	0.3' Brown fine sand, some medium sand, trace coarse sand, trace gravel; dry. 0.2' Red brick. 0.4' Brown fine sand, some medium sand, trace coarse sand, trace gravel; moist. 0.3' Black fine sand, some medium sand, trace coarse sand, trace gravel; moist.	MC	8'-12'	0.4ppm	30
12'-16'	1.2' Brown fine sand, trace medium sand, trace gravel; moist. 2.3' Tan Fine and medium sand, some coarse sand, trace gravel; wet.	MC	12'-16'	0.4ppm	88
16'-20'	1.0' Tan Fine and medium sand, little coarse sand, trace gravel; wet.	MC	16'-20'	0.4ppm	25
20'-24'	1.8' Tan medium and coarse sand, some fine sand, trace gravel; wet.	MC	20'-24'	0.3ppm	45
24'-28'	1.7' Tan medium and coarse sand, some fine sand, trace gravel; wet.	MC	24'-28'	0.5ppm	43
28'-32'	1.2' Tan medium and coarse sand, some fine sand, trace gravel; wet.	MC	28'-32'	0.4ppm	30

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/26/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME: DEC-Eastfarmingdale
SITE ADDRESS: Fairchild Republic Airport, Old Sump
Broad Hollow Rd.
East Farmingdale, NY
SITE ID NUMBER: 152004
BORING I.D.: P-32
PURPOSE: Direct Push
DRILLING METHOD: Macro Core
DRILLING COMPANY: Clearwater Drilling Inc.
HEAD DRILLER: B. Vigliotta
LOGGED BY: J. Lohan
BOREHOLE DIAMETER: 4"
DEPTH-TO-WATER: ~16'
TOTAL BORING DEPTH: 32'

SOIL SAMPLING METHOD
Type: Macro Core

GROUNDWATER SAMPLING METHOD
Type: N/A

BACKFILL: Native Fill
FINISH: N/A

COMMENTS: Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	1.1' Brown fine sand, little medium sand, trace coarse sand; dry.	MC	0'-4'	0.8ppm	30
	0.2' Concrete; dry.				
	0.1' Red brick; dry.				
	0.8' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.				
4'-8'	0.2' Red brick; dry.	MC	4'-8'	0.6ppm	15
	0.4' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.				
8'-12'	2.4' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.	MC	8'-12'	0.8ppm	75
	0.6' Tan fine sand, little coarse sand, trace medium sand, trace gravel; dry.				
12'-16'	1.3' Brown fine sand, little medium sand, little coarse sand, trace gravel; dry.	MC	12'-16'	0.7ppm	88
	2.2' Tan fine sand, some coarse sand, little medium sand, trace gravel; wet.				
16'-20'	1.8' Tan fine sand, little medium sand, little coarse sand, trace gravel; wet.	MC	16'-20'	0.8ppm	45
20'-24'	2.0' Tan fine sand, little medium sand, little coarse sand, trace gravel; wet.	MC	20'-24'	0.5ppm	48
24'-28'	2.1' Tan fine and medium sand, tracec coarse sand, trace gravel; wet.	MC	24'-28'	0.5ppm	53
28'-32'	1.4' Tan medium sand, some fine sand, litttle coarse sand, trace gravel; wet.	MC	28'-32'	0.6ppm	53
	0.3' Tan finesand, trace medium sand; wet.				
	1.4' Tan medium sand, some fine sand, some coarse sand, trace gravel; wet.				

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/25/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME: DEC-Eastfarmingdale
SITE ADDRESS: Fairchild Republic Airport, Old Sump
Broad Hollow Rd.
East Farmingdale, NY
SITE ID NUMBER: 152004
BORING I.D.: P-33
PURPOSE: Soil Investigation
DRILLING METHOD: Macro Core
DRILLING COMPANY: Clearwater Drilling Inc.
HEAD DRILLER: B. Vigliotta
LOGGED BY: J. Lohan
BOREHOLE DIAMETER: 4"
DEPTH-TO-WATER: ~16'
TOTAL BORING DEPTH: 32'

SOIL SAMPLING METHOD
Type: Macro Core

GROUNDWATER SAMPLING METHOD
Type: N/A

BACKFILL: Native Fill
FINISH: N/A

COMMENTS: Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	0.5' Brown fine sand, trace medium sand, trace gravel; dry.	MC	0'-4'	0.4ppm	88
	0.4' Red brick; dry.				
	0.3' Brown fine sand, trace medium sand, trace coarse sand; dry.				
	0.3' Concrete; dry.				
	0.5'Brown fine sand, little medium sand, trace coarse sand, trace gravel, trace red brick; dry.				
	0.4' Concrete; dry.				
	0.4' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.				
	0.8' Concrete; dry.				
4'-8'	0.2' Concrete; dry.	MC	4'-8'	0.2ppm	85
	0.6' Brown fine sand, little medium sand, trace gravel; dry.				
	0.5' Concrete; dry.				
	2.1' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.				
8'-12'	1.6' Brown fine sand, little medium sand, trace coarse sand, trace gravel; moist.	MC	8'-12'	0.3ppm	50
	0.4' Black clay; sheen, moist, odor.				
16'-20'	2.6' Brown fine sand, little medium sand, trace coarse sand; moist.	MC	16'-20'	0.3ppm	65
12'-16'	1.7' Dark brown fine sand, little medium sand, trae coarse sand; wet.	MC	12'-16'	0.1ppm	100
	2.3' Brown fine sand, little medium sand, trace coarse sand, trace gravel; wet.				
20'-24'	1.9' Brown clayey fine sand, little medium sand, trace coarse sand ; wet.	MC	20'-24'	0.5ppm	48
24'-28'	0.7' Tan fine and medium sand, trace coarse sand; wet.	MC	24'-28'	0.6ppm	18

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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DRILLING LOG - Direct Push Temporary Borehole Installation

Boring I.D. P-33

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
28'-32'	0.6' Brown fine sand, little medium sand, trace coarse sand; wet. 2.0' Dark brown fine sand, trace medium sand, trace coarse sand; wet.	MC	28'-32'	0.6ppm	65

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 7/01/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-50
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~15'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	0.8' Brown fine sand, little medium sand, trace coarse sand; dry 1.1' Brown clayey fine sand, little medium sand; moist 0.2' Brown fine sand, little medium sand, trace coarse sand; dry.	MC	0'-4'	0.0ppm	53
4'-8'	0.2' Brown fine sand, little medium sand, trace coarse sand; dry. 0.1' Concrete; dry. 0.3' Brown fine sand, little medium sand, trace coarse sand; dry. 1.1' Brown/black clay, trace fine sand, trace concrete; moist.	MC	4'-8'	0.4ppm	43
8'-12'	0.3' Brown clay, little fine sand, little medium sand; moist. 1.0' Brown fine sand, little medium sand, little coarse sand, trace black clay; moist. 0.5' Brown fine sand, little medium sand, little coarse sand; moist.	MC	8'-12'	2.5ppm	45
12'-16'	1.2' Black clay, some fine sand, little medium sand; moist. 2.8' Brown fine sand, some medium sand, little coarse sand; wet.	MC	12'-16'	0.8ppm	100
16'-20'	1.2' Brown fine sand, come coarse sand, little medium sand, trace gravel; wet.	MC	16'-20'	0.8ppm	30
20'-24'	1.0' Grey/tan fine and medium sand, little coarse sand, 0.05' band of black fine and medium sand in the middle; wet.	MC	20'-24'	0.8ppm	25
24'-28'	01.0' Tan fine and medium sand, come coarse sand, trace gravel wet.	MC	24'-28'	0.7ppm	48
28'-32'	1.8' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	28'-32'	0.3ppm	45

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 7/01/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-51
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~16'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	1.5' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.	MC	0'-4'	0.4ppm	38
4'-8'	0.1' Brown fine sand, little medium sand, trace coarse sand; dry. 0.6' Concrete; dry. 1.6' Brown fine sand, some medium sand, trace coarse sand, trace gravel; dry.	MC	4'-8'	0.2ppm	58
8'-12'	0.5' Brown fine sand, little medium sand, little coarse sand, trace gravel; dry. 0.3' Concrete; dry. 1.3' Brown fine sand, some coarse sand, little medium sand, trace gravel; moist.	MC	8'-12'	0.3ppm	53
12'-16'	1.0' Brown fine sand, little coarse sand, trace medium sand, trace gravel, trace concrete; dry. 0.8' Brown medium sand, some fine sand, trace coarse sand, gravel; wet.	MC	12'-16'	0.3ppm	45
16'-20'	1.0' Brown fine sand, little coarse sand, trace medium sand, trace gravel, trace red brick; dry.	MC	16'-20'	0.1ppm	25
20'-24'	1.5' Brown fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	20'-24'	0.5ppm	38
24'-28'	0.5' Brown/black fine sand, some medium sand, little coarse sand; wet. 0.4' Black asphalt 0.9' Brown fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	24'-28'	0.6ppm	48

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 7/01/14

DRILLING LOG - Direct Push Temporary Borehole Installation

Boring I.D. P-51

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
28'-32'	1.1' Brown Clayey fine sand, some coarse sand, little medium sand; wet.	MC	28'-32'	13.8ppm	53
	0.5' Black clay, little fine sand, trace medium sand; wet, odor.				
	0.5' Tan fine sand, some medium sand, some coarse sand; wet.				

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 7/01/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-52
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~15'
TOTAL BORING DEPTH	32"

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	1.2' Brown fine sand, little medium sand, little coarse sand; dry.	MC	0'-4'	0.4ppm	50
	0.2' Concrete; dry.				
	0.6' Brown fine sand, little coarse sand, trace medium sand; dry.				
4'-8'	1.1' Brown fine sand, little medium sand, little coarse sand; dry.	MC	4'-8'	1.1ppm	28
8'-12'	1.5' Brown fine sand, little medium sand, little coarse sand, trace gravel, trace red brick, trace asphalt; dry.	MC	8'-12'	1.7ppm	38
12'-16'	0.4' Brown fine sand, some medium sand, little coarse sand; dry.	MC	12'-16'	3.1ppm	35
	1.0' Brown clayey fine sand, little medium sand, little coarse sand; wet.				
16'-20'	1.1' Brown fine sand, some clay, some coarse sand, little medium sand; wet.	MC	16'-20'	14.2ppm	40
	0.5' Black clay, trace fine sand, trace medium sand; wet, odor.				
20'-24'	0.2' Black clay, trace fine sand, trace medium sand; wet, odor.	MC	20'-24'	1.7ppm	43
	1.5' Brown fine sand, some medium sand, little clay, little coarse sand, trace gravel; wet.				
24'-28'	0.4' Brown fine sand, some coarse sand, little medium sand; wet.	MC	24'-28'	3.2ppm	38
	0.4' Concrete; wet.				
	0.6' Brown fine sand, some medium sand, some coarse sand, gravel; wet.				
28'-32'	1.3' Brown fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	28'-32'	1.4ppm	33

"Trace", 1 - 10%
"Little", 10 - 20%
"Some", 20 - 30%
"And", 30 - 50%

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Installation Date 7/01/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME: DEC-Eastfarmingdale
SITE ADDRESS: Fairchild Republic Airport, Old Sump
Broad Hollow Rd.
East Farmingdale, NY
SITE ID NUMBER: 152004
BORING I.D.: P-54
PURPOSE: Direct Push
DRILLING METHOD: Macro Core
DRILLING COMPANY: Clearwater Drilling Inc.
HEAD DRILLER: B. Vigliotta
LOGGED BY: J. Lohan
BOREHOLE DIAMETER: 4"
DEPTH-TO-WATER: ~16'
TOTAL BORING DEPTH: 32'

SOIL SAMPLING METHOD
Type: Macro Core

GROUNDWATER SAMPLING METHOD
Type: N/A

BACKFILL: Native Fill
FINISH: N/A

COMMENTS: Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	1.3' Brown fine sand, little medium sand, little coarse sand, trace gravel; dry. 0.5' Red brick; dry. 0.1' Concrete; dry.	MC	0'-4'	0.4ppm	48
4'-8'	0.1' Red brick; dry. 0.1' Concrete; dry. 2.4' Brown fine sand, little medium sand, little coarse sand, trace concrete, trace asphalt, trace red brick; dry.	MC	4'-8'	0.2ppm	70
8'-12'	1.1' Brown fine sand, little medium sand, little coarse sand, trace gravel, trace concrete; dry. 0.6' Concrete; dry. 0.5' Brown fine sand, some coarse sand, little medium sand; dry.	MC	8'-12'	0.3ppm	55
12'-16'	1.9' Brown fine sand, little medium sand, little coarse sand, trace gravvel, trace red brick, trace concrete; dry. 0.7' Brown fine sand, little medium sand, little coarse sand, trace gravel; wet.	MC	12'-16'	0.3ppm	65
16'-20'	1.7' Brown fine sand, some coarse sand, little medium sand, trace gravel. trace red brick; moist. 0.8' Brown fine sand, little medium sand, little coarse sand, little clay, trace gravel; wet. 0.1' Black clay, some fine sand, little medium sand; wet.	MC	16'-20'	0.1ppm	65
20'-24'	1.2' Brown/black clay, trace fine sand, trace medium sand; wet. 0.5' Grey fine and medium sand, little coarse sand, trace gravel; wet.	MC	20'-24'	0.5ppm	43
24'-28'	03' Black clay, some fine sand, little medium sand, trace coarse sand; wet. 1.7' Grey fine and medium sand, little coarse sand, trace gravel wet.	MC	24'-28'	0.6ppm	50

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 7/01/14

DRILLING LOG - Direct Push Temporary Borehole Installation

Boring I.D. P-54

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
28'-32'	1.7' Grey fine and medium sand, little coarse sand, trace gravel; wet.	MC	28'-32'	1.7ppm	65

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 7/03/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-60
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~12'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	1.9' Brown fine sand, little medium sand, little coarse sand, trace gracel, trace red brick; dry.	MC	0'-4'	0.2ppm	48
4'-8'	2.0' Brown fine sand, some medium sand, little coarse sand, trace gravel; dry.	MC	4'-8'	0.3ppm	50
8'-12'	1.1' Brown fine sand, some clay, little coarse sand, trace medium sand; moist.	MC	8'-12'	1.0ppm	28
12'-16'	0.1' Brown fine sand, come clay, some medium sand, little coarse sand; wet. 0.2' Black clay, trace fine sand, trace medium sand; wet. 1.6' Brown fine sand, some medium sand, little clay, little coarse sand; wet.	MC	12'-16'	3.2ppm	48
16'-20'	0.5' Black clay, little fine sand, little medium sand; wet, odor. 1.6' Brown fine sand, some medium sand, little coarse sand, trace cly, trace gravel; wet. 1.1' Black clay, little fine sand, trace medium sand; wet.	MC	16'-20'	3.8ppm	80
20'-24'	0.4' Black fine sand, little clay, little medium sand, little coarse sand; wet. 0.3' Brown fine and medium sand, little clay, little coarse sand; wet.	MC	20'-24'	5.3ppm	18
24'-28'	0.2' Black clay, little fine sand, trace medium sand; wet. 0.7' Grey medium sand, some fine sand, some coarse sand; wet. 1.1' Tan fine sand, some medium sand, trace coarse sand; wet.	MC	24'-28'	6.8ppm	50
28'-32'	1.9' tan fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	28'-32'	0.5ppm	48

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME: DEC-Eastfarmingdale
SITE ADDRESS: Fairchild Republic Airport, Old Sump
Broad Hollow Rd.
East Farmingdale, NY
SITE ID NUMBER: 152004
BORING I.D.: P-61
PURPOSE: Direct Push
DRILLING METHOD: Macro Core
DRILLING COMPANY: Clearwater Drilling Inc.
HEAD DRILLER: B. Vigliotta
LOGGED BY: J. Lohan
BOREHOLE DIAMETER: 4"
DEPTH-TO-WATER: ~16'
TOTAL BORING DEPTH: 32'

SOIL SAMPLING METHOD
Type: Macro Core

GROUNDWATER SAMPLING METHOD
Type: N/A

BACKFILL: Native Fill
FINISH: N/A

COMMENTS: Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	1.1' Brown fine sand, little medium sand, little coarse sand, trace gravel; dry.	MC	0'-4'	3.9ppm	50
	0.2' Red brick; dry.				
	0.7' Brown fine sand, litttle medium sand, little coarse sand, trace gravel; dry.				
4'-8'	1.1' Brown fine sand, little medium sand, little coarse sand; dry	MC	4'-8'	0.2ppm	28
8'-12'	0.6' Brown fine sand, little medium sand, little coarse sand, trace red brick; dry.	MC	8'-12'	0.3ppm	38
	0.9' Brown fine sand, some medium sand, little coarse sand, trace gravel; wet.				
12'-16'	0.7' Brown fine sand, little medium sand, little coarse sand; moist.	MC	12'-16'	0.3ppm	55
	0.4' Brown fine sand, some coarse sand, little medium sand, trace gravel; wet.				
	0.3' Black clay, trace fine sand; wet.				
	0.8' Brown fine sand, little medium sand, little coarse sand,l trace gravel;wet.				
	0.4' Black clay; sheen, moist, odor.				
16'-20'	1.3' Brown fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	16'-20'	0.1ppm	33
20'-24'	0.2' Black fine sand, some medium sand, some coarse sand; wet.	MC	20'-24'	0.5ppm	28
	0.1' Black clay, trace fine sand; wet, odor.				
	0.8' Brown fine sand, some medium sand, some coarse sand, trace gravel; wet.				
24'-28'	0.7' Brown fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	24'-28'	0.6ppm	48
	0.2' Black clay, trace fine sand; wet, odor.				

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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DRILLING LOG - Direct Push Temporary Borehole Installation

Boring I.D. P-61

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
28'-32'	1.7' Brown/black fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	28'-32'	8.2ppm	58
	0.4' Black clay, trace fine sand; wet, odor.				
	0.2' Tan fine and medium sand, little coarse sand; wet.				

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME: DEC-Eastfarmingdale
SITE ADDRESS: Fairchild Republic Airport, Old Sump
Broad Hollow Rd.
East Farmingdale, NY
SITE ID NUMBER: 152004
BORING I.D.: P-62
PURPOSE: Direct Push
DRILLING METHOD: Macro Core
DRILLING COMPANY: Clearwater Drilling Inc.
HEAD DRILLER: B. Vigliotta
LOGGED BY: J. Lohan
BOREHOLE DIAMETER: 4"
DEPTH-TO-WATER: ~16'
TOTAL BORING DEPTH: 32'

SOIL SAMPLING METHOD
Type: Macro Core

GROUNDWATER SAMPLING METHOD
Type: N/A

BACKFILL: Native Fill
FINISH: N/A

COMMENTS: Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	0.2' Brown fine and medium sand, little coarse sand; moist.	MC	0'-4'	0.7ppm	45
	0.2' Concrete; dry.				
	1.4' Brown fine sand, little medium sand, little coarse sand, trace gravel, trace red brick; dry.				
4'-8'	1.5' Brown fine sand, some coarse sand, little medium sand, trace gravel, trace concrete, trace red brick, trace asphalt; dry.	MC	4'-8'	1.2ppm	95
	0.7' Concrete; dry.				
	0.6' Brown fine sand, little medium sand, little coarse sand; dry.				
8'-12'	0.1' Brown fine sand, little medium sand, trace coarse sand; dry.	MC	8'-12'	1.1ppm	78
	1.8' Concrete; dry.				
	0.6' Black clay; moist, odor.				
	0.6' Brown fine sand, some medium sand, little coarse sand, trace gravel; dry.				
12'-16'	0.1' Concrete; dry.	MC	12'-16'	0.9ppm	63
	2.1' Brown fine sand, some medium sand, little coarse sand, trace gravel, trace concrete, trace red brick; dry.				
	0.3' Brown fine and medium sand, little coarse sand, trace gravel: moist.				
16'-20'	0.4' Brown fine sand, little medium sand, trace coarse sand: dry.	MC	16'-20'	0.3ppm	30
	0.8' Brown fine sand, some medium sand, little coarse sand, trace gravel; wet.				
20'-24'	No recovery.	MC	N/A	N/A	N/A
24'-28'	0.7' Brown/grey fine sand, some medium sand, little coarse sand; wet.	MC	24'-28'	13.1ppm	53
	1.4' Black clay, trace fine sand; moist, odor.				

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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DRILLING LOG - Direct Push Temporary Borehole Installation

Boring I.D. P-62

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
28'-32'	1.2' Black clay, trace fine sand; wet, odor.	MC	28'-32'	9.8ppm	63
	0.7' Brown fine sand, some clay, little medium sand, little caorse sand, trace gravel; wet.				
	0.6' Brown fine sand, some medium sand, little coarse sand, trace gravel; wet.				

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME: DEC-Eastfarmingdale
SITE ADDRESS: Fairchild Republic Airport, Old Sump
Broad Hollow Rd.
East Farmingdale, NY
SITE ID NUMBER: 152004
BORING I.D.: P-70
PURPOSE: Direct Push
DRILLING METHOD: Macro Core
DRILLING COMPANY: Clearwater Drilling Inc.
HEAD DRILLER: B. Vigliotta
LOGGED BY: J. Lohan
BOREHOLE DIAMETER: 4"
DEPTH-TO-WATER: ~19'
TOTAL BORING DEPTH: 32'

SOIL SAMPLING METHOD
Type: Macro Core

GROUNDWATER SAMPLING METHOD
Type: N/A

BACKFILL: Native Fill
FINISH: N/A

COMMENTS: Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	2.4' Brown fine sand, some coarse sand, little medium sand, trace gravel; dry.	MC	0'-4'	1.0ppm	60
4'-8'	1.8' Brown fine sand, some medium sand, some coarse sand, trace gravel, trace asphalt; dry.	MC	4'-8'	0.6ppm	45
8'-12'	2.4' Brown fine sand, some medium sand, some coarse sand, trace gravel; dry. 1.1' Tan fine sand, some medium sand, little coarse sand, trace gravel; moist.	MC	8'-12'	0.3ppm	88
12'-16'	0.6' Brown fine sand, some medium sand, little coarse sand, trace gravel; dry. 2.2' Tan fine sand, some medium sand, little coarse sand, trace gravel; moist.	MC	12'-16'	0.9ppm	70
16'-20'	1.2' Brown fine sand, some medium sand, little coarse sand, trace gravel; moist. 1.9' Tan fine sand, some mediu sand, little coarse sand, trace gravel; moist.	MC	16'-20'	0.4ppm	78
20'-24'	2.3' Tan fine sand, little medium sand, little coarse sand, trace gravel; wet.	MC	20'-24'	0.2ppm	58
24'-28'	1.9' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	24'-28'	0.5ppm	48
28'-32'	1.7' Tan fine sand, little medium sand, little coarse sand; wet.	MC	28'-32'	0.7ppm	43

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-71
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~16'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	1.7' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.	MC	0'-4'	0.4ppm	43
4'-8'	1.5' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry. 0.2' Light brown fine sand, trace medium sand; moist. 0.6' Brown fine sand, little medium sand, trace coarse sand, trace gravel, trace asphalt; moist. 0.2' Concrete; dry.	MC	4'-8'	0.6ppm	85
8'-12'	0.3' Brown dine sand, little medium sand, trace coarse sand, trace gravel; dry. 0.1' Grey fine sand, some medium sand, little concrete; moist. 0.7' Brown/ black fine sand some clay, little medium sand. trace coarse sand, trace gravel; moist, odor.	MC	8'-12'	0.5ppm	28
12'-16'	0.3' Brown fine sand, little medium sand, trace coarse sand, trace gravel; wet. 0.2' Brown fine sand, trace medium sand, trace coarse sand, trace gravel; dry. 0.4' Brown fine sand, some medium sand, trace coarse sand, trace gravel; wet.	MC	12'-16'	0.4ppm	23
16'-20'	2.0' Black clay, trace fine sand, trace medium sand; sheen, wet, odor.	MC	16'-20'	2.1ppm	50
20'-24'	0.7' Grey fine sand, some medium sand, trace coarse sand; wet. 0.4' Tan fine sand, some medium sand, trace coarse sand, trace gravel; wet.	MC	20'-24'	0.3ppm	28
24'-28'	1.7' Tan fine sand, little medium sand, trace coarse sand, trace gravel; wet.	MC	24'-28'	0.2ppm	43

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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DRILLING LOG - Direct Push Temporary Borehole Installation

Boring I.D. P-71

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
28'-32'	1.4' Tan fine sand, little medium sand, trace coarse sand; wet.	MC	28'-32'	0.1ppm	38
	0.1' Grey fine sand, little medium sand, trace coarse sand; wet.				

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 7/07/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME: DEC-Eastfarmingdale
SITE ADDRESS: Fairchild Republic Airport, Old Sump
Broad Hollow Rd.
East Farmingdale, NY
SITE ID NUMBER: 152004
BORING I.D.: P-72
PURPOSE: Direct Push
DRILLING METHOD: Macro Core
DRILLING COMPANY: Clearwater Drilling Inc.
HEAD DRILLER: B. Vigliotta
LOGGED BY: J. Lohan
BOREHOLE DIAMETER: 4"
DEPTH-TO-WATER: ~16'
TOTAL BORING DEPTH: 32'

SOIL SAMPLING METHOD
Type: Macro Core

GROUNDWATER SAMPLING METHOD
Type: N/A

BACKFILL: Native Fill
FINISH: N/A

COMMENTS: Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	0.6' Brown fine sand, little medium sand, trace coarse sand; dry. 0.7' Concrete; dry. 1.1' Brown fine sand, little medium sand trace coarse sand, trace gravel; dry.	MC	0'-4'	0.8ppm	60
4'-8'	0.6' Brown fine sand, little medium sand, trace coarse sand, trace concrete; dry. 1.5' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.	MC	4'-8'	0.4ppm	53
8'-12'	0.2' Brown fine sand, little medium sand, trace coarse sand; moist. 0.5' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.	MC	8'-12'	0.3ppm	18
12'-16'	2.4' Brown/black clay, some fine sand, trace medium sand, trace coarse sand; wet, odor.	MC	12'-16'	0.4ppm	60
16'-20'	2.1' Brown fine sand, some medium sand, little clay, trace coarse sand; wet.	MC	16'-20'	0.3ppm	53
20'-24'	0.4' Black/ grey fine sand, little medium sand, trace coarse sand; wet. 0.3' Brown fine sand, little medium sand, trace coarse sand; wet. 0.2' Black clay; sheen, wet, odor.	MC	20'-24'	0.3ppm	23
24'-28'	Black fine sand, little medium sand, trace coarse sand; wet, odor. Low recovery, bagged directly from sampler..	MC	24'-28'	0.4ppm	??
28'-32'	0.7' Black/grey fine sand, some medium sand, little coarse sand; wet.	MC	28'-32'	1.2ppm	18

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 7/07/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME: DEC-Eastfarmingdale
SITE ADDRESS: Fairchild Republic Airport, Old Sump
Broad Hollow Rd.
East Farmingdale, NY
SITE ID NUMBER: 152004
BORING I.D.: P-73
PURPOSE: Direct Push
DRILLING METHOD: Macro Core
DRILLING COMPANY: Clearwater Drilling Inc.
HEAD DRILLER: B. Vigliotta
LOGGED BY: J. Lohan
BOREHOLE DIAMETER: 4"
DEPTH-TO-WATER: ~16'
TOTAL BORING DEPTH: 32'

SOIL SAMPLING METHOD
Type: Macro Core

GROUNDWATER SAMPLING METHOD
Type: N/A

BACKFILL: Native Fill
FINISH: N/A

COMMENTS: Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	2.0' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.	MC	0'-4'	0.4ppm	50
4'-8'	2.2' Brown fine sand, little medium sand, little coarse sand, trace asphalt, trace red brick; dry.	MC	4'-8'	0.2ppm	55
8'-12'	1.0' Brown fine sand, little medium sand, trace coarse sand; moist. 0.2' Light brown fine sand, little medium sand, little coarse sand, moist.	MC	8'-12'	0.3ppm	30
12'-16'	2.0' Brown fine sand, some medium sand, little coarse sand, trace gravel; wet. 0.4' Black clay; sheen, wet, odor.	MC	12'-16'	1.5ppm	60
16'-20'	0.8' Brown/black fine sand, little medium sand, trace coarse sand; wet.	MC	16'-20'	0.3ppm	20
20'-24'	1.3' Brown fine sand, little medium sand, trace coarse sand; wet. 0.1' Black fine sand, little medium sand, trace coarse sand; wet. 0.1' Brown fine sand, little medium sand, trace coarse sand; wet.	MC	20'-24'	0.5ppm	38
24'-28'	1.2' Brown/grey fine sand, little medium sand, trace coarse sand, gravel; wet.	MC	24'-28'	0.6ppm	30
28'-32'	1.5' Black clay, trace fine sand, trace medium sand; wet. 0.6' Grey fine sand, little medium sand, trace coarse sand, trace gravel; wet.	MC	28'-32'	3.1ppm	53

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME: DEC-Eastfarmingdale
SITE ADDRESS: Fairchild Republic Airport, Old Sump
Broad Hollow Rd.
East Farmingdale, NY
SITE ID NUMBER: 152004
BORING I.D.: P-74
PURPOSE: Direct Push
DRILLING METHOD: Macro Core
DRILLING COMPANY: Clearwater Drilling Inc.
HEAD DRILLER: B. Vigliotta
LOGGED BY: J. Lohan
BOREHOLE DIAMETER: 4"
DEPTH-TO-WATER: ~16'
TOTAL BORING DEPTH: 32'

SOIL SAMPLING METHOD
Type: Macro Core

GROUNDWATER SAMPLING METHOD
Type: N/A

BACKFILL: Native Fill
FINISH: N/A

COMMENTS: Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	1.9' Brown fine sand, trace medium sand, trace coarse sand, trace concrete; dry.	MC	0'-4'	0.4ppm	48
4'-8'	2.0' Brown fine sand, little medium sand, trace coarse sand, trace concrete, trace asphalt; dry.	MC	4'-8'	0.2ppm	50
8'-12'	2.2' Brown fine sand, little medium sand, trace coarse sand; dry.	MC	8'-12'	0.4ppm	55
12'-16'	1.5' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry. 0.6' Tan/brown fine sand, little medium sand, trace coarse sand; wet. 0.2' Black clay; wet. 0.2' Grey/brown fine sand, some medium sand, tracce coarse sand; wet.	MC	12'-16'	0.6ppm	63
16'-20'	0.7' Brown fine sand, little medium sand, trace coarse sand; dry. 1.1' Brown fine snad, some medium sand, trace coarse sand; wet. 1.1' Black clay, some fine sand, trace medium sand, trace coarse sand; wet, odor. 1.0' Brown fine sand, little medium sand, trace coarse sand, trace gravel; wet.	MC	16'-20'	1.1ppm	98
20'-24'	0.4' Brown fine sand, little medium sand, trace coarse sand; trace gravel; wet.	MC	20'-24'	0.2ppm	10
24'-28'	No recovery.	MC	24'-28'	N/A	0
28'-32'	2.3' Black clay, trace fine sand, trace medium sand; wet. 0.3' Grey/tan fine sand, some medium sand, trace coarse sand	MC	28'-32'	1.2ppm	65

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 7/07/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME: DEC-Eastfarmingdale
SITE ADDRESS: Fairchild Republic Airport, Old Sump
Broad Hollow Rd.
East Farmingdale, NY
SITE ID NUMBER: 152004
BORING I.D.: P-75
PURPOSE: Direct Push
DRILLING METHOD: Macro Core
DRILLING COMPANY: Clearwater Drilling Inc.
HEAD DRILLER: B. Vigliotta
LOGGED BY: J. Lohan
BOREHOLE DIAMETER: 4"
DEPTH-TO-WATER: ~16'
TOTAL BORING DEPTH: 32'

SOIL SAMPLING METHOD
Type: Macro Core

GROUNDWATER SAMPLING METHOD
Type: N/A

BACKFILL: Native Fill
FINISH: N/A

COMMENTS: Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	1.1' Brown fine sand, little medium sand, trace coarse sand, trace concrete; dry.	MC	0'-4'	1.1ppm	88
	0.4' Concrete; dry.				
	0.9' Brown fine sand, little medium sand, trace coarse sand, trace trace asphalt, trace redbrick; dry.				
4'-8'	0.3' Brown fine sand, little medium sand, trace coarse sand, trace concrete; dry	MC	4'-8'	0.7ppm	38
	0.4' Concrete; dry.				
	0.8' Brown fine sand, little medium sand, treace coarse sand, trace asphalt, trace red brick; dry.				
8'-12'	2.4' Brown/black fine sand, little medium sand, trace coarse sand, trace asphalt, trace concrete; dry.	MC	8'-12'	1.0ppm	60
12'-16'	2.0' Dark brown fine sandlittle medium sand traace coarse sand trace concrete, trace aspalt; dry.	MC	12'-16'	1.5ppm	65
	0.6' Tan/grey fine sand, some medium sand, trace coarse sand wet.				
16'-20'	0.8' Brown fine sand, little medium, trace coarse sand, trace concrete; dry.	MC	16'-20'	0.7ppm	53
	1.3' Grey fine sand, some medium sand, trace coarse sand, trace gravel; wet.				
20'-24'	0.1' Concrete; wet.	MC	20'-24'	0.8ppm	40
	0.5' Dark brown fine sand, little medium sand, trace coarse sand, trace red brick, trace asphalt; dry.				
	1.0' Grey fine sand, some medium sand, trace coarse coarse sand; wet.				
24'-28'	1.5' Grey/black fine sand, some medium sand, trace coarse sand trace gravel; wet.	MC	24'-28'	0.7ppm	38

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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DRILLING LOG - Direct Push Temporary Borehole Installation

Boring I.D. P-75

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
28'-32'	1.2' Grey/black fine sand, some medium sand, trace coarse sand, trace gravel; wet.	MC	28'-32'	1.0ppm	38
	0.3' Tan fine sand, little medium sannd, trace coarse sand; wet.				

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 7/08/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-80
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~16'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	2.1' Brown fine sand, little medium sand, trace coarse sand, trace asphalt, trace concrete; dry.	MC	0'-4'	0.8ppm	53
4'-8'	0.8' Dark brown fine sand, little medium sand, trace coarse sand, trace concrete; dry. 1.4' Light brown fine sand, little coarse sand, trace asphalt; dry.	MC	4'-8'	0.6ppm	55
8'-12'	1.8' Brown fine sand, little medium sand, trace coarse sand; dry. 1.1' Brown/tan fine sand, little medium sand, trace coarse sand; moist.	MC	8'-12'	1.0ppm	50
12'-16'	0.3' Brown fine sand, little medium sand, trace coarse sand; moist. 1.0' Tan/dark brown fine sand, little medium sand, trace coarse sand; moist. 1.5' Tan fine sand, little medium sand, trace coarse sand; moist. 0.9' Tan medium sand, some fine sand, little coarse sandn, trace gravel; wet.	MC	12'-16'	1.0ppm	93
16'-20'	1.3' Brown fine sand, trace medium sand, trace coarse sand; moist. 2.6' Brown/tan medium sand, some fine sand, trace coarse sand; wet.	MC	16'-20'	0.8ppm	73
20'-24'	1.6' Tan fine sand, some medium sand, trace coarse sand; wet. 0.6' Tan medium sand, trace coarse sand, little fine sand, trace gravel; wet.	MC	20'-24'	0.7ppm	55
24'-28'	0.9' Tan medium sand, some fine sand, little coarse sand; wet. 1.0' Tan fine sand, little medium sand, little coarse sand; wet.	MC	24'-28'	0.6ppm	48
28'-32'	0.2' Brown fine sand, some medium sand, little coarse sand, trace gravel; wet. 0.4' Tan fine sand, trace medium sand, trace coarse sand; wet. 0.1' Tan fine sand, little medium sand, trace coarse sand; wet.	MC	28'-32'	0.6ppm	18

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 7/08/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-81
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~16'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	1.7' Brown fine sand, little medium sand, trace coarse sand, trace gravel, trace red brick, trace cement; dry.	MC	0'-4'	3.1ppm	43
4'-8'	0.2' Brown fine sand, trace medium, sand trace coarse sand; dry. 0.7' Tan fine sand, little medium sand, trace coarse sand; dry. 0.3' Brown fine sand, trace medium sand, trace coarse sand; dry.	MC	4'-8'	3.2ppm	30
8'-12'	1.4' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry. 0.1' Black clay; moist. 0.2' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.	MC	8'-12'	4.3ppm	43
12'-16'	0.4' Brown fine sand, little medium sand, trace coarse sand; moist. 0.5' Black clay; wet. 1.6' Brown fine sand, little medium sand, little coarse sand, trace gravel; wet.	MC	12'-16'	5.3ppm	63
16'-20'	0.3' Brown fine sand, little medium sand, trace coarse sand; dry. 0.9' Black clay, some fine sand, trace medium sand, trace coarse sand; moist. 0.9' Brown/grey sand, some medium sand, little coarse sand; moist.	MC	16'-20'	3.4ppm	53
20'-24'	No recovery.	MC	20'-24'	N/A	0
24'-28'	0.4' Black clay, little fine sand, trace medium sand; wet.	MC	24'-28'	11.5ppm	10
28'-32'	02' Grey fine sand, little medium sand; wet. 1.2' Tan fine sand, little medium sand, trace coarse sand; wet.	MC	28'-32'	2.5ppm	35

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME: DEC-Eastfarmingdale
SITE ADDRESS: Fairchild Republic Airport, Old Sump
Broad Hollow Rd.
East Farmingdale, NY
SITE ID NUMBER: 152004
BORING I.D.: P-82
PURPOSE: Direct Push
DRILLING METHOD: Macro Core
DRILLING COMPANY: Clearwater Drilling Inc.
HEAD DRILLER: B. Vigliotta
LOGGED BY: J. Lohan
BOREHOLE DIAMETER: 4"
DEPTH-TO-WATER: ~16'
TOTAL BORING DEPTH: 32'

SOIL SAMPLING METHOD
Type: Macro Core

GROUNDWATER SAMPLING METHOD
Type: N/A

BACKFILL: Native Fill
FINISH: N/A

COMMENTS: Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	2.1' Brown fine sand, little medium sand, trace coarse sand, trace contrete, trace red brick; dry.	MC	0'-4'	2.5ppm	63
	0.4' Dark brown fine sand, little asphalt, little medium sand, trace coarse sand; dry.				
4'-8'	0.5' Dark brown fine sand, little medium sand, little coarse sand, trace gravel, trace red bricck; dry.	MC	4'-8'	3.0ppm	75
	2.5' Brownfine sand, little medium sand, trace coarse sand, trace gravel, trace red brick; dry.				
8'-12'	0.2' Brown fine sand, little medium sand, trace coarse sand; dry.	MC	8'-12'	2.5ppm	63
	0.2' Red brick; dry.				
	1.6' Brown fine sand, little medium sand, little coarse sand, trace gravel; dry.				
	0.5' Black fine sand, little medium sand, trace coarse sand, trace asphalt; moist.				
12'-16'	2.4' Brown fine sand, little medium sand, little coarse sand, trace gravel, trace red brick; moist.	MC	12'-16'	4.5ppm	83
	0.9' Brown/grey fine sand, little medium sand, trace coarse sand; wet.				
16'-20'	1.1' Brown fine sand, little medium sand, trace coarse sand; dry	MC	16'-20'	2.1ppm	93
	2.4' Brown/grey fine sand, little medium sand, little coarse sand, trace gravel; wet.				
20'-24'	1.2' Dark grey fine sand, some medium sand, little coarse sand, trace gravel; wet.	MC	20'-24'	4.6ppm	30
24'-28'	0.9' Dark grey fine sand, little medium sand, little coarse sand, trace gravel; wet.	MC	24'-28'	2.3ppm	48
	1.0' Grey fine sand, little medium sand, trace coarse sand, trace gravel; wet.				

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 7/08/14

DRILLING LOG - Direct Push Temporary Borehole Installation

Boring I.D. P-82

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
28'-32'	2.1' Grey fine sand, little medium sand, trace coarse sand, trace gravel; wet.	MC	28'-32'	3.5ppm	65
	0.1' Black clay; wet, odor.				
	0.2' Grey/tan fine sand, little medium sand, trace coarse sand; wet.				

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 7/08/14-7/09/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-74
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~16'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	1.2' Brown fine sand, little medium sand, trace coarse sand, trace concrete; dry.	MC	0'-4'	5.5ppm	55
	0.5' Concrete; dry.				
	0.4' Brown fine sand, little medium sand, trace coarse sand, trace concrete; dry.				
	0.3' Concrete; dry.				
4'-8'	0.2' Concrete; dry.	MC	4'-8'	4.3ppm	48
	1.7' Brown fine sand, little medium sand, trace concrete, trace asphalt; dry.				
8'-12'	2.6' Brown fine sand, little medium sand, trace coarse sand, trace concrete, trace red brick, trace wood: dry.	MC	8'-12'	5.1ppm	80
	0.6' Tan fine sand, trace medium sand, trace coarse sand; dry.				
12'-16'	1.1' Brown fine sand, little medium sand, trace coarse sand, trace asphalt; dry.	MC	12'-16'	2.5ppm	90
	2.0' Tan fine sand, trace medium sand, trace coarse sand; dry.				
	0.5' Tan fine sand, little medium sand, little coarse sand; moist.				
16'-20'	0.2' Grey fine sand, some medium sand, trace coarse sand; wet.	MC	16'-20'	1.0ppm	45
	1.6' Tan fine sand, little medium sand, trace coarse sand; wet.				
20'-24'	0.1' Grey fine sand, little medium sand trace coarse sand; wet.	MC	20'-24'	1.1ppm	50
	1.1' Tan fine sand, little medium sand, trace coarse sand; wet.				
	0.5' Tan fine sand, trace medium sand, trace coarse sand; wet.				
	0.3' Tan fine sand, little medium sand, trace coarse sand, wet.				
24'-28'	0.1' Grey fine sand, little medium sand, trace coarse sand; wet.	MC	24'-28'	1.8ppm	53
	2.0' Tan fine sand, little medium sand, trace coarse sand; wet.				
28'-32'	2.0' Tan fine sand, little medium sand, trace coarse sand, trace gravel; wet.	MC	28'-32'	1.2ppm	50

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 7/09/14

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-91
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~15'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	0.8' Brown fine sand, little medium sand, trace coarse sand; dry.	MC	0'-4'	0.8ppm	50
	0.1' Concrete; dry.				
	0.3' Brown fine sand, trace medium sand, trace coarse sand; dry.				
	0.8' Dark brown fine sand, little medium sand, trace coarse sand, trace asphalt; dry.				
4'-8'	0.1' Dark brown fine sand, little medium sand, trace coarse sand; dry.	MC	4'-8'	0.7ppm	70
	1.7' Brown fine sand, trace medium sand, trace coarse sand; dry.				
8'-12'	0.3' Brown fine sand, trace medium sand, trace coarse sand; dry.	MC	8'-12'	1.1ppm	80
	0.4' Dark brown fine sand, little medium sand, trace coarse sand; dry.				
	03' Brown fine sand, little medium sand, trace coarse sand; dry.				
	0.7' Black/brown fine sand, trace medium sand, trace coarse sand, trace gravel; moist.				
	0.6' Brown fine sand, trace medium sand, trace coarse sand, trace gravel; moist.				
	0.3' Tan fine sand, little medium sand, trace coarse sand, trace gravel; moist.				
12'-16'	1.4' Dark brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.	MC	12'-16'	1.4ppm	93
	0.7' Tan fine sand, trace medium sand, trace coarse sand; moist.				
	1.4' Tan fine sand, little medium sand, trace coarse sand, trace gravel; wet.				
16'-20'	0.7' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry.	MC	16'-20'	0.7ppm	88
	1.0' Tan fine sand, little medium sand, trace coarse sand; wet.				
	0.9' Light grey fine sand, little medium sand, trace coarse sand, wet.				
	0.7' Tan fine sand, trace medium sand, trace coarse sand; wet.				

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 7/09/14

DRILLING LOG - Direct Push Temporary Borehole Installation

Boring I.D. P-91

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
20'-24'	1.5' Tan fine sand, little medium sand, trace coarse sand; wet.	MC	20'-24'	1.8ppm	38
24'-28'	1.1' Tan fine sand, some medium sand, little coarse sand; wet.	MC	24'-28'	1.6ppm	58
	1.2' Tan fine sand, trace medium sand, trace coarse sand; wet.				
28'-32'	0.5' Tan fine sand, little medium sand, trace coarse sand; wet.	MC	28'-32'	1.7ppm	38
	0.3' Tan medium sand, some fine sand, little coarse sand; wet.				
	0.7' Tan fine sand, little medium sand, trace coarse sand; wet.				

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-92
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~16'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations: Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	0.9' Brown fine sand, trace medium sand, trace coarse sand, trace gravel; dry.	MC	0'-4'	0.9ppm	93
	0.7' Red brick; dry.				
	1.0' Brown fine sand, little red brick, trace medium sand, trace coarse sand; dry.				
	0.4' Red brick; dry.				
	0.5' Brown fine sand, trace medium sand, trace coarse sand, trace red brick; dry.				
4'-8'	0.1' Brown fine sand, trace medium sand, trace coarse sand; dry.	MC	4'-8'	2.1ppm	50
	0.3' Red brick; dry.				
	1.6' Brown fine sand, trace medium sand, trace coarse sand, trace gravel; dry.				
8'-12'	1.3' Brown fine sand, little medium sand, trace coarse sand, trace red brick; dry.	MC	8'-12'	2.8ppm	63
	0.1' Dark brown fine sand, trace medium sand; dry.				
	0.7' Brown fine sand, little medium sand, trace coarse sand; dry.				
	0.4' Dark brown fine sand, trace medium sand, trace coarse sand; moist.				
12'-16'	1.0' Brown fine sand, little medium sand, little red brick, trace coarse sand; dry.	MC	12'-16'	4.1ppm	40
	0.2' Brown/tan fine sand, little medium sand, trace coarse sand; moist.				
	0.4' Grey/black fine sand, little medium sand, trace coarse sand; wet.				
16'-20'	1.0' Brown fine sand, little medium sand, little red brick, trace coarse sand; dry.	MC	16'-20'	5.8ppm	80
	1.4' Brown fine sand, some clay, little medium sand, trace coarse sand; wet.				
	0.8' Black clay, trace fine sand, trace medium sand; wet, odor.				

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 6/25/14

DRILLING LOG - Direct Push Temporary Borehole Installation

Boring I.D. P-92

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
20'-24'	0.9' Grey fine and medium sand, little coarse sand, trace gravel; wet.	MC	20'-24'	3.1ppm	23
24'-28'	1.4' Tan fine sand, little medium sand, trace coarse sand, tracce gravel; wet.	MC	24'-28'	4.2ppm	35
28'-32'	0.5' Tan fine sand, little medium sand, trace coarse sand; wet.	MC	28'-32'	3.7ppm	48
	0.5' Tan fine sand, some medium sand, little coarse sand; wet.				
	0.4' Tan fine sand, trace medium sand; wet.				
	0.5' Tan fine sand, little medium sand, trace coarse sand; wet.				

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

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Installation Date 7/09/14
Page 1 of 1

DRILLING LOG - Direct Push Temporary Borehole Installation

DRILLING DETAILS

PROJECT/SITE NAME	DEC-Eastfarmingdale
SITE ADDRESS	Fairchild Republic Airport, Old Sump
	Broad Hollow Rd.
	East Farmingdale, NY
SITE ID NUMBER	152004
BORING I.D.	P-93
PURPOSE	Direct Push
DRILLING METHOD	Macro Core
DRILLING COMPANY	Clearwater Drilling Inc.
HEAD DRILLER	B. Vigliotta
LOGGED BY	J. Lohan
BOREHOLE DIAMETER	4"
DEPTH-TO-WATER	~16'
TOTAL BORING DEPTH	32'

SOIL SAMPLING METHOD
Type Macro Core

GROUNDWATER SAMPLING METHOD
Type N/A

BACKFILL Native Fill
FINISH N/A

COMMENTS Intervals sampled: 4'-8', 8'-12', 12'-16', 16'-20', and 28'-32'.

Depth Below Grade	Soil Lithology/Field Observations				
	Description/Classification	Sample Type	Screening Interval	PID Reading	Percent Recovery
0'-4'	1.5' Brown fine sand, trace medium sand, trace coarse sand, trace red brick; dry. 0.4' Concrete; dry.	MC	0'-4'	0.4ppm	88
4'-8'	2.1' Brown fine sand, little medium sand, little concrete, trace coarse sand, trace gravel; dry.	MC	4'-8'	0.2ppm	85
8'-12'	0.5' Brown fine sand, little medium sand, trace coarse sand; dry. 0.4' Light brown fine sand, little medium sand, trace coarse sand; dry. 0.5' Light brown fine sand, little medium sand, trace coarse sand, trace gravel; moist.	MC	8'-12'	0.3ppm	50
12'-16'	1.3' Brown fine sand, little medium sand, trace coarse sand; dry. 0.1' Asphalt; dry. 0.2' Brown fine sand, little clay, little medium sand, trace coarse sand; moist. 0.4' Grey fine sand, little medium sand, trace coarse sand; wet.	MC	12'-16'	0.3ppm	65
16'-20'	1.4' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry. 0.7' Grey fine sand, little medium sand, trace coarse sand; wet. 1.6' Black fine sand, little medium sand, trace coarse sand; wet.	MC	16'-20'	0.1ppm	100
20'-24'	1.9' Grey fine sand, little medium sand, trace coarse sand; wet.	MC	20'-24'	0.5ppm	48
24'-28'	0.7' Black/grey fine sand, little medium sand, trace coarse sand; wet.	MC	24'-28'	0.6ppm	18
28'-32'	2.1' Grey fine sand, little medium sand, trace coarse sand, trace gravel; wet. 0.1' Grey/tan fine sand, little medium sand, trace coarse sand; wet.	MC	28'-32'	0.6ppm	65

"Trace", 1 - 10% "Some", 20 - 30%
"Little", 10 - 20% "And", 30 - 50%

APPENDIX C

List of Site Contacts

APPENDIX C - LIST OF ALL SITE CONTACTS
Fairchild Republic Aircraft; Old Sump Site
East Farmingdale, New York

NAME	AFFILIATION	PHONE/EMAIL ADDRESS
John Swagerty	Acadia Realty Trust	(914) 288-8160 / jswagerty@acadiarealty.com
Joseph Duminuco	Roux Associates	(631)232-2600 / jduminuco@rouxinc.com
Charles McGuckin	Roux Associates	(631) 232-2600 / cmcguckin@rouxinc.com
Bob Corcoran	NYSDEC	(518) 402-9658 / bob.corcoran@dec.ny.gov
Walter Parish	NYSDEC	(631) 444-0240 / walter.parish@dec.ny.gov
Jacquelyn Nealon	NYSDOH	(518) 402-7880 / BEEI@health.ny.gov

APPENDIX D

Site-Wide Cover Design Plan

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES INC

209 Shafter Street
Islandia, New York 11749 TEL 631-232-2600 FAX 631-232-9898

August 5, 2015

Mr. John Swagerty
Acadia Realty Trust
1311 Mamaroneck Avenue, Suite 260
White Plains, New York 10605

Re: *Site-Wide Cover Design Plan –*
Fairchild Republic Airport; Old Sump Site (Revision 1)

Dear Mr. Swagerty:

Roux Associates, Inc. (Roux Associates) and Remedial Engineering, P.C. have prepared this Site-Wide Cover Design Plan (Design Plan) on behalf of Acadia Republic Farmingdale, LLC (Acadia) for the Fairchild Republic Aircraft; Old Sump Site property (Site No. 152004) located at Broad Hollow Road and Conklin Street in East Farmingdale, New York (Site). A Site Map is provided in Figure 1. The Site is an approximately 13-acre area and is bounded by vacant property and Conklin Street to the north, commercial buildings to the south, State Route 110 to the east, and East Carmens Road to the west. The proposed reuse of the Site is for commercial use, which will include approximately 120,800 square feet (SF) of retail space, 357,100 SF of paving/asphalt parking and 122,500 SF of landscaping. The Design Plan was prepared in accordance with the New York State Department of Conservation (NYSDEC) Record of Decision (ROD) dated March 2015.

As per the ROD, the Design Plan includes a cover system as an engineering control (EC) to allow for commercial use of the Site. The cover system will consist of buildings; pavement/asphalt; concrete sidewalks/walkways; and a soil cover in all landscaped areas. The Design Plan, including the soil cover details, is provided on Figure 2. The soil cover will be a minimum of one foot of soil, meeting the SCOs for cover material as set forth in 6 New York Codes, Rules and Regulations (NYCRR) Part 375-6.7(d) for commercial use. The soil cover will be placed over a demarcation layer, in all landscaping areas, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. The lower six inches of soil will meet the requirements for commercial use as set forth in 6 NYCRR Part 375-6.7(d).

In addition, prior to the development of the Site and installation of ECs, a soil vapor investigation will be conducted in areas where buildings are proposed for construction. The soil vapor investigation will be conducted to evaluate the need for the installation of sub-slab depressurization system(s) (SSDS) beneath the proposed building(s) to mitigate

any potential soil vapor intrusion within the building(s). The preliminary SSDS details are provided on Figure 2. The proposed soil vapor investigation is described in detail in the Site Management Plan (SMP), which will be submitted to the NYSDEC under separate cover. The SMP will be finalized prior to the start of the Site development activities.

If development of the Site is completed in phases, a temporary gravel cover or fencing will be installed in undeveloped areas that don't yet contain a cover system, to restrict access to these areas and eliminate exposure to potentially contaminated soil.

Please call if you have any questions or require additional information.

Sincerely,

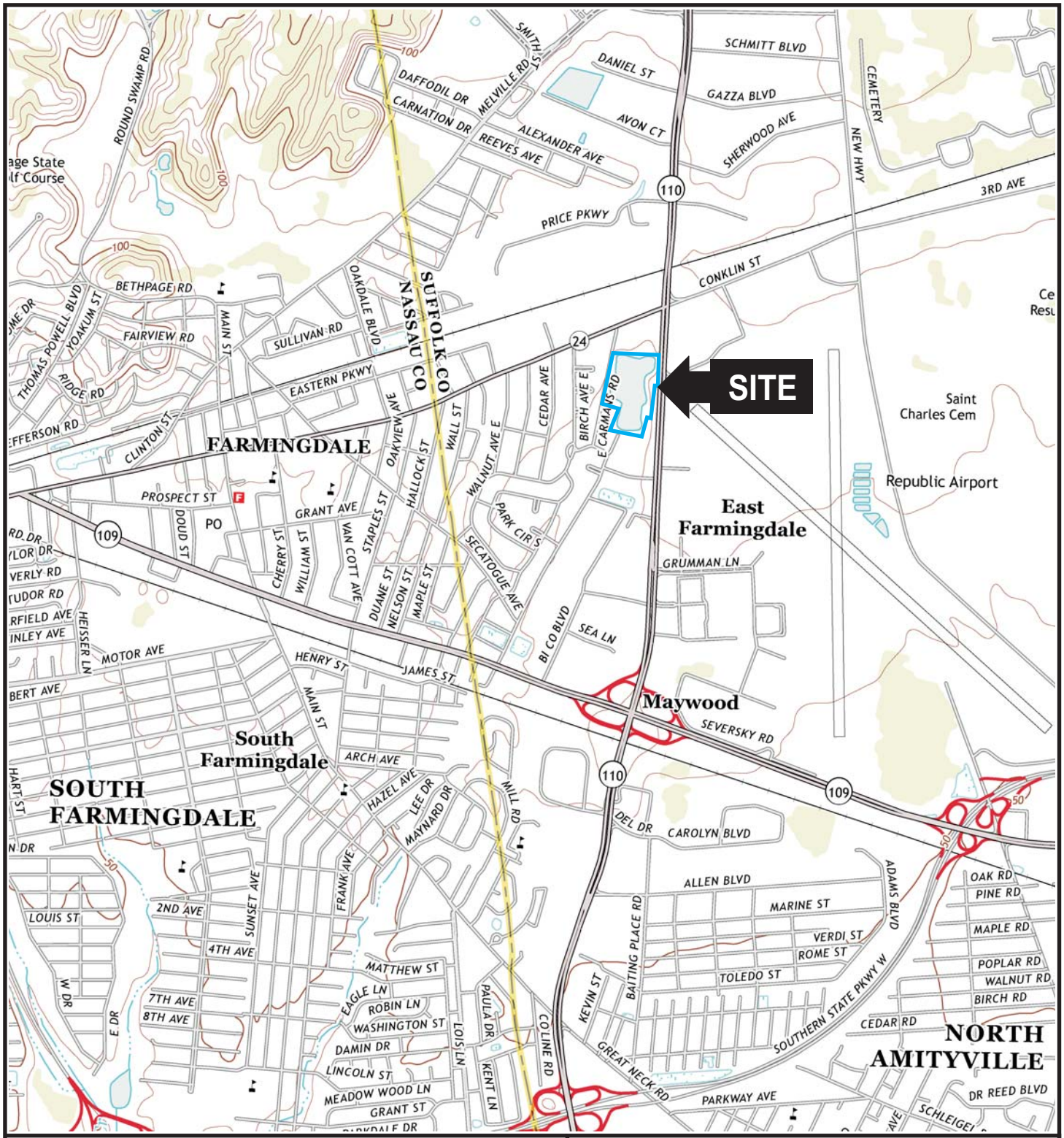
ROUX ASSOCIATES, INC.

Jeff Wills
Project Hydrogeologist

Principal Hydrogeologist/
Vice President

REMEDIAL ENGINEERING, P.C.

Charles McGuckin, P.E.
Principal Engineer



QUADRANGLE LOCATION



SOURCE:
USGS; 2013, AMITYVILLE, NY
7.5 Minute Topographic Quadrangle

N

0 2000’

Title:

SITE LOCATION MAP

FAIRCHILD REPUBLIC AIRPORT; OLD SUMP

Prepared for:

ACADIA REPUBLIC FARMINGDALE, LLC

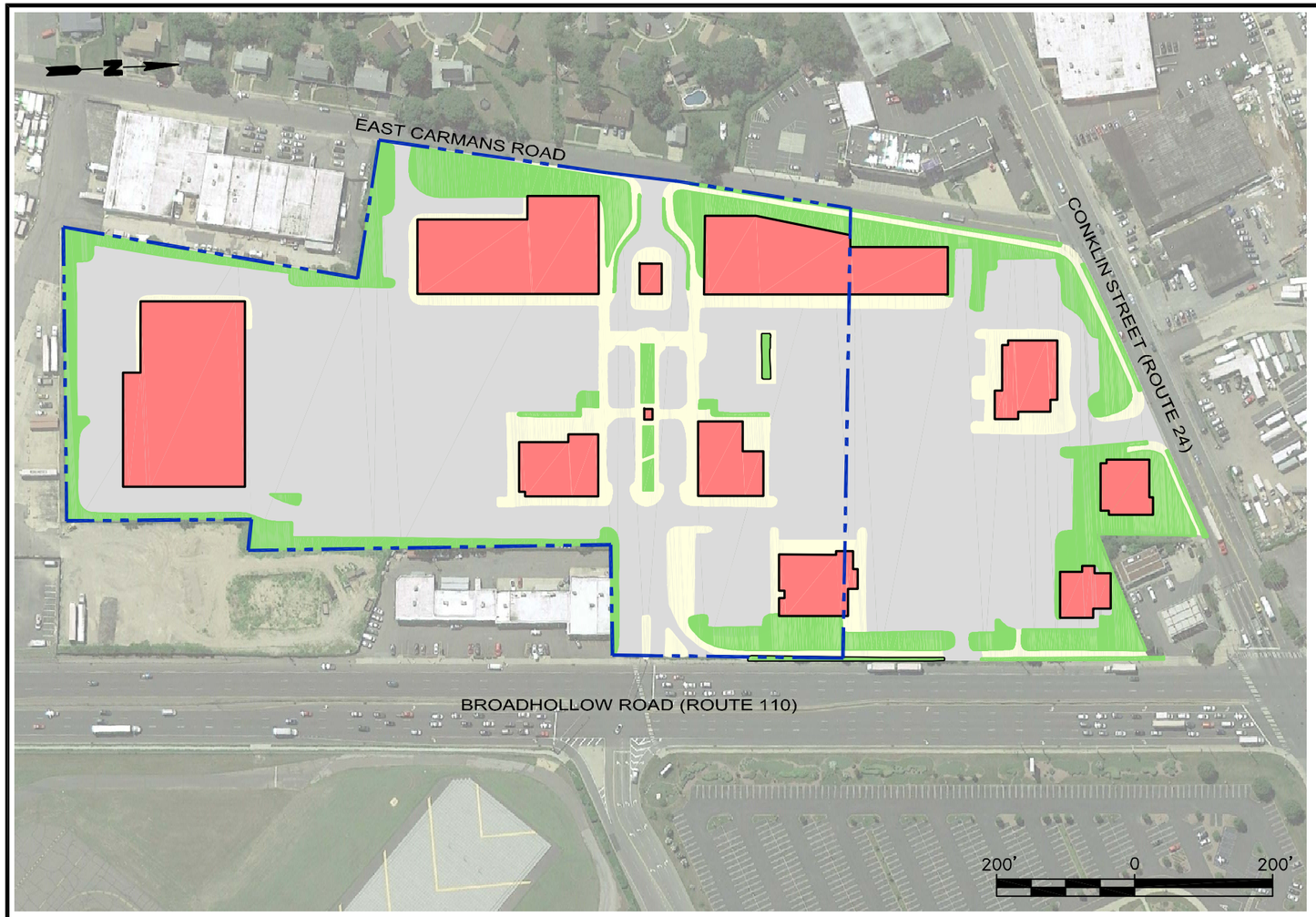
ROUX

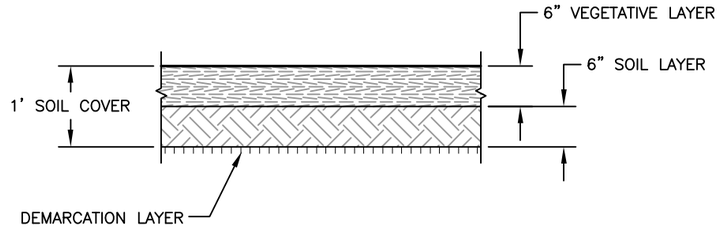
ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled by: J.W.	Date: 31JUL15
Prepared by: J.A.D.	Scale: AS SHOWN
Project Mgr.: J.W.	Project No.: 2422.0001Y000
File: 2422.0001Y104.01.CDR	

FIGURE 1

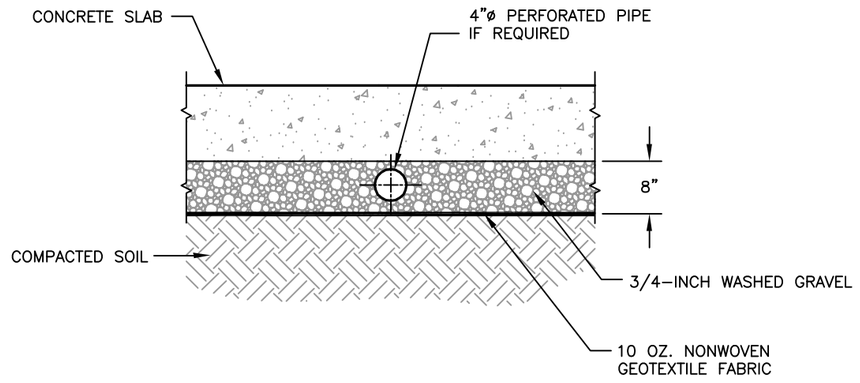
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SOIL COVER/DEMARCATION LAYER DETAIL

SCALE: NOT TO SCALE



SUB-SLAB DEPRESSURIZATION SYSTEM - PIPE DETAIL

SCALE: NOT TO SCALE

LEGEND

- SITE BOUNDARY
- BUILDING/RETAIL AREA
- PAVING/ASPHALT AREA
- LANDSCAPING AREA
- CONCRETE SIDEWALK/WALKWAY

DEVELOPMENT PROGRAM

BUILDING/RETAIL: 120.8K SF

PAVING/ASPHALT: 357.1K SF

LANDSCAPING: 122.5K SF

K = THOUSAND
SF = SQUARE FEET

Title:

SITE-WIDE COVER DESIGN PLAN

FAIRCHILD REPUBLIC AIRCRAFT; OLD SUMP

Prepared For:
ACADIA REPUBLIC FARMINGDALE, LLC

ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled by: J.W.	Date: 08DEC15	FIGURE
Prepared by: J.A.D.	Scale: AS SHOWN	2
Project Mgr: J.W.	Project: 2422.0001Y000	
File: 2422.0001Y104.02.DWG		

V:\CAD\PROJECTS\2422Y\0001Y\104\2422.0001Y104.02.DWG

APPENDIX E

Excavation Work Plan

APPENDIX E – EXCAVATION WORK PLAN (EWP)

B-1 NOTIFICATION

At least 15 days prior to the start of any activity that is anticipated to encounter remaining contamination, the Site owner or their representative will notify the NYSDEC. Table 1 includes contact information for the above notification. The information on this table will be updated as necessary to provide accurate contact information. A full listing of Site-related contact information is provided in Appendix C.

Table 1: Notifications*

Bob Corcoran	(518) 402-9658, bob.corcoran@dec.ny.gov
Walter Parish	(631) 444-0240, walter.parish@dec.ny.gov

* Note: Notifications are subject to change and will be updated as necessary.

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent of excavation, plans/drawings for Site re-grading, intrusive elements or utilities to be installed below the soil cover, estimated volumes of contaminated soil to be excavated and any work that may impact an engineering control;
- A summary of environmental conditions anticipated to be encountered in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre-construction sampling;
- A schedule for the work, detailing the start and completion of all intrusive work;
- A summary of the applicable components of this EWP;
- A statement that the work will be performed in compliance with this EWP and 29 CFR 1910.120;
- A copy of the contractor's health and safety plan (HASP), in electronic format, if it differs from the HASP provided in Appendix F of this SMP;

- Identification of disposal facilities for potential waste streams; and
- Identification of sources of any anticipated backfill, along with all required chemical testing results.

B-2 SOIL SCREENING METHODS

Visual, olfactory and instrument-based (e.g. photoionization detector) soil screening will be performed by a qualified environmental professional during all excavations into known or potentially contaminated material (remaining contamination). Soil screening will be performed when invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work, after issuance of the COC.

Soils will be segregated based on previous environmental data and screening results into material that requires off-Site disposal and material that requires testing to determine if the material can be reused on-Site as soil beneath a cover or if the material can be used as cover soil. Further discussion of off-Site disposal of materials and on-Site reuse is provided in Sections B-6 and B-7 of this Appendix.

B-3 SOIL STAGING METHODS

Soil stockpiles will be continuously encircled with a berm and/or silt fence. Hay bales will be used as needed near catch basins, surface waters and other discharge points.

Stockpiles will be kept covered at all times with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced.

Stockpiles will be inspected at a minimum once each week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by the NYSDEC.

B-4 MATERIALS EXCAVATION AND LOAD-OUT

A qualified environmental professional or person under their supervision will oversee all invasive work and the excavation and load-out of all excavated material.

The owner of the property and remedial party (if applicable) and its contractors are responsible for safe execution of all invasive and other work performed under this Plan.

The presence of utilities and easements on the Site will be investigated by the qualified environmental professional. It will be determined whether a risk or impediment to the planned work under this SMP is posed by utilities or easements on the Site.

Loaded vehicles leaving the Site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and NYSDOT requirements (and all other applicable transportation requirements).

A truck wash will be operated on-Site, as appropriate. The qualified environmental professional will be responsible for ensuring that all outbound trucks will be washed at the truck wash before leaving the Site until the activities performed under this section are complete. Truck wash waters will be collected and disposed of off-Site in an appropriate manner.

Locations where vehicles exit the Site shall be inspected daily for evidence of off-Site soil tracking.

The qualified environmental professional will be responsible for ensuring that all egress points for truck and equipment transport from the Site are clean of dirt and other materials derived from the Site during intrusive excavation activities. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site-derived materials.

B-5 MATERIALS TRANSPORT OFF-SITE

All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded.

Material transported by trucks exiting the Site will be secured with tight-fitting covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

Truck transport routes are as follows: All trucks loaded with Site materials will exit the vicinity of the Site using only these approved truck routes. Trucks will enter and exit the Site from the existing Site gate on East Carmans Road. Truck routes are shown on Figure 1A. This is the most appropriate route and takes into account: (a) limiting transport through residential areas and past sensitive sites; (b) prohibiting off-Site queuing of trucks entering the Site; (c) limiting total distance to major highways; (d) promoting safety in access to highways; and (e) overall safety in transport.

Trucks will be prohibited from stopping and idling in the neighborhood outside the project Site.

Egress points for truck and equipment transport from the Site will be kept clean of dirt and other materials during site remediation and development.

Queuing of trucks will be performed on-Site in order to minimize off-Site disturbance. Off-Site queuing will be prohibited.

B-6 MATERIALS DISPOSAL OFF-SITE

All material excavated and removed from the Site will be treated as contaminated and regulated material and will be transported and disposed in accordance with all local, State (including 6NYCRR Part 360) and Federal regulations. If disposal of material from this Site is proposed for unregulated off-Site disposal (i.e. clean soil removed for development purposes), a formal request with an associated plan will be made to the NYSDEC. Unregulated off-Site management of materials from this Site will not occur without formal NYSDEC approval.

Off-Site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility if appropriate, i.e. hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, C/D recycling facility, etc. Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Periodic Review Report. This documentation will include: waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts.

Non-hazardous historic fill and contaminated soils taken off-Site will be handled, at minimum, as a Municipal Solid Waste per 6NYCRR Part 360-1.2. Material that does not meet Unrestricted SCOs is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility).

B-7 MATERIALS REUSE ON-SITE

The qualified environmental professional will ensure that procedures defined for materials reuse in this SMP are followed and that unacceptable material does not remain on-Site. Contaminated on-Site material, including historic fill, contaminated soil and the BUD stockpile material, that is acceptable for reuse on-Site will be placed below the demarcation layer or impervious surface, and will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines. Prior to reusing the BUD stockpile, a new BUD permit will have to be obtained from the NYSDEC.

Any demolition material proposed for reuse on-Site will be sampled for asbestos and the results will be reported to the NYSDEC for acceptance. Concrete crushing or processing on-Site will not be performed without prior NYSDEC approval. Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the Site will not be reused on-Site.

B-8 FLUIDS MANAGEMENT

All liquids to be removed from the Site, including but not limited to, excavation dewatering, decontamination waters and groundwater monitoring well purge and

development waters, will be handled, transported and disposed in accordance with applicable local, State, and Federal regulations. Dewatering, purge and development fluids will not be recharged back to the land surface or subsurface of the Site, and will be managed off-Site, unless prior approval is obtained from NYSDEC.

B-9 COVER SYSTEM RESTORATION

After the completion of soil removal and any other invasive activities the cover system will be restored in a manner that complies with the 2015 Record of Decision. The existing cover system is comprised of a minimum of 12 inches of clean soil, asphalt pavement, concrete covered sidewalks and concrete buildings, etc. The demarcation layer, consisting of orange snow fencing material (or other approved equal material) will be replaced to provide a visual reference to the top of the remaining contamination zone, the zone that requires adherence to special conditions for disturbance of remaining contaminated soils defined in this SMP. If the type of cover system changes from that which exists prior to the excavation (i.e., a soil cover is replaced by asphalt), this will constitute a modification of the cover element of the remedy and the upper surface of the remaining contamination. A figure showing the modified surface will be included in the subsequent Periodic Review Report and in an updated SMP.

B-10 BACKFILL FROM OFF-SITE SOURCES

All materials proposed for import onto the Site will be approved by the qualified environmental professional and will be in compliance with provisions in this SMP prior to receipt at the Site. A Request to Import/Reuse Fill or Soil form, which can be found at http://www.dec.ny.gov/regulations/67386.html, will be prepared and submitted to the NYSDEC project manager allowing a minimum of 5 business days for review.

Material from industrial sites, spill sites, or other environmental remediation sites or potentially contaminated sites will not be imported to the Site.

All imported soils will meet the backfill and cover soil quality standards established in 6NYCRR 375-6.7(d). All imported soils will meet the lower of the protection of

groundwater or the protection of public health soil cleanup objectives presented in Table 6.8(b) of the latest revision of Part 375. Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this Site, will not be imported onto the Site without prior approval by NYSDEC. Solid waste will not be imported onto the Site.

Trucks entering the Site with imported soils will be securely covered with tight fitting covers. Imported soils will be stockpiled separately from excavated materials and covered to prevent dust releases.

B-11 STORMWATER POLLUTION PREVENTION

Barriers and hay bale checks will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by the NYSDEC. All necessary repairs shall be made immediately.

Accumulated sediments will be removed as required to keep the barrier and hay bale check functional.

All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials.

Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

Erosion and sediment control measures identified in the SMP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters.

Silt fencing or hay bales will be installed around the entire perimeter of the construction area.

B-12 EXCAVATION CONTINGENCY PLAN

If underground tanks or other previously unidentified contaminant sources are found during post-remedial subsurface excavations or development related construction, excavation activities will be suspended until sufficient equipment is mobilized to address the condition.

Sampling will be performed on product, sediment and surrounding soils, etc. as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for a full list of analytes (TAL metals; TCL volatiles and semi-volatiles, TCL pesticides and PCBs), unless the Site history and previous sampling results provide a sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC for approval prior to sampling.

Identification of unknown or unexpected contaminated media identified by screening during invasive Site work will be promptly communicated by phone to NYSDEC's Project Manager. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. These findings will be also included in the Periodic Review Report.

B-13 OTHER NUISANCES

A plan for rodent control will be developed and utilized by the contractor prior to and during Site clearing and Site grubbing, and during all remedial work.

A plan will be developed and utilized by the contractor for all remedial work to ensure compliance with local noise control ordinances.



LEGEND

TRUCK ROUTE TO SITE

TRUCK ROUTE FROM SITE

N

0 600’

Title:

TRUCK ROUTE

EXCAVATION WORK PLAN
FAIRCHILD REPUBLIC AIRCRAFT;
OLD SUMP SITE
EAST FARMINGDALE, NEW YORK

Prepared for:

ACADIA REPUBLIC FARMINGDALE LLC

ROUX

ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled by: J.W.	Date: 12AUG15	FIGURE
Prepared by: B.H.C.	Scale: AS SHOWN	1A
Project Mgr.: J.W.	Project No.: 2422.0001Y000	
File: 2422.0001Y102.01.CDR		

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APPENDIX F

Health and Safety Plan

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D. Health and Safety Briefing / Meeting Log and Daily Site Safety Checklist
E. Roux Associates Heavy Equipment Exclusion Zone Policy
F. Medical Data Forms
G. Generic Community Air Monitoring Plan
H. *ACORD*® Automobile Loss Notice Form
I. OSHA 300 Form

1.0 INTRODUCTION

This site-specific Health and Safety Plan (HASP) has been prepared in accordance with 29 CFR 1910.120 Occupational Safety and Health Act (OSHA) Hazardous Waste Operations and Roux Associates, Inc. (Roux Associates) Standard Operating Procedures (SOPs). It addresses all the activities described below that are associated with the Acadia Republic Aircraft; Old Sump Site located between Broad Hollow Road and East Carmans Road, East Farmingdale, New York (the Site, Figure 1) and will be implemented by the designated Site Health and Safety Officer (SHSO) during Site work. When activities are to be conducted, which are not specifically addressed by this HASP, appropriate SOPs and Job Safety Analyses (JSAs) will be reviewed to determine the appropriate work approach and associated levels of health and safety required. If a JSA for the specific activity does not exist, one will be prepared by the field work team, reviewed for completeness by the Project Manager, and implemented as required by the JSA (see Section 6.3 and Appendix A).

Compliance with this HASP is required for all personnel working on-Site. Assistance in implementing this HASP can be obtained from the Roux Associates Office Health and Safety Manager (OHSM). The content of this HASP may undergo revision based upon additional information made available. Any changes proposed to this HASP must be reviewed and approved by the OHSM or his/her designee and Acadia Republic Farmingdale LLC (Acadia or Client) Site Representative.

All Site operations are under the direction of Acadia and any operations or activities covered under this safety plan. Routine operations or activities performed at the Site that, at a minimum, include the use of high visibility clothing, hardhats, steel toe boots/shoes, work gloves, and safety glasses.

Prior to performing work each task should be evaluated to determine the appropriate procedures that need to be followed.

Responsibility	Name	Telephone Number
Roux Associates Contacts		
Project Principal	Joseph Duminuco	(631) 232-2600
Project Manager	Jeff Wills	(631) 232-2600
Client Contacts		
Site Representative	John Swagerty	(914) 288-8160
General Contractor Project Executive	TBD	TBD
Site Health and Safety Officer	TBD	TBD

TBD- To be determined

Emergency Information

Multiple emergency services may be obtained by calling 911. More specific numbers for local services are listed below but should not be used until after 911 is alerted.

Type	Name	Telephone Numbers
Police	Suffolk County Police Dept	911
Fire	East Farmingdale Fire Dept	911 / (631) 249-0474
Urgent Care Facility (Figure 2A)	First Care & Occupational Health Clinic	(631) 425-0118
Hospital (Figure 3A)	St. Joseph Hospital	(516) 579-6000

Environmental Emergency

(e.g., release or spill)

Type	Name	Telephone Numbers
Client Site Representative	John Swagerty	(914) 288-8160
General Contractor Project Executive	TBD	TBD
Site Health and Safety Officer	TBD	TBD

Type	Name	Telephone Numbers
Corporate Health and Safety Manager (Roux Associates)	Joseph Gentile	(856) 832-3768 (Office) (610) 844-6911 (Cell)
Office Health and Safety Manager (Roux Associates)	Joseph Gavin	(631) 232-2600 (Office) (516) 754-6671 (Cell)
Project Manager (Roux Associates)	Jeff Wills	(631) 232-2600 (Office) (516) 637-0213 (Cell)

TBD- To be determined

2.0 PERSONNEL DESIGNATIONS

Project Principal

Consults with and advises the General Contractor personnel on health and safety issues related to this HASP.

Project Manager

The Project Manager (PM) Communicates with the Project Principal and other Roux Associates office and corporate technical and health and safety staff (as needed), regarding Site activities and potential health and safety concerns related to this HASP in order to advise the General Contractor Project Executive on recommended health and safety measures.

General Contractor Project Executive -TBD

The General Contractor Project Executive (GCPE) is responsible for committing to a goal of ZERO environmental, health and safety incidents. The PE is also responsible for making certain that personnel receive and are aware of the provisions of this HASP, are instructed in the work practices necessary to ensure safety and are familiar with planned procedures for dealing with emergencies. The GCPE assures that personnel are aware of the potential hazards associated with Site operations and correcting any work practices or conditions that may result in injury or exposure to hazardous substances. The GCPE ensures that at least one person on-Site, prior to assignment, is trained and certified by the American Red Cross or equivalent and is responsible for rendering first aid. These individuals will be identified by job function and will be recertified per the certifying agency's time schedule. Blood borne Pathogens training will be conducted concurrently and will be provided annually. Potential exposure to blood borne pathogens will be determined without regard for personal protective equipment. When rendering first aid or CPR universal precautions will be observed. Labels and signs will be used to serve as warnings of infectious materials. Where PPE is provided to minimize exposure to lead, gloves, hats, vented goggles, shoes or disposable shoe covers are provided. Protective clothing shall be in clean and dry condition at least weekly. Protective clothing shall be cleaned, laundered, properly disposed and repaired or replaced as necessary. Any blood soaked bandages, etc., will be placed in leak proof bags for handling, storage and transport. After contact with blood or other potentially infectious material, all equipment and surfaces shall be cleaned and decontaminated. Hepatitis B vaccine is made available to all employees that have occupational exposure to BBP at no cost.

The GCPE assures that all field personnel are in compliance with the hazardous waste worker health and safety training and medical surveillance requirements of 29 CFR 1910.120 and all other applicable regulations.

Roux Associates Corporate Health and Safety Manager

The Corporate Health and Safety Manager (CHSM) is responsible for assuring that the appropriate monitoring and safety equipment and other resources necessary to perform Site activities safely are addressed in the HASP. The CHSM provides consultation to Site personnel on all questions related to health and safety. The CHSM also provides HAZWOPER training based on his extensive industrial experience and technical background (i.e., CIH).

Site Health and Safety Officer

The Site Health and Safety Officer (SHSO) will be present on-Site during the conduct of all field operations, will be responsible for all health and safety activities, and has the authority to make all health and safety related decisions. The SHSO ensures that all personnel working on-Site are qualified according to applicable Environmental Protection Agency, Occupational Safety and Health Association (OSHA) and state requirements. The determination of hazard concentrations will be made by the SHSO in consultation with the CHSM. The SHSO has stop-work authorization which he or she will execute upon determination of an imminent safety hazard, emergency situations, or other potentially dangerous situation, such as detrimental weather conditions. Authorization to proceed with work will be issued by the SHSO or CHSM in consultation with the GCPE after such action. The SHSO or GCPE will initiate and execute all contact with emergency facilities and personnel when this action is appropriate. The SHSO will also monitor decontamination procedures to determine their effectiveness. When such procedures are found to be ineffective, appropriate steps shall be taken to correct any deficiencies. An assistant SHSO may be designated by the SHSO if required but must be pre-qualified and approved by the CHSM.

Roux Associates Office Health and Safety Manager

The Office Health and Safety Manager (OHSM) is responsible for providing support, as needed, to the Project and serves as back-up to the Site Health and Safety Officer. The OHSM assures that field personnel assigned to the project receive a health and safety orientation and are provided

with the necessary personal protective equipment and clothing. The OHSM may periodically perform field audits, participate in field assessments and prepare information to be used for safety communication.

Project Personnel

Project personnel will be responsible for: complying with this HASP; taking all reasonable precautions to prevent injury to themselves and to their fellow employees; performing only those tasks that they believe they can do safely; immediately reporting any accidents and/or unsafe conditions to the SHSO; notifying the GCPE and the SHSO of any special medical problems (e.g., allergies) and making certain that all on-Site personnel are aware of any such problems.

3.0 SITE HISTORY AND PHYSICAL DESCRIPTION

This section provides a brief summary of the history and physical description of the Site.

The Site is located in East Farmingdale, Suffolk County, New York and is identified as Section 049.00 Block 02.00 and Lots 007.000, 008.000, 010.000, 011.000 and 014.000 on the Town of Babylon Tax Map.

The Site is the location of a former sand mining operation for Colonial Sand & Gravel Company that was later converted to a storm water recharge basin and wastewater/cooling water repository. The basin, also known as the Old Recharge Basin (ORB), was used by New York State Department of Transportation (NYSDOT) to collect storm water runoff, and by Fairchild Republic Corporation (Fairchild) for runoff and disposal of up to 2 million gallons per day of non-contact cooling water and treated waste water from the Fairchild Main Plant Site (Site No. 152130). These discharges were regulated under a New York State issued State Pollution Discharge Elimination System (SPDES) permit. Fairchild stopped discharging to the basin in 1983 when it constructed a new recharge basin on the east side of Route 110. The Fairchild Main Plant Site produced sludge from metal precipitation from alodine process, anodizing, chemical milling and wash water from paint spray booths. The Suffolk County Department of Health Services (SCDHS) expressed concerns about the discharges entering the ORB and these concerns, along with variants from the SPDES permit, led to a Notice of Violation (NOV). The NOV trigged environmental investigations of the Site that began in 1982. On August 11, 1982, Fairchild entered into a Consent Agreement with SCDHS to investigate the ORB, which resulted in the Site becoming listed on the Registry of Inactive Hazardous Waste Disposal Sites as Class 2 in August 1989. Extensive investigations were completed at the Site under the direction of the NYSDEC and with input from the SCDHS that characterized the soil, sediment and groundwater.

5.0 HAZARD ASSESSMENT

5.1 Chemical Hazards

Investigation results indicate that semivolatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs) and metals (including chromium and lead) are present in soil and PCE is present in groundwater at the Site. The toxicological, physical, and chemical properties of these potential contaminants are presented in Table 1. This table includes action levels (permissible exposure levels), which will establish the level of protection. The potential for encountering these hazards exists during intrusive activities such as repairs to soil cover system. Material Safety Data Sheets (MSDSs) / Safety Data Sheets (SDS) for chemical products found in soil at the Site are provided in Appendix B where they are available for review by project personnel during field operations.

5.1.1 Carbon Monoxide Hazards

Carbon monoxide (CO) is a colorless, odorless, and toxic gas, which is predominately produced by incomplete combustion of carbon-containing materials. Incomplete combustion occurs when insufficient oxygen is used in the fuel (hydrocarbon) burning process. Common sources of CO may include: motor vehicle exhausts, fuel burning[1], furnaces, coal burning power plants, small gasoline engines including electric generators, demolition equipment, chain saws, lawn mowers and power washers, marine engines, fuel powered forklifts, propane or kerosene-powered heaters, and fuel burning water heaters.

Exposure to CO impedes the blood's ability to carry oxygen to body tissues and vital organs. When CO is inhaled, it combines with hemoglobin (an iron-protein component of red blood cells), producing carboxyhemoglobin, which greatly diminishes hemoglobin's oxygen-carrying capacity. **Hemoglobin's binding affinity for CO is 300 times greater than its affinity for oxygen.** As a result, small amounts of CO can dramatically reduce hemoglobin's ability to transport oxygen.

Common symptoms of CO exposure are headache, nausea, rapid breathing (i.e., shortness of breath), weakness, exhaustion, dizziness, and confusion (i.e., light headedness). Hypoxia (severe oxygen deficiency) due to acute CO poisoning may result in reversible neurological effects, or it

1 Fuel burning may include natural gas, propane, fuel oil, kerosene, gasoline, coal, or other carbon-based items.

may result in long-term (and possibly delayed) irreversible neurological (brain damage) or cardiological (heart damage) effects.

CO exposure can be dangerous during pregnancy for both the mother and the developing fetus. Please contact CDC-INFO (800-232-4636) if you have any questions regarding CO exposure during pregnancy.

At work sites where carbon-containing fuels are used, such as in internal combustion engines and generators, the exhausts from these units can contain significant concentrations of CO. In situations where the exhausts create exposure to CO, the exhausts of these units should be extended via appropriate hoses/piping to well ventilated exterior areas (i.e., outside and downwind of structures). Where the concentrations of CO exceed the following "action levels", notify the Project Manager and immediately implement the corresponding actions to mitigate exposure.

Action Levels Table (CO)

Carbon Monoxide (CO) Action Levels[2]	
Concentration of CO in air	**Action**
< 25 ppm	Inspect exhaust system for leaks or other sources of CO. Monitor initially and every 15 minutes during use of CO-generating equipment.
25 – 50 ppm	Ventilate area. Monitor continuously and record measurements. Contact PM.
> 50 ppm	Stop work activities. Ventilate area.

5.2 Physical Hazards

A variety of physical hazards may be present during Site activities. These hazards are similar to those associated with any construction-type project. These physical hazards are due to motor vehicle and heavy equipment operation and hazardous walking and working surfaces. Additionally, when performing activities at the Site, a hard hat and reflective vest must be worn at

2 Based upon The American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV) of 25 ppm as an 8-hour time-weighted average (TWA) [ACGIH 2014 TLVs® and BEIs®] and OSHA's Permissible Exposure Limit (PEL) of 50 ppm as an 8-hour TWA concentration [29 CFR Table Z-1].

all times. Workers must also be aware of electrical hazards, such as overhead power lines, while performing their assigned tasks. These hazards are not unique and are generally familiar to most field personnel. Additional task-specific requirements may be covered during safety briefings.

5.3 Biological Hazards

Biological hazards include exposure to poison ivy/oak, the possibility of disease carrying insects (i.e., ticks) and a variety of wild animals (i.e., coyotes, raccoons, etc.).

5.3.1 Insect Stings

Stings from insects are often painful, may cause swelling, and can be fatal if a severe allergic reaction, such as anaphylactic shock, occurs. If a sting occurs, the stinger should be scraped out of the skin, opposite of the sting direction. The area should be washed with soap and water, followed by an ice pack. Personnel allergic to bee and/or wasp stings shall alert their PM, SHSO and coworkers immediately, and provide/self-administer medicine and antidotes to treat allergic reactions immediately as prescribed by their personal physician, or if the victim has a history of allergic reaction, he/she should be taken to the designated hospital.

5.3.2 Tick Injury Prevention Program

Ticks may carry Lyme disease, Rocky Mountain spotted fever or other diseases. As such, Roux Associates has instituted a program to prevent tick bites and to provide prompt, adequate and appropriate notifications and treatment in the event of a work-related tick bite. This SOP applies to all Roux Associates employees and their subcontractors and should be addressed by applicable JSAs.

5.3.3 Project Planning

Pre-planning is the first step in tick avoidance. Where possible, plan the work to avoid tick-infested areas.

- Avoid brushy, overgrown grassy and wooded habitats, particularly in spring and early summer when nymphal-stage ticks feed.
- Remove leaves, tall grass and brush from areas surrounding work areas (to include residential Sites), thereby reducing tick, deer and rodent habitat.

- Consider having a licensed applicator apply tick-toxic chemicals (e.g., Damminix, Dursban, Sevin, etc.) to surrounding work or residential areas to suppress the tick population.

- Consider performing work during dormant (sub-freezing) seasons; or not during maximum season (spring and early summer) unless it is not practical or rescheduling may introduce other hazards.

5.3.4 Tick Injury Prevention Measures

Where avoidance of tick habitat or clearing of the area is not possible, follow the measures described below to avoid tick bites.

- Using Permethrin on clothes to kill ticks on contact;
- Wearing light-colored clothing so that ticks can be more easily seen and removed before attachment occurs;
- Wearing long-sleeved shirts and tucking in (or taping) pant legs into socks or boots to prevent ticks from reaching the skin;
- Wearing high boots or closed shoes that cover the entire foot;
- Wearing a hat; and
- Spraying insect repellents containing n,n-diethylm-toluamide (DEET) on exposed skin, excluding the face, in accordance with United States Environmental Protection Agency (USEPA) guidelines.

Tick prevention measures as described above must be implemented prior to entering a potentially tick-infested area. This usually means that the PPE needs to be in place and properly worn before stepping off of a paved or concrete area onto a grassy or wooded area. Pant legs need to be tucked into socks. Where Tyvek is used, the pant legs need to be taped at the ankles.

Insect repellent should be applied in accordance with the manufacturer's instructions. In the event of sensitive ecosystems ensure that the application does not need to be applied at a certain distance from the habitat.

The PPE needs to remain on with the tucking or taping of pant legs, all closures fastened, etc., until leaving the potentially tick-infested area. Upon leaving the area, remove the PPE and bag it to prevent ticks from traveling and subsequently attaching themselves to your skin.

Workers are to inspect themselves and co-workers frequently to see if any ticks are on their clothing and remove them as soon as they are identified. If an embedded tick is found, it should be promptly removed with tweezers. This should be done by grasping the tick firmly and as close to the skin as possible. Then, with a steady motion, pull the tick's body away from the skin. Cleanse the area with an antiseptic. DO NOT use petroleum jelly, a hot match, nail polish or other products to remove the tick. **Preserve the tick for analysis (i.e., by placing in a zip lock bag, envelope or jar). The tick will be analyzed to determine if it contains the bacteria capable of causing Lyme disease.** After returning home, it is also important to do another thorough examination while showering as a further check that no ticks were missed in previous inspections. Also, it is recommended that any work clothes be washed and dried at high temperatures.

5.3.5 Responding to Known or Suspected Tick Bites

Any discovery of a tick embedded in the skin where the tick contact may have occurred at work will require (in addition to project management) immediate contact of the Office Manager, OHSM, and CHSM.

Medical practitioners consulted by Roux Associates recommend not administering an antibiotic until AFTER symptoms such as rash, flu-like symptoms, fever, joint or muscle aches, nausea or vomiting develop which could take a few days. Therefore, for tick bites determined to be work related, **antibiotics should not be prescribed or administered until AFTER the results of the tick testing are reviewed and until after any characteristic symptoms develop.**

5.3.6 Tick Incident Investigation and Reporting

Investigation and reporting of a work-related tick bite will follow established incident investigation and reporting procedures. The Roux Associates Health & Safety Lessons Learned (H&SLL) / Accident Report Forms (ARF) will be used for documenting incidents as appropriate, and are provided in Appendix C.

5.3.7 Animals and Animal Wastes

There is potential for various wildlife to reside within the structures, including, but not limited to pigeons, bats, mice, rats, squirrels, raccoons, stray dogs, and feral cats. Certain animals can represent significant sources (vectors) of disease transmission. Precautions to avoid or minimize

potential contact with (biting) animals (such as some of the above listed) or animal waste and/or dead animals should be considered prior to all field activities. Rats, squirrels, raccoons, feral cats, and other wild animals can inflict painful bites which can also cause disease (as in the case of rabid animals). Site personnel should avoid contact with any of the above.

If contact occurs, be sure to clean the area thoroughly with soap and water as soon as possible. If a bite occurs, the area should be cleaned thoroughly immediately with soap and water and medical attention should be sought.

5.3.8 Blood-Borne Pathogens

The majority of the occupational tasks on-Site will not involve a significant risk of exposure to blood, blood components, or body fluids. The highest risk of acquiring any blood borne pathogen for employees on-Site will be following an injury. When administering first aid care, there are potential hazards associated with blood borne pathogens that cause diseases such as Human Immunodeficiency Virus (HIV), Hepatitis B (HBV), Hepatitis A (HAV), Hepatitis C (HCV), or the Herpes Simplex Virus (HSV). An employee who has not received the appropriate certification and blood borne pathogens training should never perform first aid and/or cardiopulmonary resuscitation (CPR).

In order to minimize any potential pathogen exposure, all employees should use the hand washing facilities on a regular basis. The decontamination area will provide an adequate supply of water, soap, and single use towels for hand washing. Additionally, the following universal precautions should be followed to prevent further potential risk:

- Direct skin or mucous membrane contact with blood should be avoided.
- Open skin cuts or sores should be covered to prevent contamination from infectious agents.
- Body parts should be washed immediately after contact with blood or body fluids that might contain blood, even when gloves or other barriers have been used.
- Gloves and disposable materials used to clean spilled blood shall be properly disposed of in an approved hazardous waste container.
- First aid responders shall wear latex or thin mil nitrile gloves when performing any procedure risking contact with blood or body substances.

- Safety glasses will be worn to protect the eyes from splashing or aerosolization of body fluids.
- A CPR mask will be worn when performing CPR to avoid mouth-to-mouth contact.
- Cut-resistant work gloves will be worn to minimize the risk of injury to the hands and finger when working on all equipment with sharp or rough edges.
- Broken glass or possible contaminated material shall be avoided with unprotected hands.

5.3.9 Other Biohazards

Other biological hazards include mosquitoes which generally live in the vicinity of brush, trees, and stagnant water. Some areas have mosquitoes that carry viruses (for example, West Nile virus, or Eastern Equine Encephalitis). Another category of biohazards include plants such poison ivy, poison oak, and poison sumac. If exposed to these plants, personnel will wash skin thoroughly with soap and water or post-contact cleansers.

5.4 Heat/Cold Stress

Heat and cold stress are potential hazards associated with heavy physical activity and/or the use of personal protective equipment in hot or cold weather environments. Heat and Cold stress are discussed in Sections 9.10 and 9.11. Protection against sun exposure by wearing a sun screen, hat, and long-sleeved shirts must be implemented when warranted in addition to frequent and proactive hydration of workers.

5.5 Noise

Noise is associated with the operation of heavy equipment, power tools, pumps, and generators as well as aircraft engine noise due to proximity of the Site to the Republic Airport. Personnel with 8-hour time weighted average (TWA) exposures exceeding 85 decibels (dB) must be included in a hearing conservation program in accordance with 29 CFR 1910.95. High noise operations will be evaluated by the SHSO. Noise exposure will be controlled through the use of hearing protection such as ear plugs or ear muffs or by maintaining set-backs from high-noise equipment as warranted.

5.6 Electrical Hazards

Portable pumps, generators, and other power tools require proper grounding and/or a ground fault circuit interrupter (GFCI) before operation. Personnel should never attempt to move an operating pump or generator.

6.0 TRAINING REQUIREMENTS

6.1 Basic Training

All Site personnel who will perform work in areas where there exists the potential for toxic exposure will be health and safety trained prior to performing work on-Site per OSHA (29 CFR 1920.120(e)). Initial and annual training will include the locations of and proper use of safety equipment such as portable fire extinguishers. American Red Cross basic first aid and adult CPR will be offered to employees approximately every two years. Training records will be maintained by the SHSO on-Site and as described in Section 6.4. OSHA HAZWOPER training will be provided annually and is limited to first responder awareness level only. Where training is required by a specific health or safety standard, this will be conducted initially and annually and will include the information summarized in the Toxicological Table, Table 1 of this HASP.

6.2 Site-Specific Training

Training will be provided by the SHSO and GCPE that specifically addresses the activities, procedures, monitoring and equipment to be utilized by Site personnel and visitors. The training will include Site and facility layout, hazards, emergency services at the Site, and will detail all provisions contained within this HASP. Where a facility is subject to OSHA's Process Safety Management (PSM) Standard, 29 CFR 1910.119, employees will be trained in the purpose of PSM, namely, to prevent or minimize consequences of catastrophic releases of toxic, flammable or explosive chemicals. This training will also allow field workers to clarify anything they do not understand and to reinforce their responsibilities regarding safety and operations for their particular activity. Site-specific training will be documented and kept as part of the project records.

Where employees may be exposed to lead, employees shall be informed of 29 CFR 1910.1025 and 29 CFR 1926.62, Appendices A and B. All affected employees are required to attend initial and annual training programs. The employees will be informed of the specific nature of the operations which could result in exposure to lead above the action level, the purpose, proper selection, fitting, use, and limitation of respirators, engineering controls, purpose and a description of the medical surveillance program and medical removal program.

6.3 Safety Briefings

Project personnel will be given briefings by the SHSO, the PM and/or the GCPE on an as-needed basis to further assist them in conducting their activities safely. Safety briefings will be provided each morning and when new operations are to be conducted; changes in work practices must be implemented due to new information made available and before work is begun at each on-Site work area. Safety briefings will include a discussion of anticipated hazards, review Job Safety Analyses for tasks to be implemented, pertinent Loss, Lessons Learned, Peer Observation finding, and safety violations. These include not following Client rules or procedures, not following established safe work practices, and lack or improper use of personal protective equipment/clothing, etc. On-Site safety briefings will be documented daily on the forms included as Appendix D (Health and Safety Briefing/Meeting Log and Daily Site Safety Checklist), and will be kept by the SHSO as part of the project records. In addition, when activities are to be conducted which are not specifically addressed by this HASP, appropriate JSAs will be reviewed to determine the appropriate levels of health and safety required. If a JSA for the specific activity does not exist, one will be prepared by the field work team, reviewed for completeness by the GCPE, and implemented as required by the work scope. A copy of the JSA template form is included in Appendix A. Modifications to JSAs will be documented on the completed forms and maintained in the project file. Observed safety violations will be addressed by coaching and mentoring of personnel.

6.4 Record Keeping Requirements

All record keeping requirements mandated by OSHA (29 CFR 1910.120) will be strictly followed. Specifically, all current personnel training records, medical fit for duty papers, and respirator fit test forms will be required before work can begin and maintained on-Site during the length of the project. These records along with injury/incident reports, medical examination records and exposure monitoring records will become a permanent part of the project records. Each subcontractor will maintain the above-mentioned records for his employees.

Medical and exposure records maintained per 29 CFR 1910.1020 will be maintained for at least the duration of employment plus 30 years. Training records will be maintained for 3 years from the date of training.

Medical and exposure records shall be made available upon request to employees, and to the Assistant Secretary or the Director (OSHA) for examination and copying. Medical records must have written consent of employee before being released. Transfer of records will be in compliance with 29 CFR 1910.1020 (h).

7.0 ZONES, PROTECTION, AND COMMUNICATIONS

7.1 Site Zones

A three zone approach to Site operations to control the potential spread of contamination will be employed. The three zones are:

- The Exclusion Zone;
- The Contamination Reduction Zone; and
- The Support Zone.

The establishment of work zones will ensure that: personnel are properly protected against the potential hazards in the area where they are working; work activities and potential contamination are limited to the specific areas; and personnel can be easily located and evacuated in an emergency.

The establishment of work zones and the levels of protection required within the zones will be determined on a case-by-case basis. The SHSO, PM and the Client's GCPE will determine the need for work zones, and based upon Site-specific knowledge and data, determine the levels of protection within the established zones. The following sections provide general specifications for the three work zones.

7.1.1 Exclusion Zone

The area(s) which contain, or are suspected to contain, hazardous materials or activities will be considered the Exclusion Zone (EZ). The SHSO may establish more than one restricted area within the EZ when different levels of protection may be employed or different hazards exist. Signs will be posted in and around areas required to be posted by a specific health or safety standard. No personnel are allowed in the EZ without:

- The proper personal protective equipment;
- Medical authorization per Section 8.3;
- A need to be in the zone; and
- Training certification.

During excavation, drilling and sampling activities, the Exclusion Zone is defined as the excavation and a 10-foot radius around the excavation boundary, or drilling or sampling locations. For the purposes of this project, the Exclusion Zone(s) will be delineated once the work sites have been determined.

7.1.2 Contamination Reduction Zone

A Contamination Reduction Zone (CRZ) will be established between the Exclusion Zone and the Support Zone. The CRZ will contain the contamination reduction corridor (CRC) and is designed to reduce the probability that the uncontaminated clean areas will become contaminated or affected by other Site hazards. It is the area where decontamination of personnel and equipment takes place and serves to limit the physical transfer of hazardous substances into clean areas. Decontamination shall be performed in geographical areas that minimize the exposure of uncontaminated employees or equipment to contaminated employees or equipment. The CRZ is to be used for general Site entry and egress including access for heavy equipment for investigation activities. The CRZ will also contain safety and emergency equipment (see Section 7.2.3). No personnel are allowed in the CRZ without:

- The proper personal protective equipment;
- Medical authorization per Section 8.3;
- A need to be in the zone; and
- Training certification.

Unauthorized employees shall not remove protective clothing or equipment from change rooms.

7.1.3 Support Zone

The Support Zone (SZ) is considered the uncontaminated area and will be separated from the CRZ by the "Contamination Control Line". The SZ will contain the support facility that will provide for team communications and emergency response. Appropriate sanitary facilities and safety and support equipment will be located in this zone. The majority of Site operations as well as Site access of authorized persons will be controlled from this location. The support facility will be located up-wind of Site operations, if possible, and may be used as a potential evacuation point. No potentially contaminated personnel or materials are allowed in this zone.

7.1.4 Buddy System

Select field activities conducted in contaminated, hazardous, and remote areas of the Site may require the use of the buddy system. Instances when the buddy system should be employed include, but are not limited to activities performed in wetland areas (i.e., surface-water sampling, etc.), excavation activities, drilling activities and confined space entry (permit required and non-permit required). Prior to commencing with field tasks in a potentially hazardous area, the need for using the buddy system should be evaluated. If required, a buddy should be able to:

- Provide his/her partner with assistance;
- Observe his/her partner for signs of chemical or heat/cold exposure;
- Periodically check the integrity of his/her partner's protective clothing; and
- Notify the SHSO or others if emergency help is needed.

7.2 Personal Protection

This section describes the levels of protection that will be required by on-Site personnel during Site activities.

7.2.1 General

The level of protection to be worn by field personnel and visitors will be defined and controlled by the SHSO, the PM and the Client's GCPE. Where more than one hazard is indicated, further definition shall be provided by review of Site hazards, conditions, and operational requirements and by monitoring at the particular operation being conducted.

Intrusive activities (i.e., drilling, excavation activities, etc.) include any Site activity which will, or potentially will, result in exposure(s) to hazardous or toxic chemicals or physical agents at or above the permissible exposure limit (PEL), or to flammable or oxygen-deficient atmospheres. Prior to commencing with any field activity, the potential for such conditions should be evaluated to determine air monitoring requirements. General procedures for air monitoring are described below.

During intrusive activities, continuous monitoring will be performed using the photoionization detector (PID) and Dräeger or Sensidyne tubes for initial and periodic real-time measurements of

benzene. Personnel monitoring utilizing activated charcoal tubes may also be performed in areas where high benzene concentrations were present during previous investigations. If personal monitoring is needed, it will only be undertaken under the direction and direct supervision of the CHSM.

The use of Dräeger or Sensidyne tubes for benzene will allow the SHSO to make an immediate decision on the adequacy of protection against this compound. Should the PID or Dräeger or Sensidyne tubes indicate that any detectable concentration for this constituent has been exceeded, work will cease in this area until:

- Workers have donned a full-face air-purifying respirator; or
- The concentration levels for benzene are below the Dräeger or Sensidyne tube detection levels.

Based upon the results of air measurements of intrusive activities in these worst case areas, the level of personnel protection will be established for the remainder of the Site. Protection may be upgraded or downgraded by the SHSO in conjunction with the PM based upon the PID instrument and Dräeger or Sensidyne tube results.

All non-intrusive activities that preclude contact with contaminated media will be performed in Level D protection without continuous monitoring, unless periodic PID monitoring indicates additional monitoring is warranted. However, initial monitoring may be necessary utilizing the PID and the Dräeger or Sensidyne tubes and/or personal monitoring (charcoal tubes).

7.2.2 Respiratory Protection and Clothing

Three levels of protective equipment are discussed below including Level D, Level C, and Level B.

<u>Level D Protection</u>

1. Personal Protective Equipment:
   - High visibility/reflective coveralls/clothing
   - Cut Resistant gloves (or leather work gloves);
   - Boots/shoes, leather, or chemical-resistant, steel toe and shank;

- Ice cleats[(1)];
- Boots (outer), chemical-resistant (disposable)*;
- Chemical resistant gloves – nitriles*;
- Chemical resistant clothing (e.g., Tyveks)*;
- Fire Retardant Clothing[(2)]*
- Safety glasses or chemical splash goggles[(3)];
- Hard hat; and
- Hearing protection.

* Optional for activities except when handling petroleum product (i.e., well bailing) and materials (i.e., soil, sorbent products, etc.) exhibiting high degrees of petroleum contamination

(1) Ice Cleats to be worn with approved safety shoes when working in areas with snow/ice cover.

(2) Fire retardant coveralls required in areas of hot work/areas with potential for flash (i.e., truck flammable loading rack, within tank berms)

(3) Clear lenses to be worn when working in low light areas inside Site buildings and outside during overcast days that may limit visibility.

2. Criteria for Selection.
   - Non-intrusive activities and intrusive activities in areas where the potential airborne hazards are substantially characterized and do not pose a threat of exposure in excess of one-half the PEL.
   - PID instrument (such as the MiniRAE 3000 or other comparable instrument) readings in the breathing zone are less than 5 ppm and benzene and furfural are not detectable utilizing colorimetric indicator tubes (e.g., Dräeger or Sensidyne). Work functions preclude splashes, immersion, or potential for unexpected inhalation of any chemicals.

     Notes: 1. Benzene and furfural may also be monitored initially and periodically in the breathing zone utilizing activated charcoal sampling devices.

3. Modifications of Level D will be used to increase or decrease the level of skin protection during activities that increase or preclude, respectively, the degree of contact with chemical hazards. Modifications for increased protection may include the use of chemical resistant coveralls (e.g., Tyveks) and chemical resistant gloves. Chemical resistant coveralls, gloves and boots will be used when the handling of petroleum products is required (i.e., well bailing). Any modifications of Level D will require approval of the SHSO and GCPE.

Protection may be upgraded or downgraded by the SHSO in conjunction with the Project Principal on the basis of action levels presented below:

Action Levels for Respiratory Protection (Total Organic Vapors)

Total Organic Vapors in Breathing Zone (ppm)[(1)]	Action
≤ 5	No Action
> 5 – < 25	Cease Field Operations
≥ 25	Cease Field Operations

[(1)] Based on relative response (sensitivity of PID to total organic vapors).

PID Action Levels

If photoionization detector measurements are above 5 ppm-v but below 25 ppm-v above background for five minutes in the breathing zone, employee protection will be upgraded to Level C with the use of a full-face respirator.

If PID measurements exceed 25 ppm-v above background for five minutes in the breathing zone, work activities will cease until airborne vapor levels can be reduced to less than 25 ppm-v and are quantified or the SHSO determines alternate methods to be followed in order to proceed.

Most activities are conducted outdoors, where breathing of high vapor levels are not likely in aboveground areas. Excavations which are not to be entered are likely to have higher vapor concentrations. Where a spill occurs in a basement or other indoor area, ventilation will not be as good as outdoors and extra care shall be taken in monitoring vapor levels.

Action Levels for Oxygen Levels and Combustible Gases

COMBUSTIBLE GASES [1]	
0-2.0 – 2.0% LEL	Continue monitoring
2.0 – 5.0% LEL	Notify SHSO
5.0% LEL or greater	Potential explosion hazard Interrupt task / Evacuate Area

Action Levels for Oxygen Levels and Combustible Gases

OXYGEN [1]	
20.8% O_2	Oxygen level normal
Greater than 22.0% O_2 / Less than 20.0% O_2	Oxygen enriched / deficient – notify SHSO
Greater than 23.5% O_2 / Less than 19.5% O_2	Oxygen enriched / deficient Interrupt task / Evacuate area

[1] Action levels are based on Environmental Protection Agency Standard Operating Safety Guides; Table 5-1, Atmospheric Hazard Action Guidelines may be further restricted based on the CIH's professional judgment and experience.

Level C Protection

1. Personal Protective Equipment:

   – Full-face, air-purifying, cartridge-equipped respirator (MSHA/NIOSH specifically approved for protection from organic vapors per OSHA 1910.1028);

   – Chemical-resistant clothing (coverall; hooded, two-piece chemical splash suit; chemical-resistant hood and apron; disposable chemical-resistant coveralls);

   – Gloves (outer), chemical-resistant - nitriles;

   – Gloves (inner), chemical-resistant - latex;

   – Boots (inner), chemical-resistant, steel toe and shank;

   – Boots (outer), chemical-resistant (disposable*);

   – Hard hat;

   – Hearing protection;

   – Escape mask*.

   * Optional

2. Criteria for Selection.

   Meeting any of these criteria warrants use of Level C protection.

   – Airborne hazards are known to be present but are unlikely to exceed protection factors provided by air-purifying respirators.

   – Continuous total organic vapor readings in the breathing zone register between 5 ppm and 25 ppm on a PID (such as the MiniRAE 3000 or other comparable instrument), benzene and furfural readings utilizing colorimetric indicator tubes (e.g., Dräeger or Sensidyne) are detectable but less than 5 ppm.

   – Measured air concentrations of known organic vapors will be reduced by the respirator to, at, or below one-half the permissible exposure limits, and the individual and

combined compound concentrations are within the service limit of the respirator cartridge.

- Atmospheric contaminant concentrations do not exceed Immediately Dangerous to Life and Health (IDLH) concentrations.

- Atmospheric contaminants, liquid splashes, or other direct contact will not adversely affect the small area of skin left unprotected by chemical-resistant clothing.

- Job functions have been determined not to require self-contained breathing apparatus.

Notes: 1. Benzene and furfural may also be monitored initially and periodically in the breathing zone utilizing activated charcoal sampling devices.

2. Modifications of Level C will be used to increase or decrease the level of skin protection during activities that increase or preclude, respectively, the degree of contact with chemical hazards. Modifications for increased protection may include the use of chemical resistant coveralls (e.g., Tyveks) and chemical resistant gloves. Any modifications to Level C will require approval of the SHSO and PM.

Level B Protection

1. Personal Protection Equipment:

   - Pressure-demand, self-contained breathing apparatus (MSHA/NIOSH approved);

   - Chemical-resistant clothing (overall and long-sleeved jacket; coveralls; hooded, one or two-piece chemical-splash suit; disposable chemical-resistant coveralls);

   - Gloves (outer), chemical-resistant;

   - Gloves (inner), chemical-resistant;

   - Boots (inner), chemical-resistant, steel toe and shank;

   - Boots (outer), chemical-resistant, (disposable);

   - Hard hat;

   - Hearing protection; and

   - Two-way radio communications (intrinsically safe).

2. Criteria for Selection

   Meeting any one of these criteria warrants use of Level B protection:

   - PID instrument (such as the MiniRAE 3000 or other comparable instrument) readings in the breathing zone are greater than 25 ppm and less than 500 ppm, benzene and furfural are detectable at concentrations at or above 5 ppm utilizing colorimetric indicator tubes (e.g., Dräeger or Sensidyne).

- Airborne hazards are known to be present, but are not identified or quantified.
- The type(s) and atmospheric concentration(s) of toxic substance(s) have been identified and require the highest level of respiratory protection, but a lower level of skin and eye protection. These would be atmospheres:
  - With IDLH concentrations;
  - Exceeding limits of protection afforded by a full-face, air-purifying respirator; or
  - Containing substances requiring air-supplied equipment, but substances and/or concentrations do not represent a serious skin hazard.
- The atmosphere contains less than 19.5% oxygen.
- Site operations make it highly unlikely that the small, unprotected arc of the head or neck will be contacted by splashes of extremely hazardous substances.
- If work is performed in an enclosed space where the exposure to toxics or an oxygen deficient atmosphere may be present.

7.2.3 Safety Equipment

Basic emergency and first aid equipment will be available at the Support Zone and/or the CRZ as appropriate. This shall include first aid kit, emergency eyewash, fire extinguishers, and other safety-related equipment. Basic emergency and first aid equipment is permanently available at the Site.

- First aid kits shall consist of appropriate items (as recommended by a healthcare professional) and stored in a weather proof container with individual sealed packages of each type of item.
- First aid kits will be checked initially and at least weekly at the Site.
- Hand washing facilities or antiseptic solutions/towelettes will be available at all work locations.

Field personnel will be notified of the locations of emergency and first aid equipment prior to commencing with field activities.

<u>Hand Tools</u>

Where hand and power tools are used and employees are potentially exposed to the hazard of falling, flying, abrasive, or splashing objects, or are exposed to harmful dust, fumes, mists, vapors,

or gases, the employees shall be provided the appropriate Personal Protective Equipment as necessary to protect them from the hazard.

Communications

Mobile Telephones – for communication with emergency support services/facilities. All Site personnel should be equipped with a mobile phone. Mobile communications, however, will be prohibited when the user is within the work area to avoid injuries resulting from distraction.

8.0 MONITORING PROCEDURES FOR SITE OPERATIONS

8.1 Air Quality Monitoring During Site Operations/Intrusive Activities

A Community Air Monitoring Plan ("CAMP") will be implemented on-Site, in which VOCs and particulates as well as wind direction and temperature will be monitored at the perimeter of the work area during ground intrusive activities, which will be recorded in a Site field book. The CAMP can be found in Appendix G. VOCs and particulates will be monitored as a precautionary measure. The design of the CAMP is intended to provide a measure of protection for the on-Site workers not directly involved with the subject work activities and for the off-Site community from potential airborne contaminant releases as a direct result of remedial work and Site development activities.

Work zone monitoring will be performed to verify the adequacy of the Level D respiratory protection, to aid in Site layout, and to document monitoring results. If air monitoring in the work areas indicates the presence of potentially hazardous materials, control measures will be implemented. All monitoring instruments shall be operated by qualified personnel only and will be calibrated prior to use daily or more often, as necessary. The SHSO, in consultation with the Roux Associates Field Manager, is responsible for ensuring that appropriate monitoring, levels of protection, and safety procedures are followed. The SHSO will monitor wind direction and. All monitoring equipment will be calibrated to the manufacturer's specifications each day prior to use and documented in Site field books.

8.1.1 Level D Intrusive Activities

Level D intrusive activities will initially include all intrusive Site activities. These activities will begin utilizing Level D protection as described in Section 7.2.2, with upgrading as necessary to assure adequate personnel protection.

The SHSO will monitor the breathing zone with the PID in continuous operating mode and with the alarm activated. The alarm will be set at 5 ppm, which is below the permissible exposure level (PEL) for all constituents of concern, except benzene and furfural. If the PID indicates the 5 ppm concentration has been exceeded, the SHSO will order cessation of the activity and the exclusion zone cleared of all personnel until the PID indicates a reading less than 5 ppm, or until the nature of the hazard has been more thoroughly evaluated.

Colorimetric indicator tubes may be be used to establish the concentration of benzene and furfural. Furfural may be detected utilizing the Sensidyne tube for Cyclohexanone (#154). The colorimetric indicator tubes may not be chemical-specific for these compounds but will be conservatively biased high and the readings will be assumed to be benzene or furfural, which will enable the SHSO to make an immediate decision on the appropriate level of protection. Benzene and furfural may also be monitored initially in the breathing zone, using activated charcoal sampling devices if approved by, and under the direct supervision of, the CHSM. If any detections of benzene and/or furfural are noted based on the colorimetric indicator tube readings, the SHSO will order cessation of the activity until: 1) the benzene and/or furfural concentrations are non-detectable by the colorimetric indicator tubes; or 2) all potentially exposed personnel have donned Level C respiratory protection as described in Section 7.2.2., and PID readings are less than 5 ppm; or 3) until the nature of the hazard has been more thoroughly evaluated and it is determined that the measured compound(s) was not benzene and/or furfural.

To confirm the adequacy of respiratory protection, personnel monitoring (short-term and full shift, as appropriate) utilizing activated charcoal sampling devices may be performed to measure the airborne concentrations of benzene and furfural and possibly other organic and inorganic compounds (as necessary) at beginning of new activities and periodically during intrusive activities. These samples would be sent to an American Industrial Hygiene Association (AIHA) accredited laboratory for analysis using the approved National Institute of Occupational Safety and Health (NIOSH) analytical methods. If initial monitoring results exceed the applicable action level for a compound of concern, additional monitoring will be conducted every six months until two consecutive results are below the action level. Whenever air monitoring is undertaken to evaluate employee exposure, employees will be notified of the results in writing to include any corrective actions to be or that are being taken. If a corrective action program is necessary, it will be developed (and updated annually) to include engineering and work practice controls, air monitoring and a description of lead-emitting sources.

Where employees may be exposed to lead, full shift personal samples will be taken that are representative of the employees' regular, daily exposure to lead. If the initial determination or subsequent monitoring reveals employee exposure to be at or above the action level but below the permissible exposure limit the employer will repeat monitoring in accordance with 29 CFR

1910.1025 (d)(6)(ii) and (iii)/29 CFR 1926.62 (d)(6)(ii) and (iii) at least every six months. This monitoring will be continues at the required frequency until at least two consecutive measurements, taken at least 7 days apart, are below the action level at which time the monitoring may be discontinued.

Within 15 working days after the receipt of the results of any lead monitoring the employer shall notify each affected employee of these results either individually or by posting in an appropriate location that is accessible to affected employees. Whenever the results indicate that the representative employee exposure, without regard to respirators, exceeds the permissible exposure limit, the employer shall include in the written notice a statement that the permissible exposure limit was exceeded and a description of the corrective action taken or to be taken to reduce exposure to or below the permissible exposure limit.

If needed, a Site-specific compliance program for controlling lead exposure will address means of engineering and work practice controls, air monitoring, and a description of each operation in which lead is emitted. This program then would be revised and updated at least annually.

Respirators will be used during the time period necessary to install or implement engineering or work practice controls, where engineering and work practice controls are insufficient and in emergencies.

8.1.2 Level C Intrusive Activities

Level C intrusive activities will initially include only those activities that require upgrading from Level D. Level C protection will be as described in Section 7.2.2, with upgrading, as necessary, to Level B to assure adequate personnel protection. Downgrading to Level D protection will also be possible if monitoring demonstrates no inhalation hazard exists for the activity.

The SHSO will monitor the breathing zone with the PID in continuous operating mode and with the alarm activated. The alarm will be set at 5 ppm, which is below the permissible exposure level (PEL) for all constituents of concern except benzene and furfural. If the PID indicates the 5 ppm concentration has been exceeded, the SHSO will initiate measurements utilizing the colorimetric indicator tubes for benzene and furfural.

If the PID readings exceed 25 ppm total organic vapor, or the benzene and/or furfural colorimetric indicator tube readings exceed 5 ppm, the SHSO will order cessation of the activity until: 1) the PID indicates a reading less than 25 ppm, and the benzene and/or furfural concentrations are below 5 ppm based upon the colorimetric indicator tube readings, 2) all potentially exposed personnel have donned Level B respiratory protection or, 3) the nature of the hazard has been more thoroughly evaluated and it is determined that the measured concentrations do not pose a potential exposure in excess of the PEL utilizing the Level C protection.

To confirm the adequacy of respiratory protection, personnel monitoring utilizing activated charcoal sampling devices may be performed to measure the airborne concentrations of benzene and furfural and possibly other organic compounds (as necessary) at the beginning of new activities and periodically during intrusive activities. These samples would be sent to an AIHA accredited laboratory for analysis using the approved NIOSH analytical methods.

8.1.3 Level B Intrusive Activities

Level B intrusive activities will initially include only those activities that require upgrading from Level C, and only those activities required to bring work to a safe stoppage. No work is currently planned utilizing Level B protection, and this HASP will require amendment at such time as Level B work becomes necessary (except for safe work stoppage activities).

When Level B protection is utilized, the SHSO will monitor the breathing zone with the PID in continuous operating mode and with the alarm activated. The alarm will be set at 100 ppm. If the PID indicates the 100 ppm concentration is exceeded, the SHSO will order cessation of the activity until: 1) the PID readings are below 100 ppm or; 2) until the nature of the hazard has been more thoroughly evaluated and it is determined that the measured concentrations do not pose a potential exposure in excess of a PEL utilizing the Level B protection.

To confirm the adequacy of respiratory protection, personnel monitoring utilizing activated charcoal sampling devices may be performed to measure the airborne concentrations of benzene and furfural and possibly other organic compounds (as necessary) whenever Level B protection is utilized.

8.2 Air Quality Monitoring During Non-Intrusive Activities

Non-intrusive activities include any Site activity, which would not reasonably be expected to result in exposure(s) to hazardous or toxic chemicals or physical agents at or above the permissible exposure limit (PEL), or to flammable or oxygen-deficient atmospheres. Based upon the current understanding of Site conditions, personnel monitoring may be performed using colorimetric indicator tubes or activated charcoal sampling devices on the first day of non-intrusive activities, and periodically thereafter, if the PID readings indicate a more accurate assessment is warranted.

8.3 Medical Surveillance Requirements

Medical surveillance specifies any special medical monitoring and examination requirements as well as stipulates that all Roux Associates personnel and subcontractors contracted directly by Roux Associates are required to pass the medical surveillance examination or equivalent for hazardous waste work required by 29 CFR 1910.120.

The examination will be taken annually, at a minimum, and upon termination of employment with the company at no cost to employees. Additional medical testing may be required by the CHSM, or CHSM in consultation with the company physician and the SHSO, if an overt exposure or accident occurs, or if other Site conditions warrant further medical surveillance. For example, if there is potential exposure to lead, blood sampling and monitoring will be conducted in accordance with the OSHA lead standard. In addition temporary removal will be employed for any employee with elevated blood levels along with employee notification of blood sampling results within 5 days and incorporation of Medical Removal Protection benefits.

Medical examinations and procedures shall be performed by or under the supervision of a licensed physician. Medical surveillance is provided without cost to the employees.

Where biological monitoring is performed based on lead exposure, the blood sampling and monitoring should be conducted every 6 months until two consecutive blood samples and analyses are acceptable. The sampling and monitoring should be performed at least monthly during the removal period. Any employee with elevated blood levels should be temporarily removed. Employees should be notified in writing within five days when lead levels are not acceptable.

OSHA Standard 29 CFR 1910.1025/29 CFR 1926.62 requires temporary medical removal with Medical Removal Protection benefits.

9.0 SAFETY CONSIDERATIONS FOR SITE OPERATIONS

9.1 General

In this section, non-monitoring, safety-related procedures are described. In general, all Site activities should be conducted in accordance with the Client's Safe Work Practices Requirements and Contractor Safety Rules & Work Procedures, if available.

9.2 Site Walk-Throughs

Safety considerations during Site walk-throughs are important since this activity will usually precede all other field operations. Air monitoring will be performed as indicated in Section 8.0 and will be used to assist in prescribing levels of protection for future Site operations, designating Site layout and identifying areas of particular hazard, if any.

9.3 Construction Activities

Activities involved with construction of remedial action treatment systems will initially be considered non-intrusive activities. However, initial and/or periodic monitoring, as described in Section 7.2 may be performed by the SHSO.

A variety of physical hazards may be present during any construction-type project. Personnel should be aware of safety issues associated with; noise, cold, hot work such as welding, cutting and burning, heavy lifting, rough terrain, heavy equipment operation, ladders, scaffolding, excavating and trenching, underground and overhead utilities, electrical hazards, and the hazards associated with hand and power tools. These hazards are not unique and are generally familiar to most construction personnel.

9.4 Operation and Maintenance Activities – If Required

Once a treatment system, if required, is brought on-line (including initial start-up and testing), any personnel involved in sampling, testing, repairs, and operation and maintenance of the system must be health and safety trained before being allowed to work on the system. Certification of compliance with 29 CFR 1910.120 must be provided to, and will be maintained by, the SHSO on-Site as described in Section 6.4 of the HASP.

Once a treatment system is on-line, all remedial action treatment system activities will be performed under the requirements of the HASP.

Air monitoring will be performed to establish the general or specific concentrations of benzene and furfural and other chlorinated and non-chlorinated solvents prior to maintenance activities performed on the remedial action treatment system using the following instruments:

- photoionization detector;
- colorimetric indicator tubes; and
- activated charcoal sampling devices, if necessary.

Action levels described in Section 8.0 of the HASP will apply to all remedial action treatment system tasks.

Be sure that appropriate personal protective equipment/clothing is used when handling chemicals (i.e., polymers, coagulants, disinfecting agents, etc.) used during operation and maintenance activities.

If used, ladders will meet the following requirements:

- all rungs will be uniformly spaced or meet OSHA specifications;
- will be inspected prior to each use with defective ladders tagged and taken out of service until destroyed;
- users will maintain 3 points of contact while ascending and descending the ladder and will face the ladder at all times, will not stand on the top two rungs and will avoid carrying items in their hands; and
- side-rails shall be tied off at the top and extend a minimum of 3 feet above the upper landing.
- Extension ladders shall be placed at a 4:1 ratio:
  - will be of the correct load capacity for the task;
  - not loaded beyond that capacity; and
  - will only be used for the purpose for which they were designed.

9.5 Heavy Equipment and Traffic Safety

The SHSO will be present on-Site during all invasive operations and will provide health and safety monitoring to ensure that appropriate levels of protection and safety procedures are utilized.

This Site utilizes all of the mechanical equipment used on any major construction site. Typical machinery to be found includes pumps, compressors, generators, portable lighting systems, pneumatic tools (drum openers), hydraulic drum crushers, pug mills, forklifts, trucks, dozers, and backhoes, drill rigs. It poses a serious hazard if not operated properly, or if personnel near machinery cannot be seen by equipment operators.

Roux SOP 1.13R1 outlines Roux policies and procedures regarding Heavy Equipment Exclusion Zone (HEEZ) set up and use. The objective of the Exclusion Zone Policy is to establish the minimum clearance distance that must be maintained between workers and heavy equipment while equipment is in operation (i.e., engaged or moving). The intent is to have no personnel or other equipment entering the HEEZ while the equipment is in operation/moving, to ensure that Roux and Subcontractor employees are not unnecessarily exposed to the hazards of the equipment. Appendix E provides Roux Associates' Heavy Equipment Exclusion Zone SOP.

In addition, the following safety procedures relating to traffic safety must be followed while performing on-Site and off-Site activities.

<u>On-Site Traffic Safety Procedures</u>

When performing activities on, or adjacent to on-Site roads, the following traffic safety procedures must be followed.

- High-visibility coveralls must be worn during Site activities as described in Section 7.2 of this HASP. If possible, the coveralls being worn should be modified via wearing of a reflective vest or with a reflective, reflective stripe(s) when working on, or adjacent to all paved and unpaved roads at the Site.

- When performing activities on, or on the shoulder of any paved roads (e.g., Site entrance and exit roads, the primary roads leading to a truck loading area, paved areas at a truck loading area, a minimum of two people must be present. One person will serve as a "traffic watchman" whose sole responsibility is to monitor traffic conditions and alert worker(s) of potential traffic hazards. The "traffic watchman" must be alert at all times and focused on traffic conditions. At no time should the "traffic watchman" engage in activities other than monitoring traffic conditions.

- When performing activities at wells, well vaults, manholes, etc., on, or adjacent to all paved and unpaved roads at the Site, the work vehicle should be positioned, to the fullest extent possible, to form a barrier between the worker(s) and oncoming traffic. In addition, each work vehicle will be equipped with a minimum of four high visibility traffic cones. All traffic cones will be placed as necessary to alert traffic of ongoing activities.

- All Client and Roux Associates subcontractors performing work at the Site must also adhere to the above safety procedures.

Off-Site Traffic Safety Procedures

When performing activities on or adjacent to off-Site roads, the following traffic safety procedures must be followed.

- When performing activities on, or adjacent to off-Site roads (paved and unpaved), a reflective vest or high visibility outerwear will be worn at all times.

- As described in on-Site procedures, when performing activities on, or adjacent to off-Site paved roads, a "traffic watchman" must be used at all times. The areas where a "traffic watchman" must be used include, but are not limited to, the following areas: Route 110 (Broad Hollow Road).

- As described in on-Site procedures, when performing activities on, or adjacent to off-Site roads, the work vehicle should be positioned, to the fullest extent possible, to form a barrier between the worker(s) and oncoming traffic. In addition, a minimum of four 42" high traffic cones will be placed as necessary to alert traffic of ongoing activities.

9.5.1 Inspection

Each piece of potentially hazardous equipment (i.e., power tools,) will be inspected for proper and safe operation prior to its use.

- All mechanical and rigging equipment will be inspected by the operators prior to beginning this work effort, and at least daily thereafter, to ensure proper operating capability and that all guards are adequate and in place. Defective equipment must be repaired or replaced prior to continued use/operation.

- Inspect all cables, sheaves, slings, chains, hooks, and eyes prior to use.

- Secure equipment firmly or make sure it is supported.

- Be sure all power lines are inactivated, removed, or at a safe distance.

- Always use proper loading for capacity at lifting radius.

- Keep all equipment lubricated and maintained.

- Employ signal persons whenever needed.

- Make certain that signals are understood and observed.

9.6 Excavation and Backfill Operations

The SHSO will be present on-Site during all excavation and backfill operations and will provide health and safety monitoring to ensure that appropriate levels of protection and safety procedures are utilized. The proximity of chemical, water, sewer, and electrical lines will be identified by the Client's GCPE before any subsurface activity or sampling is attempted.

The following safe work practices will be followed during this task:

- The proximity of chemical, water, sewer and electrical lines will be identified by a facility representative prior to any subsurface activity beginning.
- Roux's subsurface protocol or the Client's protocol will be used, whichever is more stringent.
- While excavating, stay out of the reach of the backhoe arm's swing by standing at the end of the excavation, not near the sides (sides have the potential to cave in).

Maximum Allowable Slopes

Soil or Rock Type	Maximum Allowable Slopes (H:V)[1] for Excavations less than 20 Feet Deep[3]
Stable Rock	Vertical (90°)
Type A[2]	¾ : 1 (53°)
Type B	1 : 1 (45°)
Type C	1½ : 1 (34°)

OSHA (29 CFR 1926.652, Subpart P, Appendices A and B)

Notes:

[1] Numbers shown in parentheses next to maximum allowable slopes are angles expressed in degrees from the horizontal. Angles have been rounded off.

[2] A short term maximum allowable slope of 1/2H : 1V (63°) is allowed in excavations in Type A soil that are 12 feet (3.67 m) or less in depth. Short term maximum allowable slopes for excavations greater than 12 feet (3.67 m) in depth shall be 3/4H : 1V (53°).

[3] Sloping or benching for excavations greater than 20 feet deep shall be designed by a Registered Professional Engineer.

Proper stockpiling, containment, and disposal practices will be utilized in regard to the potential amount of waste generated during operations. The location of safety equipment and evacuation procedures will be established prior to initiation of operations according to this HASP. The use of hard hats, eye protection, ear protection, hand protection and steel-toed boots will be required during excavation or other heavy equipment operations.

9.7 Overhead/Underground Power Lines

The positioning or operation of heavy equipment in the vicinity of utility services will not be initiated until the activities have been coordinated with the Client's GCPE. Operation of equipment adjacent to or under overhead power lines, in such a manner that encroaches on authorized clearances, will not take place unless one of the following are satisfied:

- Power has been shut off and positive steps are taken to prevent the lines from being energized;
- The equipment does not have the ability to move laterally or horizontally within the minimum clearance specified in the table below, from energized power lines;
- The equipment has been positioned and blocked to allow no part, including cables, to come within the minimum clearance specified in the table below; or
- Excavation operations are not initiated within 25 feet of the verified position of underground power lines.

Minimum Required Clearances for Energized Overhead Power Lines

Nominal System Voltage of Power Line (K V)	Minimum Required Clearance (feet)
0-50	10
51-100	12
101-200	15
201-300	20
301-500	25
501-750	35
751-1000	45

1 kilovolt (KV) = 1,000 volts

9.8 Heavy Equipment Decontamination

If a steam cleaner will be utilized to decontaminate equipment, personnel should exercise caution as the high pressure steam can cause severe burns. Protective gloves, face shields, hard hats, steel-toed boots, and Tyvek suits or rain gear will be worn when using steam cleaners.

9.9 Hot/Cold Work

Welding will not be performed unless specific clearance and a hot work permit have been obtained from the Client's GCPE. Any contractors or Roux Associates personnel performing welding must adhere to the Client's Hot Work Procedures, if available, and the procedures outlined below.

Welding equipment shall be chosen for safe application to the work and shall be installed properly. Employees designated to operate welding equipment shall be properly instructed and qualified to operate it. Mechanical ventilation shall be provided when welding or cutting:

- Where there is less than 10,000 cubic feet of air per welder;
- Where the overhead height is less than 16 feet; and
- Where required by Client practices and procedures (e.g., Confined Space Permitting).

Proper shielding and eye protection shall be used to prevent exposure of personnel to welding hazards. Proper precautions (isolating welding and cutting, removing fire hazards from vicinity, etc.) for fire prevention shall be taken in areas where welding or other "hot work" is being done. All welding operations and other "hot work" shall be scheduled and performed in accordance with the Client's permitting system. The SHSO will be responsible for securing these permits.

9.9.1 Welding in Confined Spaces

All welding and cutting operations carried out in confined spaces shall be adequately ventilated to prevent the accumulation of toxic materials or possible oxygen deficiency and shall be performed in compliance with the Client's and Roux Associates' Confined Space Entry Procedures (Appendices E and I). In general, oxygen shall never be used for ventilation. In such circumstances where it is impossible to provide ventilation, OSHA requires airline respirators or hose masks approved by the National Institute for Occupational Safety and Health (NIOSH) for this purpose to be utilized. In areas immediately dangerous to life, NIOSH approved powered air purifying respirators (PAPR) or self-contained breathing apparatus (SCBA) shall be used. These

exposures and tasks are not to be performed by Roux employees. If the work requires welding in confined spaces, this will only be performed by a qualified welder who is Confined Space Entry Trained (for permit-required entries) and provided with procedures and PPE that satisfy OSHA 29 CFR 1910.134.

9.10 Heat Stress

Heat stress is a significant potential hazard and can be associated with heavy physical activity and/or the use of personal protective equipment/clothing in hot weather environments.

Heat cramps are brought on by prolonged exposure to heat. As an individual sweats, water and salts are lost by the body resulting in painful muscle cramps. The signs and symptoms of heat stress are as follows:

- Severe muscle cramps, usually in the legs and abdomen;
- Exhaustion, often to the point of collapse; and
- Dizziness or periods of faintness.

First aid treatment includes shade, rest and fluid replacement. Normally, the individual should recover within one-half hour. If the individual is not better within 30 minutes and the body temperature has not decreased, the individual should be transported to an occupational health clinic or hospital for medical attention.

Heat exhaustion may occur in a healthy individual who has been exposed to excessive heat while working or exercising. The circulatory system of the individual fails as blood collects near the skin in an effort to rid the body of excess heat. The signs and symptoms of heat exhaustion are as follows:

- Rapid and shallow breathing;
- Weak pulse;
- Cold and clammy skin with heavy perspiration;
- Skin appears pale;
- Fatigue and weakness;

- Dizziness; and
- Elevated body temperature.

First aid treatment includes cooling the victim, elevating the feet, and replacing fluids. If the individual is not better within 30 minutes and the body temperature has not decreased, the individual should be transported to an occupational health clinic or hospital for medical attention. A n East Farmingdale, NY vicinity city map with the location of St Joseph Hospital and Healthsure Medical Services, PLLC is included as Figure 2A and 3A.

Heat stroke occurs when an individual is exposed to excessive heat and stops sweating. This condition is classified as a **MEDICAL EMERGENCY** requiring immediate cooling of the victim and transport to an emergency medical facility. The signs and symptoms of heat stroke are as follows:

- Dry, hot red skin;
- Body temperature approaching or above 105 degrees F;
- Large (dilated) pupils; and
- Loss of consciousness - the individual may go into a coma.

First aid treatment requires immediate cooling and transportation to an emergency medical facility.

Heat stress is a significant hazard if any type of protective equipment (semipermeable or impermeable) which prevents evaporative cooling is worn in hot weather environments.

9.11 Cold Stress

Cold stress is a danger at low temperatures and when the wind-chill factor is low. Prevention of cold-related illnesses is a function of whole body protection. Adequate insulating clothing must be used when the air temperature is below 40°F. A work/rest regimen will be initiated when ambient temperatures and protective clothing cause a stressful situation. In addition, reduced work periods followed by rest in a warm area may be necessary in extreme conditions. The signs and symptoms of cold stress include the following:

- Severe shivering;
- Abnormal behavior;
- Slowing;
- Weakness;
- Stumbling or repeated falling;
- Inability to walk;
- Collapse; and/or
- Unconsciousness.

First aid requires removing the victim from the cold environment, and preventing further body heat loss by covering the victim lightly with blankets. Do not cover the victim's face. If the victim is still conscious, administer hot drinks and encourage activity such as walking, wrapped in a blanket. If the victim's conditions do not improve, seek further medical attention.

9.12 Communications

- Cellular Phones
  Site personnel should be equipped with cellular telephones. Applicable cellular phone numbers are provided in Section 1.0 (page 3).

- Hand Signals
  To be employed by personnel required to use Level C respiratory protection. They shall be known by the entire field team before operations commence and covered during Site-specific training.

Hand Signals

SIGNAL	MEANING
Hand gripping throat	Out of air, can't breath
Grip partner's wrist	Leave area immediately
Hands on top of head	Need assistance
Thumbs up	I'm alright, okay
Thumbs down	No, negative

9.13 Additional Safe Work Practices

Refer to the SHSO for specific concerns on each individual Site task. The safety rules listed below, must be strictly followed:

- Inform GCPE of planned activities and evaluate the degree of health and safety protection required for each task;
- Practice contamination avoidance, avoid any skin contact with potentially contaminated materials (i.e., surface or ground water, soil, etc.);
- Hard hat and safety eye protection will be worn when inside the exclusion zone;
- Do not carry gum, cigarettes, food drink or cosmetics of any kind into contaminated areas;
- Wash hands before handling food and drink and other activities that could cause hand-to-mouth transfer of contaminants;
- Appropriate foot, hearing, eye, head and hand protection will be worn by those directly involved in the work efforts when warranted;
- No facial hair that interferes with the face to face piece seal of respirators will be allowed;
- Personnel not involved in the operations, excavating, or monitoring activities will remain a safe distance from the equipment;
- Do not climb over/under obstacles or barricades;
- Be alert to your own physical condition;
- Watch your buddy for signs of fatigue, exposure, heat or cold stress, etc.;
- No work will be conducted without adequate light;
- Report all accidents, no matter how minor, immediately to the SHSO and the Project Engineer; and
- **KNOW YOUR HEALTH AND SAFETY PLAN.**

10.0 DECONTAMINATION PROCEDURES

10.1 Contamination Prevention

One of the most important aspects of decontamination is the prevention of contamination. Good contamination prevention should minimize worker exposure and help ensure valid sample results by precluding cross-contamination. Procedures for contamination avoidance include:

Personnel

- Do not walk through areas of obvious or known contamination;
- Do not handle or touch contaminated materials directly;
- Make sure all personal protective equipment (PPE) has no cuts, tears or other signs of deterioration prior to donning;
- Fasten all closures on suits, covering with tape, if necessary;
- Take particular care to protect any skin injuries;
- Stay upwind of airborne contaminants; and
- Do not carry cigarettes, gum, etc., into contaminated areas.

Sampling/Monitoring

- When required by the SHSO, cover instruments with clear plastic, leaving opening for sampling and exhaust ports; and
- Bag sample containers prior to the placement of sample material.

Heavy Equipment

- Care should be taken to limit the amount of contamination that comes in contact with heavy equipment;
- Excavated soils should be contained and kept away from workers; and
- Decontaminate equipment prior to moving to another work area.

10.2 Decontamination

The SHSO shall be responsible for determining appropriate decontamination methods for all Site activities. Figures 4, 5 and 6 illustrate typical decontamination procedures for Levels D, C, and B and procedures for emergency decontamination. Decontamination water should be collected,

handled, drummed, and/or containerized prior to determination of classification and appropriate disposal method (see Section 11.0).

Equipment Decontamination

Sampling equipment will be decontaminated through the following steps, if necessary:

- fresh water rinse;
- non-phosphate detergent wash;
- fresh water rinse; and
- distilled water rinse.

11.0 DISPOSAL PROCEDURES

All discarded materials, waste materials, or other objects shall be handled in such a way as to preclude the potential for spreading contamination, creating a sanitary hazard, or causing litter to be left on-Site. All potentially contaminated materials should be bagged, drummed, or placed in waste wranglers, as necessary, and placed in the designated area by the GCPE. Potentially contaminated waste materials that are bagged or drummed outside of the area will be labeled prior to transportation.

All personal protective clothing and sorbent products contaminated with petroleum product will be stored in waste storage containers (i.e., waste wranglers) located in the hazardous waste storage area. All hazardous waste storage containers, tanks and drums will be labeled with the appropriate hazardous waste labels and/or placards. All contaminated materials will be disposed of in accordance with appropriate regulations. All non-contaminated materials shall be collected and bagged for appropriate disposal as normal domestic waste.

PPE & equipment shall be decontaminated, cleaned, laundered, maintained or replaced as needed to maintain their effectiveness. Employees whose non-impermeable clothing becomes wetted with hazardous substances shall immediately remove the clothing.

12.0 EMERGENCY PLAN

As a result of the hazards on-Site and the conditions under which operations are conducted, the possibility of an emergency exists. An emergency plan is required by OSHA (29 CFR 1910.120) to be available for use and is included below. A copy of this plan shall be available in the Support zone at each work area.

In the event of an emergency situation, such as fire, explosion, significant release of particulates, etc., all persons in both the restricted and non-restricted areas will evacuate and assemble near the Support Zone or other safe area as identified by the Site Emergency Coordinator(s). The Site Emergency Coordinator(s) will have authority to initiate proper action if outside services are required. Under no circumstances will incoming personnel or visitors be allowed to proceed into the area once the emergency signal has been given. The SHSO or GCPE must see that access for emergency equipment is provided and that all spark-producing apparatus has been shut down once the alarm has been sounded. Once the safety of all personnel is established, the fire department and other emergency response groups will be notified by telephone of the emergency. Then, other personnel listed in Section 12.4 shall be notified.

Note: This plan does NOT address post-emergency response operations since a specific HASP will be developed at that time as appropriate.

12.1 Site Emergency Coordinator(s)

The Site Emergency Coordinator(s) are:

- GCPE;
- SHSO; and
- Facility Manager.

The Site Emergency Coordinator(s) shall implement this emergency plan whenever conditions at the Site warrant such action. The coordinator(s) will be responsible for assuring the evacuation, emergency treatment, emergency transport of Site personnel as necessary, and notification of emergency response units and the appropriate management staff.

12.2 Evacuation

Withdrawal Upwind

The work party will continually note general wind directions while on-Site. Upon noting the conditions warranting movement away from the work area, the crew will move upwind a distance of approximately 100 feet or farther, as indicated by the site monitoring instruments. Donning SCBA and a lifeline, SHSO will return to the work area to determine if the condition noted was transient or persistent. If persistent, on-Site personnel will be notified of the situation and the need to leave the site or don SCBA. When access to the Site is restricted and escape possibly hindered, the crew may be instructed to evacuate the Site rather than move upwind, especially if withdrawal upwind moves the crew away from escape routes.

Site Evacuation

Upon determination of conditions warranting Site evacuation, the work party will proceed upwind of the work area and notify the SHSO and the Client's Project Engineer of Site conditions. If the hazard is toxic gas, respirators will be donned. The crew will proceed to the field office to assess the situation. The advisability and type of further response action will be coordinated and carried out by the SHSO, the PM and the GCPE.

12.3 Potential or Actual Fire or Explosion

If the potential for a fire exists or if an actual fire or explosion occurs, the following procedure will be implemented:

- Immediately evacuate the Site as described above (Section 12.2);
- Notify Client's Project Engineer, SHSO and PM; and
- Notify fire and security. Call **911**
  Fire Department – East Farmingdale Fire Department
  Police Department – Suffolk County Police Department

12.4 Environmental Incident (Release or Spread of Contamination)

If possible, the spread of contamination should be controlled or stopped. The Facility Manager must be informed of the need to contact police and fire authorities to inform them of the possible or immediate need for nearby evacuation. If a significant release has occurred, the National Response Center and other appropriate groups should be contacted by the Facility Manager or his

designee. Those groups will alert National or Regional Response Teams as necessary. Following these emergency calls, the remaining personnel listed in the table below shall be notified:

Emergency Telephone Numbers

Type	Name	Telephone #
Fire Department	Fire Department	911 / (631) 249-0474
HazMat Emergency Response		911
Law Enforcement	Police Department	911
Hospital	ST Joseph Hospital	(516) 579-6000
Ambulance		911
Urgent Care Center	First Care & Occupational Health Clinic	(631) 425-0118
National Response Center (Release or Spill)		(800) 424-8802
Site Representative	John Swagerty	(914) 288-8160
Client GCPE	TBD	TBD
Site Health and Safety Officer	TBD	TBD
Project Manager	Jeff Wills	(631) 232-2600
Corporate H&S Manager	Joseph Gentile	(856) 832-3768 (Office) (610) 844-6911 (Cell)

These contacts and phone numbers will be posted in the SZ.

12.5 Personal Injury

If on-Site personnel require emergency medical treatment, the following steps will be taken:

1) Notify the Project Manager, Principal, and/or other Roux Senior Management for Illness or Injury Case Management protocol to be initiated.

2) Notify the Fire Department or Ambulance service and request an ambulance or transport the victim to the hospital, as appropriate.

3) Decontaminate to the extent possible prior to administration of first aid or movement to emergency facilities.

4) First aid will be provided by emergency medical services (EMS) or by on-Site personnel trained in first aid, CPR, and blood borne pathogens, if available.

5) The OHSM will supply medical data sheets on the victim (if a Roux Associates, Inc. employee) to appropriate medical personnel.

Accident Report Forms and Medical Services Form are provided in Appendices F, G, and H.

12.6 Overt Personnel Exposure

If an overt exposure to toxic materials should occur, the exposed person shall be treated on-Site as follows:

Skin Contact:	Wash/rinse affected area thoroughly with copious amounts of soap and water, then provide appropriate medical attention. An emergency shower or drench system shall be accessible at the Site at all times. Utilizing eyewash, eyes should be rinsed for at least fifteen (15) minutes upon chemical contamination.
Inhalation:	Move to fresh air and/or, if necessary, decontaminate, and transport to the hospital.
Ingestion:	Decontaminate and transport to emergency medical facility.
Puncture Wound or Laceration:	Decontaminate and transport to emergency medical facility. SHSO will coordinate with the CHSM and the HR Director to obtain medical information on the injured if necessary.

12.7 Adverse Weather Conditions

In the event of adverse weather conditions, the SHSO will determine if work can continue without sacrificing the health and safety of field workers. Some of the items to be considered prior to determining if work should continue are:

- Heavy rainfall;
- High wind;
- Potential for heat stress;
- Potential for cold stress and cold-related injuries;
- Limited visibility;
- Potential for electrical storms – stop work for a minimum of 15 minutes after observing a lightning strike and for at least 15 minutes after the storm has passed;
- Potential for malfunction of H&S monitoring equipment or gear; and
- Potential for accidents.

13.0 FIELD TEAM REVIEW

Each person performing work at or visiting this Site shall sign this section after Site-specific training is completed and before being permitted to access the CRZ or Exclusion Zone.

I have read and understand this Site-Specific Health and Safety Plan. I will comply with the provision contained therein.

Site/Project: Fairchild Republic Aircraft: Old Sump Site
East Farmingdale, New York

Name Printed	Signature	Date

14.0 APPROVALS

By their signature, the undersigned certify that this HASP is approved and will be utilized at the Fairchild Republic Aircraft; Old Sump Site.

TBD – Site Health and Safety Officer	Date
Joseph Gentile – Corporate Health and Safety Manager	Date
Jeff Wills – Project Manager	Date
TBD – Client's General Contractor Project Executive	Date

TABLES

1. Toxicological, Physical and Chemical Properties of Compounds Potentially Present at the Site

Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
1,2-Dichlorobenzene	95-50-1	TWA 25 ppm STEL 50 ppm	C 50 ppm (300 mg/m^3)	C 50 ppm (300 mg/m^3)	200 ppm	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, nose; liver, kidney damage; skin blisters	Eyes, skin, respiratory system, liver, kidneys	Colorless to pale-yellow liquid with a pleasant, aromatic odor. [herbicide] BP: 357°F Fl.P: 151°F UEL: 9.2% LEL: 2.2% Class IIIA Combustible Liquid
1,2-Dichloroethane	107-06-2	TWA 10 ppm	Ca TWA 1 ppm (4 mg/m^3) STEL 2 ppm (8 mg/m^3)	TWA 50 ppm C 100 ppm 200 ppm [5-minute maximum peak in any 3 hours]	Ca [50 ppm]	inhalation, ingestion, skin absorption, skin and/or eye contact	Irritation eyes, corneal opacity; central nervous system depression; nausea, vomiting; dermatitis; liver, kidney, cardiovascular system damage; [potential occupational carcinogen]	Eyes, skin, kidneys, liver, central nervous system, cardiovascular system	Colorless liquid with a pleasant, chloroform-like odor. [Note: Decomposes slowly, becomes acidic & darkens in color.] BP: 182°F Fl.P: 56°F UEL: 16% LEL: 6.2% Class IB Flammable Liquid
1,2-Dichloroethene (total)	540-59-0	TWA 200 ppm (790 n	TWA 200 ppm (790 mg/m^3)	TWA 200 ppm (790 mg/m^3)	1000 ppm	inhalation, ingestion, skin and/or eye contact	Irritation eyes, respiratory system; central nervous system depression	Eyes, respiratory system, central nervous system	Colorless liquid (usually a mixture of the cis & trans isomers) with a slightly acrid, chloroform-like odor BP: 118-140°F Fl.P: 36-39°F UEL: 12.8% LEL: 5.6% Class IB Flammable Liquid
2-Butanone (MEK)	78-93-3	TWA 200 ppm (590 mg/m^3) STEL 300 ppm (885 mg/m^3)	TWA 200 ppm (590 mg/m^3) STEL 300 ppm (885 mg/m^3)	TWA 200 ppm (590 mg/m^3)	3000 ppm	inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose; headache; dizziness; vomiting; dermatitis	Eyes, skin, respiratory system, central nervous system	Colorless liquid with a moderately sharp, fragrant, mint- or acetone-like odor. BP: 175°F Fl.P: 16°F UEL(200°F): 11.4% LEL(200°F): 1.4% Class IB Flammable Liquid
Acenaphthene	83-32-9	None established	None established	None established	None established	inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, respiratory system	Eyes, skin, respiratory system	Brown solid
Acetone	67-64-1	TWA 500 ppm STEL 50 ppm	TWA 250 ppm (590 mg/m^3)	TWA 1000 ppm (2400 mg/m^3)	2500 ppm [10%LEL]	inhalation, ingestion, skin and/or eye contact	Irritation eyes, nose, throat; headache, dizziness, central nervous system depression; dermatitis	Eyes, skin, respiratory system, central nervous system	Colorless liquid with a fragrant, mint-like odor BP: 133°F Fl.P: 0°F UEL: 12.8% LEL: 2.5% Class IB Flammable Liquid
Anthracene	65996-93-2	TWA 0.2 mg/m^3	Ca TWA 0.1 mg/m^3 (cyclohexane-extractable fraction)	TWA 0.2 mg/m^3 (benzene-soluble fraction)	Ca [80 mg/m^3]	inhalation, skin and/or eye contact	Dermatitis, bronchitis, [potential occupational carcinogen]	respiratory system, skin, bladder, kidneys	Black or dark-brown amorphous residue. Combustible Solids
Antimony	7440-36-0	TWA 0.5 mg/m^3	TWA 0.5 mg/m^3	TWA 0.5 mg/m^3	50 mg/m^3 (as Sb	inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat, mouth; cough; dizziness; headache; nausea, vomiting, diarrhea; stomach cramps; insomnia; anorexia; unable to smell properly	Eyes, skin, respiratory system, cardiovascular system	Silver-white, lustrous, hard, brittle solid; scale-like crystals; or a dark-gray, lustrous powder. BP: 2975°F

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Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Arsenic (inorganic)	7440-38-2 (metal)	TWA 0.01 mg/m3	Ca C 0.002 mg/m3 [15-min]	TWA 0.010 mg/m3	Ca [5 mg/m3 (as As)]	Inhalation; ingestion; skin absorption; skin and/or eye contact	Ulceration of nasal septum, dermatitis, GI disturbances, peripheral neuropathy, resp irritation, hyperpigmentation of skin, [potential occupational carcinogen]	Liver, kidneys, skin, lungs, lymphatic sys	Metal: sliver-gray or tin-white, brittle, odorless solid BP: sublimes
Asbestos	1332-21-4	TWA 0.1 f/cc	Ca 100,000 fibers/m3	TWA 0.1 fiber/cm3	Ca [IDLH value has not been determined]	Inhalation; ingestion; skin and/or eye contact	Asbestosis (chronic exposure), dyspnea, interstitial fibrosis, restricted pulmonary function, finger clubbing, irritation eyes, [potential occupational carcinogen]	Respiratory system, eyes,	White or greenish (chrysotile), blue (crocidolite), or gray-green (amosite), fibrous, odorless solids. BP: decomposes
Asphalt fumes	8052-42-4	TWA 0.5 mg/m^3(fumes)	Ca C 5 mg/m3 [15 min]	None established	Ca [IDLH value has not been determined]	Skin absorption; inhalation; skin and/or eye contact	Irritation eyes, resp sys	Eyes, respiratory system	Black or dark brown cement-like substance Combustible solid
Barium	7440-39-3	TWA 0.5 mg/m3	None established	TWA 0.5 mg/m3	None established	Inhalation, ingestion, skin contact	Irritation skin, respiratory system,	Skin, eyes, respiratory system	Yellow white powder BP: 1640 C
Benzene	71-43-2	TWA 0.5 ppm STEL 2.5 ppm	Ca TWA 0.1 ppm STEL 1 ppm	TWA 1 ppm STEL 5 ppm	Ca [500 ppm]	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, respiratory system; dizziness; headache, nausea, staggered gait; anorexia, lassitude (weakness, exhaustion); dermatitis; bone marrow depression; [potential occupational carcinogen]	Eyes, skin, respiratory system, blood, central nervous system, bone marrow	Colorless to light yellow liquid with an aromatic odor [Note: Solid below 42 °F] BP: 176°F Fl.Pt = 12°F LEL: 1.2% UEL: 7.8% Class B Flammable liquid
Benzo[a]anthracene	56-55-3	None established	None established	None established	None established	Inhalation; ingestion; skin absorption; skin and/or eye contact	Irritation eyes, skin, respiratory system, CNS	Skin	Pale Yellow crystal, solid BP: 438 C
Benzo[a]pyrene	50-32-8	None established	TWA 0.1 mg/m3	TWA 0.2 mg/m3	None established	Inhalation; ingestion; skin absorption; skin and/or eye contact	POISON. This material is an experimental carcinogen, mutagen, tumorigen, neoplastigen and teratogen. It is a probable carcinogen in humans and a known human mutagen. IARC Group 2A carcinogen. It is believed to cause bladder, skin and lung cancer. Exposure to it may damage the developing foetus. May cause reproductive damage. Skin, respiratory and eye irritant or burns.	Skin, eye, bladder, lung, reproductive	Yellow crystals or powder [found in cigarette smoke, coal tar, fuel exhaust gas and in many other sources] BP: 495 C
Benzo[b]fluoranthene	205-99-2	None established	TWA 0.1 mg/m3	TWA 0.2 mg/m3	None established	Inhalation; ingestion; skin and/or eye contact	No data were identified on the toxicity of benzo[b]fluoranthene to humans. Based on results of studies in animals, IARC concluded that benzo[b]fluoranthene is possibly carcinogenic to humans	Respiratory system, skin, bladder, kidneys	Off-white to tan powder

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Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Benzo[k]fluoranthene	207-08-9	None established	None established	None established	None established	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, respiratory tract, gastrointestinal; fatal if swallowed, inhaled, absorbed through the skin; vomiting, nausea, diarrhea	Lungs, respiratory system	Yellow crystals BP: 480 C
Beryllium	7440-41-7 (metal)	TWA 0.002 mg/m^3	Ca C 0.0005 mg/m^3	TWA 0.002 mg/m^3 C 0.005 mg/m^3 (30 minutes) with a maximum peak of 0.025 mg/m^3	Ca [4 mg/m^3 (as Be)]	inhalation, skin and/or eye contact	Berylliosis (chronic exposure): anorexia, weight loss, lassitude (weakness, exhaustion), chest pain, cough, clubbing of fingers, cyanosis, pulmonary insufficiency; irritation eyes; dermatitis; [potential occupational carcinogen]	Eyes, skin, respiratory system	Metal: A hard, brittle, gray-white solid. BP: 4532°F
Bis(2-ethylhexyl) phthalate	117-81-7	TWA 5 mg/m^3	TWA 5 mg/m^3 STEL 10 mg/m^3 (do not exceed during andy 15-minute work period)	TWA 5 mg/m^3	None established	inhalation, skin and/or eye contact	Irritation eyes, skin, nose, throat; affect the nervous system and liver; damage to male reproductive glands	Eyes, skin, nose, respiratory system, nervous system, reproductive system, liver	Colorless to light colored, thick liquid with slight odor
Butane	106-97-8	TWA 1000 ppm	TWA 800 ppm (1900 mg/m^3)	None established	None established	inhalation, skin and/or eye contact (liquid)	Drowsiness, narcosis, asphyxia; liquid: frostbite	central nervous system	Colorless gas with a gasoline-like or natural gas odor. BP: 31°F UEL: 8.4% LEL: 1.6% Flammable Gas
Cadmium	7440-43-9 (metal)	TWA 0.01 mg/m^3	Ca	TWA 0.005 mg/m^3	Ca [9 mg/m^3 (as Cd)]	inhalation, ingestion	Pulmonary edema, dyspnea (breathing difficulty), cough, chest tightness, substernal (occurring beneath the sternum) pain; headache; chills, muscle aches; nausea, vomiting, diarrhea; anosmia (loss of the sense of smell), emphysema, proteinuria, mild anemia; [potential occupational carcinogen]	respiratory system, kidneys, prostate, blood	Metal: Silver-white, blue-tinged lustrous, odorless solid. BP: 1409°F
Carbon Disulfide	75-15-0	TWA 1 ppm	TWA 1 ppm (3 mg/m^3) STEL 10 ppm (30 mg/m^3) [skin]	TWA 20 ppm C 30 ppm 100 ppm (30-minute maximum peak)	500 ppm	inhalation, skin absorption, ingestion, skin and/or eye contact	Dizziness, headache, poor sleep, lassitude (weakness, exhaustion), anxiety, anorexia, weight loss; psychosis; polyneuropathy; Parkinson-like syndrome; ocular changes; coronary heart disease; gastritis; kidney, liver injury; eye, skin burns; dermatitis; reproductive effects	central nervous system, peripheral nervous system, cardiovascular system, eyes, kidneys, liver, skin, reproductive system	Colorless to faint-yellow liquid with a sweet ether-like odor. BP: 116°F Fl.P: -22°F UEL: 50.0% LEL: 1.3% Class IB Flammable Liquid
Chlorobenzene	108-90-7	TWA 10 ppm	None established	TWA 75 ppm (350 mg/m^3)	1000 ppm	inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose; drowsiness, incoordination; central nervous system depression; in animals: liver, lung, kidney injury	Eyes, skin, respiratory system, central nervous system, liver	Colorless liquid with an almond-like odor BP: 270°F Fl.P: 82°F UEL: 9.6% LEL: 1.3%

Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Chloroethane	75-00-3	TWA 100ppm	Handle with caution in the workplace	TWA 1000 ppm (2600 mg/m^3)	3800 ppm [10%LEL]	inhalation, skin absorption (liquid), ingestion (liquid), skin and/or eye contact	Incoordination, inebriation; abdominal cramps; cardiac arrhythmias, cardiac arrest; liver, kidney damage	Liver, kidneys, respiratory system, cardiovascular system, central nervous system	Colorless gas or liquid (below 54°F) with a pungent, ether-like odor. BP: 54°F Fl.P: NA (Gas) -58°F (Liquid) UEL: 15.4% LEL: 3.8%
Chloroform	67-66-3	TWA 10 ppm	Ca STEL 2 ppm (9.78 mg/m^3) [60-minute]	C 50 ppm (240 mg/m^3)	Ca [500 ppm]	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; dizziness, mental dullness, nausea, confusion; headache, lassitude (weakness, exhaustion); anesthesia; enlarged liver; [potential occupational carcinogen]	Liver, kidneys, heart, eyes, skin, central nervous system	Colorless liquid with a pleasant odor BP: 143°F
Chromium	7440-47-3	TWA 0.5 mg/m^3 (metal and Cr III compounds) TWA 0.05 mg/m^3 (water-soluble Cr IV compounds) TWA 0.01 mg/m^3 (insoluble Cr IV compounds)	TWA 0.5 mg/m^3	TWA 1 mg/m^3	250 mg/m^3 (as Cr)	inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin; lung fibrosis (histologic)	Eyes, skin, respiratory system	Blue-white to steel-gray, lustrous, brittle, hard, odorless solid. BP: 4788°F
Chrysene; Phenanthrene; Pyrene; Coal tar pitch volatiles	65996-93-2	TWA 0.2 mg/m3	Ca TWA 0.1 mg/m^3 (cyclohexane-extractable fraction)	TWA 0.2 mg/m^3 (benzene-soluble fraction)	Ca [80 mg/m^3]	Inhalation, skin and/or eye contact	Dermatitis, bronchitis, [potential occupational carcinogen]	Respiratory system, skin, bladder, kidneys	Black or dark-brown amorphous residue. Combustible Solids
cis-1,2-Dichloroethene	158-59-2	TWA 200 ppm	TWA 200 ppm	TWA 200 ppm	None established	inhalation, skin absorption, ingestion	Harmful if swallowed, inhaled, or absorbed through skin. Irritant. Narcotic. Suspected carcinogen	Skin	Colorless liquid BP: 60 C Fl.P: 4 C UEL: 12.8% LEL: 9.7 %
Copper	7440-50-8	TWA 0.2mg/m^3 (fume) 1 mg/m^3 (dusts and mists)	TWA 1 mg/m^3	TWA 1 mg/m^3	100 mg/m^3 (as Cu)	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, respiratory system; cough, dyspnea (breathing difficulty), wheezing	Eyes, skin, respiratory system, liver, kidneys (increase(d) risk with Wilson's disease)	Noncombustible Solid in bulk form, but powdered form may ignite. BP: 4703°F
Dibenzo[a,h]anthracene	53-70-3	None established	None established	None established	None established	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin	Eyes, skin; skin photosensitization.	Colorless crystalline powder BP: 524°C
Ethylbenzene	100-41-4	TWA 100 ppm STEL 125 ppm	TWA 100 ppm (435 mg/m^3) STEL 125 ppm (545 mg/m^3)	TWA 100 ppm (435 mg/m^3)	800 ppm [10%LEL]	inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, mucous membrane; headache; dermatitis; narcosis, coma	Eyes, skin, respiratory system, central nervous system	Colorless liquid with an aromatic odor. BP: 277°F Fl.P: 55°F UEL: 6.7% LEL: 0.8% Class IB Flammable Liquid
Fluoranthene	206-44-0	None established	None established	None established	None established	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; possible burns; heart and liver injury, pulmonary edema, respiratory arrest, gastrointestinal disturbances.	Heart, liver, lungs.	Yellow needles.
Fluorene	86-73-7	None established	None established	None established	None established	inhalation, ingestion, skin and/or eye contact	Irritation skin, digestive tract	Skin	White crystals BP: 563°F

Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Hexachlorobutadiene	87-68-3	TWA 0.02 ppm	Ca TWA 0.02 ppm (0.24 mg/m^3) [skin]	None established	Ca [N.D.]	inhalation, skin absorption, ingestion, skin and/or eye contact	In animals: irritation eyes, skin, respiratory system; kidney damage; [potential occupational carcinogen]	Eyes, skin, respiratory system, kidneys	Clear, colorless liquid with a mild, turpentine-like odor. BP: 419°F
Indeno[1,2,3-cd]pyrene	193-39-5	None established	None established	None established	None established	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; possible human carcinogen (skin); weakness; affect liver, lung tissue, renal tissue; impariment of blood forming tissue	Skin	Fluorescent green-yellow crystalline solid BP: 536 C
Isopropylbenzene	98-82-8	TWA 50 ppm	TWA 50 ppm (245 mg/m^3) [skin]	TWA 50 ppm (245 mg/m^3) [skin]	900 ppm [10%LEL]	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, mucous membrane; dermatitis; headache, narcosis, coma	Eyes, skin, respiratory system, central nervous system	Colorless liquid with a sharp, penetrating, aromatic odor. BP: 306°F Fl.P: 96°F UEL: 6.5% LEL: 0.9%
Lead	7439-92-1	TWA 0.05 mg/m^3	TWA (8-hour) 0.050 mg/m^3	TWA 0.050 mg/m^3	100 mg/m^3 (as Pb)	inhalation, ingestion, skin and/or eye contact	Lassitude (weakness, exhaustion), insomnia; facial pallor; anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; paralysis wrist, ankles; encephalopathy; kidney disease; irritation eyes; hypertension	Eyes, gastrointestinal tract, central nervous system, kidneys, blood, gingival tissue	A heavy, ductile, soft, gray solid. BP: 3164°F Noncombustible Solid in bulk form
Manganese	7439-96-5 (metal)	TWA 0.2 mg/m^3	TWA 1 mg/m^3 STEL 3 mg/m^3	C 5 mg/m^3	500 mg/m^3 (as Mn)	inhalation, ingestion	Manganism; asthenia, insomnia, mental confusion; metal fume fever: dry throat, cough, chest tightness, dyspnea (breathing difficulty), rales, flu-like fever; low-back pain; vomiting; malaise (vague feeling of discomfort); lassitude (weakness, exhaustion); kidney damage	respiratory system, central nervous system, blood, kidneys	A lustrous, brittle, silvery solid. BP: 3564°F
Mercury (organo) alkyl compounds (as Hg)	7439-97-6	TWA 0.01 mg/m^3 STEL 0.03 mg/m^3 [skin]	TWA 0.01 mg/m^3 STEL 0.03 mg/m^3 [skin]	TWA 0.01 mg/m^3 C 0.04 mg/m^3	2 mg/m^3 (as Hg)	inhalation, skin absorption, ingestion, skin and/or eye contact	Paresthesia; ataxia, dysarthria; vision, hearing disturbance; spasticity, jerking limbs; dizziness; salivation; lacrimation (discharge of tears); nausea, vomiting, diarrhea, constipation; skin burns; emotional disturbance; kidney injury; possible teratogenic effects	Eyes, skin, central nervous system, peripheral nervous system, kidneys	Appearance and odor vary depending upon the specific (organo) alkyl mercury compound

Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Mercury compounds [except (organo) alkyls] (as Hg) Mercury	7439-97-6	TWA 0.025 mg/m^3 (elemental and inorganic forms)	Hg Vapor: TWA 0.05 mg/m^3 [skin] Other: C 0.1 mg/m3 [skin]	TWA 0.1 mg/m^3	10 mg/m^3 (as Hg)	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; cough, chest pain, dyspnea (breathing difficulty), bronchitis, pneumonitis; tremor, insomnia, irritability, indecision, headache, lassitude (weakness, exhaustion); stomatitis, salivation; gastrointestinal disturbance, anorexia, weight loss; proteinuria	Eyes, skin, respiratory system, central nervous system, kidneys	Metal: Silver-white, heavy, odorless liquid. [Note: "Other" Hg compounds include all inorganic & aryl Hg compounds except (organo) alkyls.] BP: 674°F
Methylene Chloride	75-09-2	TWA 50 ppm, A3 - suspected human carcinogen	Ca	TWA 25 ppm STEL 125 ppm	Ca [2300 ppm]	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; lassitude (weakness, exhaustion), drowsiness, dizziness; numbness, tingle limbs; nausea; [potential occupational carcinogen]	Eyes, skin, cardiovascular system, central nervous system	Colorless liquid with a chloroform-like odor BP: 104°F UEL: 23% LEL: 13%
n-Butylbenzene	104-51-8	None established	None established	None established	None established	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; CNS depression, lung damage; nausea, vomiting, headache, dizziness, weakness, loss of coordination, blured vision, drowsiness, confusion, disorientation	Eyes, skin,repiratory system, central nervous system	Colorless liquid with a sweet odor BP: 183 C Fl.P: 59 C UEL: 5.8% LEL: 0.8%
Nickel	7440-02-0 (Metal)	TWA 1.5 mg/m^3 (elemental) TWA 0.1 mg/m^3 (soluble inorganic compounds) TWA 0.2 mg/m^3 (insoluble inorganic compounds) TWA 0.1 mg/m^3 (Nickle subsulfide)	Ca TWA 0.015 mg/m^3	TWA 1 mg/m^3	Ca [10 mg/m^3 (as Ni)]	inhalation, ingestion, skin and/or eye contact	Sensitization dermatitis, allergic asthma, pneumonitis; [potential occupational carcinogen]	Nasal cavities, lungs, skin	Metal: Lustrous, silvery, odorless solid. BP: 5139°F
n-Propylbenzene	103-65-1	None established	None established	None established	None established	inhalation, ingestion, skin and/or eye contact	Harmful if swallowed, Irritation eyes, skin, digestive tract, respiratory tract, central nervous system	Eyes, skin, central nervous system, respiratory system	colorless or light yellow liquid BP: 159 C Fl.P: 47 C UEL: 6% LEL: 0.8%
Petroleum hydrocarbons (Petroleum distillates)	8002-05-9	None established	TWA 350 mg/m^3 C 1800 mg/m^3 [15 min]	TWA 500 ppm (2000 mg/m^3)	1,100 [10% LEL]	Inhalation; ingestion; skin and/or eye contact	Irritation eyes, skin, nose, throat; dizziness, drowsiness, headache, nausea; dried/cracked skin; chemical pneumonitis	CNS, eyes, respiratory system, skin	Colorless liquid with a gasoline or kerosene-like odor BP: 86-460°F Fl. Pt = -40 to -86°F UEL: 5.9% LEL: 1.1% Flammable liquid

Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

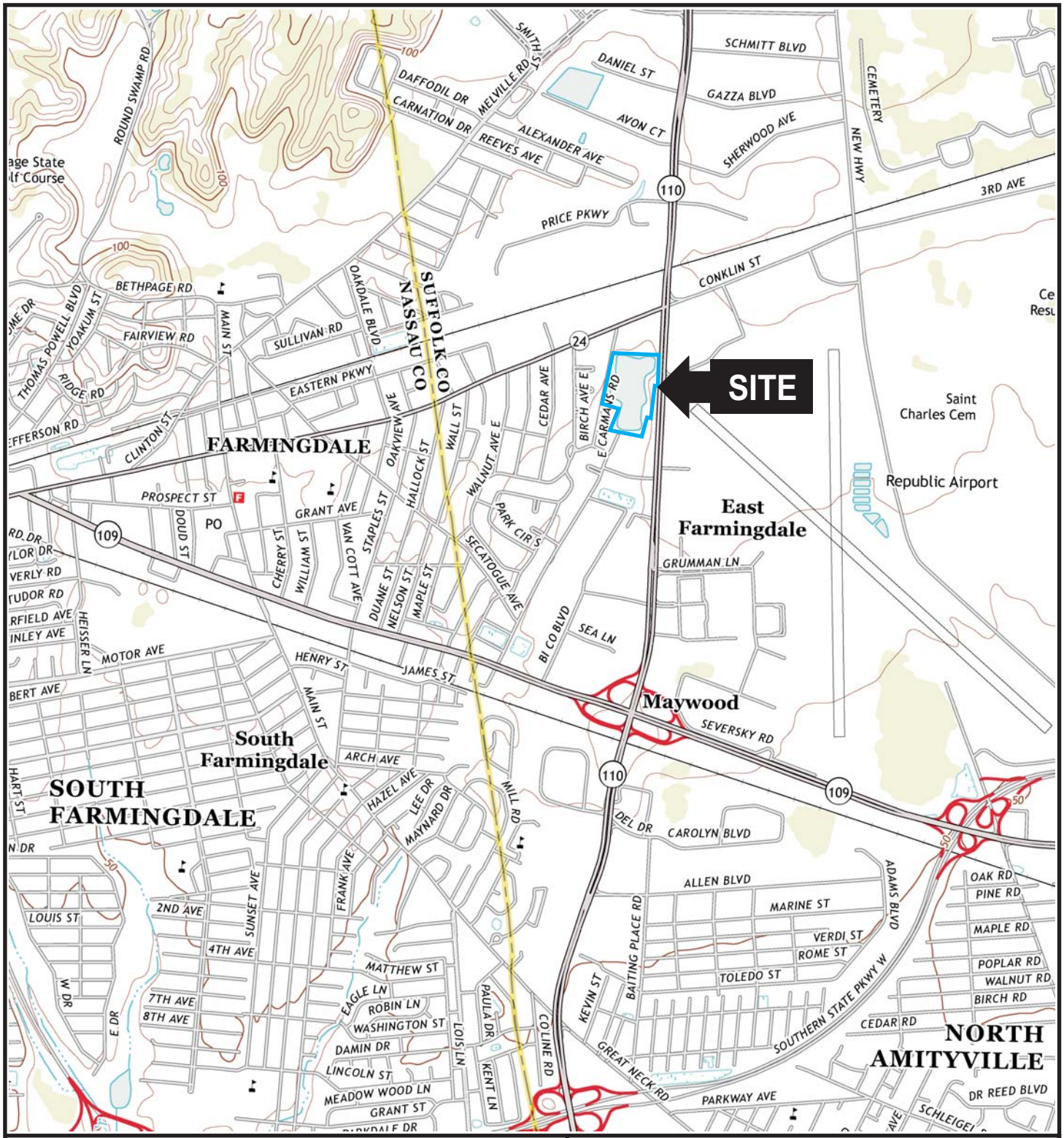
Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Phenol	108-95-2	TWA 5 ppm	TWA 5 ppm (19 mg/m^3) C 15.6 ppm (60 mg/m^3) [15-minute] [skin]	TWA 5 ppm (19 mg/m^3) [skin]	250 ppm	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, nose, throat; anorexia, weight loss; lassitude (weakness, exhaustion), muscle ache, pain; dark urine; cyanosis; liver, kidney damage; skin burns; dermatitis; ochronosis; tremor, convulsions, twitching	Eyes, skin, respiratory system, liver, kidneys	Colorless to light-pink, crystalline solid with a sweet, acrid odor. BP: 359°F UEL: 8.6% LEL: 1.8%
p-Isopropyltoluene	99-87-6	None established	None established	None established	None established	inhalation, skin absorption, eye contact	Irritation skin	CNS, skin	Colorless, clear liquid, sweetish aromatic odor BP: 350.8°F Class III Flammable liquid
sec-Butylbenzene	135-98-8	None established	None established	None established	None established	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, upper airway; central nervous system, headache, dizziness; gastrointestinal disturbance	Respiratory system, central nervous system, eyes, skin;	Colorless liquid BP: 344°F Fl.P: 126 °F UEL: 6.9% LEL: 0.8% Combustible liquid
Selenium	7782-49-2	TWA 0.2 mg/m^3	TWA 0.2 mg/m^3	TWA 0.2 mg/m^3	1 mg/m^3 (as Se)	inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat; visual disturbance; headache; chills, fever; dyspnea (breathing difficulty), bronchitis; metallic taste, garlic breath, gastrointestinal disturbance; dermatitis; eye, skin burns; in animals: anemia; liver necrosis, cirrhosis; kidney, spleen damage	Eyes, skin, respiratory system, liver, kidneys, blood, spleen	Amorphous or crystalline, red to gray solid. [Note: Occurs as an impurity in most sulfide ores.] BP: 1265°F
Silver	7440-22-4 (metal)	TWA 0.1 mg/m^3 (metal, dust, fumes) TWA 0.01 mg/m^3 (Soluble compounds, as Ag)	TWA 0.01 mg/m^3	TWA 0.01 mg/m^3	10 mg/m^3 (as Ag)	inhalation, ingestion, skin and/or eye contact	Blue-gray eyes, nasal septum, throat, skin; irritation, ulceration skin; gastrointestinal disturbance	Nasal septum, skin, eyes	Metal: White, lustrous solid BP: 3632°F
tert-Butylbenzene	98-06-6	None established	None established	None established	None established	inhalation, skin absorption, ingestion,	Eye and respiratory irritant; CNS depression; liver or kidney damage	Respiratory system, central nervous system, eyes, liver, kidney	Colorless liquid with an aromatic odor BP: 168 - 169 C Fl.P: 34 C UEL:5.6 % LEL: 0.8 %
Tetrachloroethene	127-18-4	TWA 25 ppm STEL 100 ppm (STEL) listed as A3, animal carcinogen	Ca Minimize workplace exposure concentrations	TWA 100 ppm C 200 ppm (for 5 minutes in any 3-hour period), with a maximum peak of 300 ppm	Ca [150 ppm]	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat, respiratory system; nausea; flush face, neck; dizziness, incoordination; headache, drowsiness; skin erythema (skin redness); liver damage; [potential occupational carcinogen]	Eyes, skin, respiratory system, liver, kidneys, central nervous system	Colorless liquid with a mild, chloroform-like odor. BP: 250°F Noncombustible Liquid

Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at Fairchild Republic Aircraft; Old Sump Site, East Farmingdale, New York

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Toluene	108-88-3	TWA 20 ppm	TWA 100 ppm (375 mg/m^3) STEL 150 ppm (560 mg/m^3)	TWA 200 ppm C 300 ppm 500 ppm (10-minute maximum peak)	500 ppm	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, nose; lassitude (weakness, exhaustion), confusion, euphoria, dizziness, headache; dilated pupils, lacrimation (discharge of tears); anxiety, muscle fatigue, insomnia; paresthesia; dermatitis; liver, kidney damage	Eyes, skin, respiratory system, central nervous system, liver, kidneys	Colorless liquid with a sweet, pungent, benzene-like odor. BP: 232°F Fl.P: 40°F UEL: 7.1% LEL: 1.1% Class IB Flammable Liquid
trans-1,2-Dichloroethene	156-60-5	TWA 200 ppm	None established	TWA 200 ppm STEL 250 ppm (skin)	None established	inhalation, skin absorption, ingestion, skin and/or eye contact	Narcotic. Irritation eyes, skin, respiratory tract, mucous membrane; CNS depression.	Respiratory tract, mucous membrane, eyes, skin, CNS	Colorless liquid with a fruity pleasant odor BP: 48°C Fl.P 6C UEL: 12.8% LEL: 9.7%
Trichloroethene	79-01-6	TWA 10 ppm STEL 25 ppm	Ca	TWA 100 ppm C 200 ppm 300 ppm (5-minute maximum peak in any 2 hours)	Ca [1000 ppm]	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; headache, visual disturbance, lassitude (weakness, exhaustion), dizziness, tremor, drowsiness, nausea, vomiting; dermatitis; cardiac arrhythmias, paresthesia; liver injury; [potential occupational carcinogen]	Eyes, skin, respiratory system, heart, liver, kidneys, central nervous system	Colorless liquid (unless dyed blue) with a chloroform-like odor. BP: 189°F UEL(77°F): 10.5% LEL(77°F): 8%
Xylene (m, o & p isomers)	108-38-3, 95-47-6, 106-42-3	TWA 100 ppm (435 mg/m^3) STEL 150 ppm	TWA 100 ppm (435 mg/m^3)	TWA 100 ppm (435 mg/m^3)	900 ppm	Skin absorption, inhalation, ingestion, skin, and/or eye contact	Irritation eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait; corneal vacuolization; anorexia, nausea, vomiting, abdominal pain; dermatitis	Eyes, skin, respiratory system, central nervous system, gastrointestinal tract, blood, liver, kidneys	Colorless liquid with an aromatic odor BP: 282°F, 292°F, 281°F Fl. Pt. 82°F, 90°F, 81°F LEL: 1.1%, 0.9%, 1.1% UEL: 7.0%, 6.7%, 7.0% Classs C Flammable Liquid
Zinc	7440-66-6	TWA 10 mg/m3 (Inhalable fraction)	None established	TWA 10 mg/m3 (for zinc oxide fume)	None established	skin and/or eye contact, inhalation, ingestion	Irritation eyes, skin, respiratory tract; gastrointestinal disturbances	Eyes, skin, respiratory system	Bluish gray solid BP: 1664.6°F Flammable

FIGURES

1. Site Location Map
2. Hospital Route Map
3. Health Clinic Route Map



QUADRANGLE LOCATION



SOURCE:
USGS; 2013, AMITYVILLE, NY
7.5 Minute Topographic Quadrangle

N

0 2000’

Title:

SITE LOCATION MAP

FAIRCHILD REPUBLIC AIRPORT; OLD SUMP SITE
EAST FARMINGDALE, NEW YORK

Prepared for:

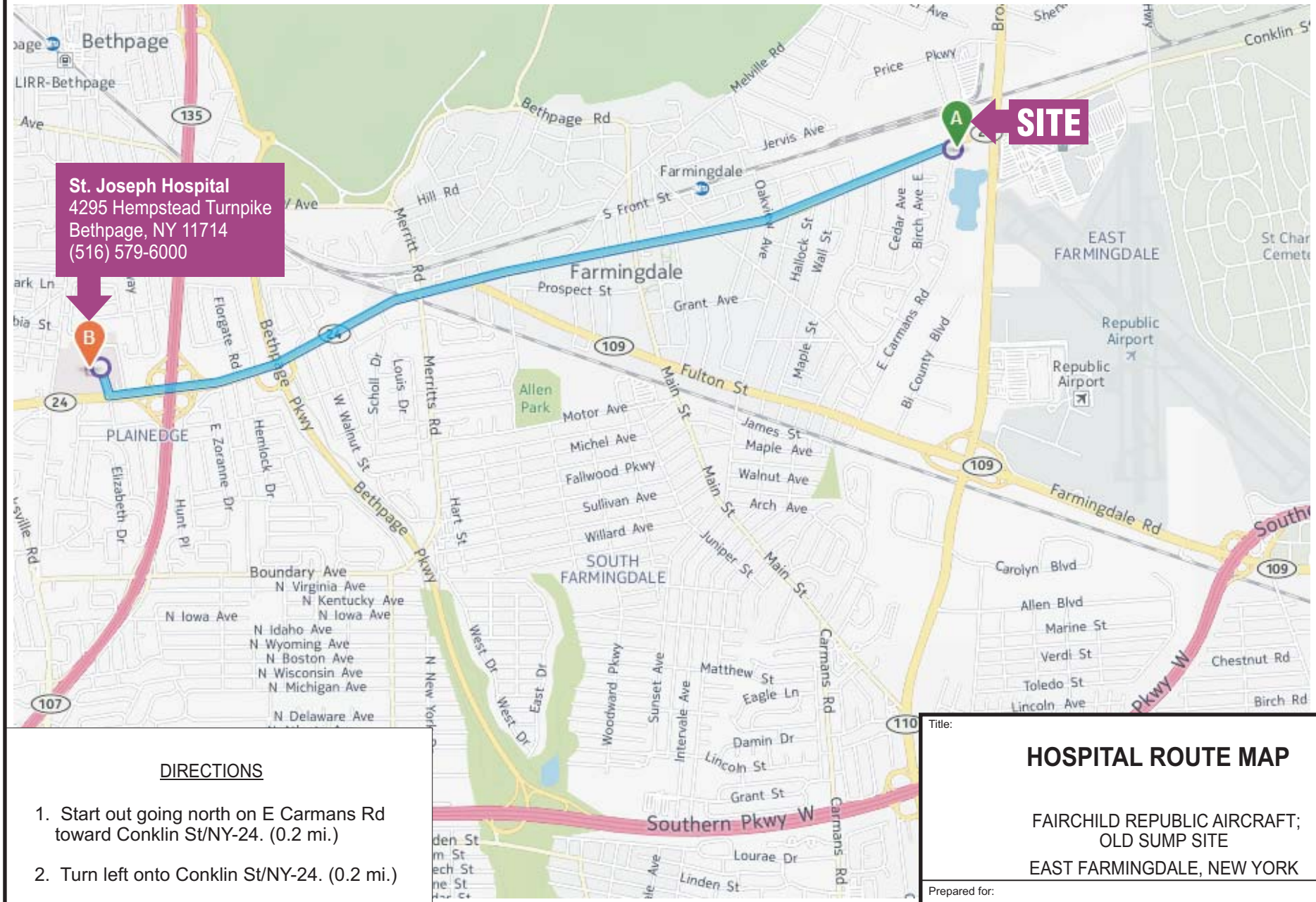
ACADIA REPUBLIC FARMINGDALE, LLC

ROUX

ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled by: J.W.	Date: 31JUL15	FIGURE
Prepared by: J.A.D.	Scale: AS SHOWN	1
Project Mgr.: J.W.	Project No.: 2422.0001Y000	
File: 2422.0001Y104.01.CDR		

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DIRECTIONS

1. Start out going north on E Carmans Rd toward Conklin St/NY-24. (0.2 mi.)
2. Turn left onto Conklin St/NY-24. (0.2 mi.)
3. Take 2.9 miles
4. Enter St. Joseph Hospital on right.

Title:

HOSPITAL ROUTE MAP

FAIRCHILD REPUBLIC AIRCRAFT;
OLD SUMP SITE

EAST FARMINGDALE, NEW YORK

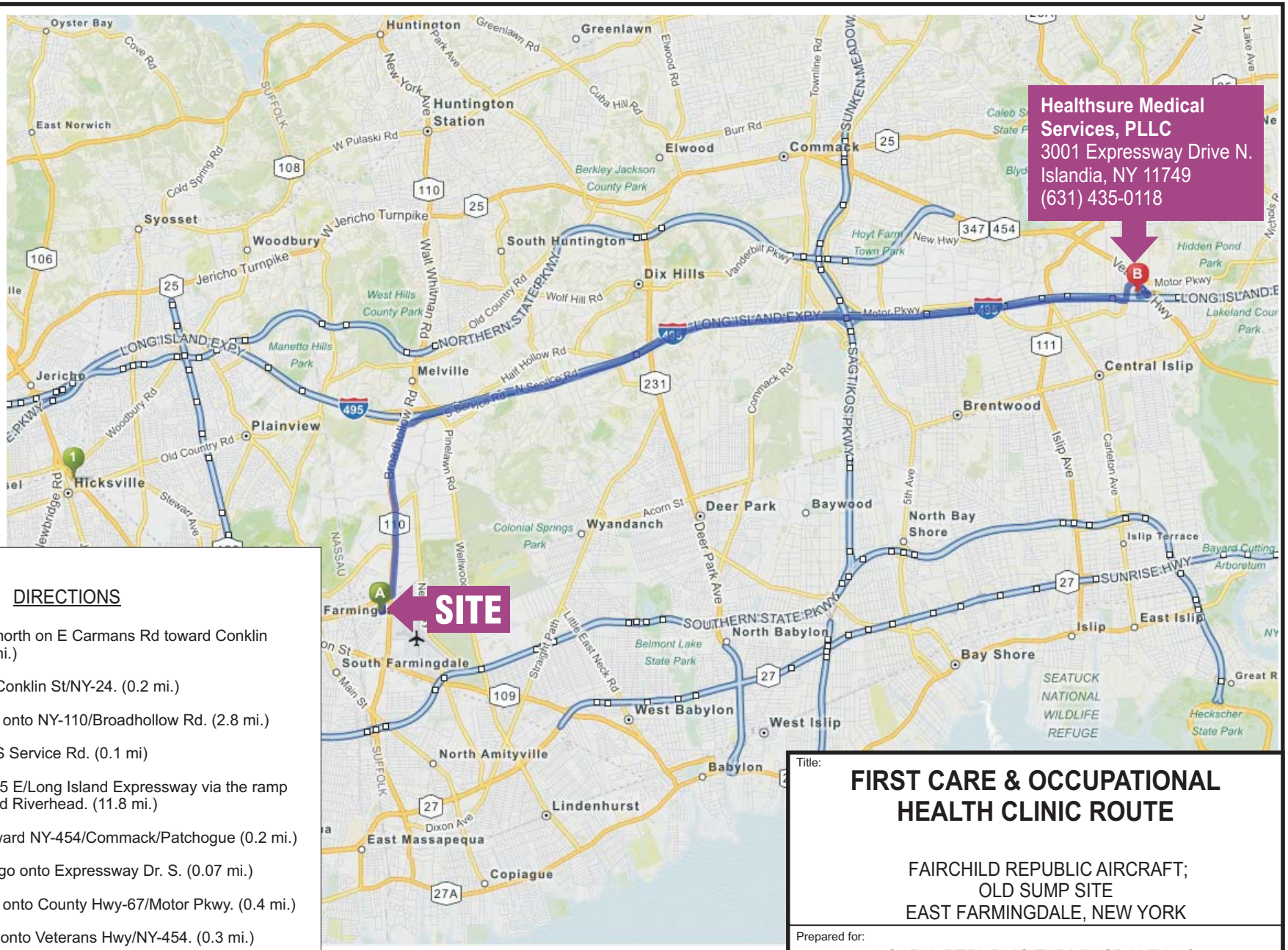
Prepared for:

ACADIA REPUBLIC FARMINGDALE LLC

ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled by: J.W.	Date: 07AUG15
Prepared by: B.H.C.	Scale: AS SHOWN
Project Mgr.: J.W.	Project No.: 2422.0001Y000
File: 2422.0001Y102.01.CDR	

FIGURE 2



DIRECTIONS

1. Start out going north on E Carmans Rd toward Conklin St/NY-24. (0.2 mi.)
2. Turn right onto Conklin St/NY-24. (0.2 mi.)
3. Take the 1st left onto NY-110/Broadhollow Rd. (2.8 mi.)
4. Turn right onto S Service Rd. (0.1 mi)
5. Merge onto I-495 E/Long Island Expressway via the ramp on the left toward Riverhead. (11.8 mi.)
6. Take Exit 57 toward NY-454/Commack/Patchogue (0.2 mi.)
7. Stay straight to go onto Expressway Dr. S. (0.07 mi.)
8. Take the 1st left onto County Hwy-67/Motor Pkwy. (0.4 mi.)
9. Turn slight right onto Veterans Hwy/NY-454. (0.3 mi.)
10. Take 1st right onto Express Dr. N. (0.2 mi.)
11. 3001 Express Dr. N is on the right.

Title:

FIRST CARE & OCCUPATIONAL HEALTH CLINIC ROUTE

FAIRCHILD REPUBLIC AIRCRAFT;
OLD SUMP SITE
EAST FARMINGDALE, NEW YORK

Prepared for:
ACADIA REPUBLIC FARMINGDALE LLC

ROUX
ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled by: J.W.	Date: 07AUG15
Prepared by: B.H.C.	Scale: AS SHOWN
Project Mgr.: J.W.	Project No.: 2422.0001Y000
File: 2422.0001Y102.01.CDR	

FIGURE
3

APPENDICES

A. Job Safety Analysis
B. Material Safety Data Sheets (MSDS)
C. Lessons Learned/Accident Reporting Forms
D. Health and Safety Briefing/Tailgate Meeting Form
E. Heavy Equipment Exclusion Zone Policy
F. All One Health Form
G. Generic Community Air Monitoring Plan
H. Acord Automobile Loss Form
I. OSHA 300 Log of Occupational Injuries and Illnesses

Job Safety Analysis

JOB SAFETY ANALYSIS	Cntrl. No.	DATE:	☒ NEW ☐ REVISED	PAGE 1 of 2
JSA TYPE CATEGORY **GENERIC**	WORK TYPE	WORK ACTIVITY (Description)		

DEVELOPMENT TEAM	POSITION / TITLE	REVIEWED BY:	POSITION / TITLE

REQUIRED AND / OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT

☐ LIFE VEST	☐ GOGGLES	☐ AIR PURIFYING RESPIRATOR	☐ GLOVES:
☐ HARD HAT	☐ FACE SHIELD		☐ OTHER
☐ LIFELINE / BODY HARNESS	☐ HEARING PROTECTION	☐ SUPPLIED RESPIRATOR	
☐ SAFETY GLASSES	☐ SAFETY SHOES	☐ PPE CLOTHING:	

REQUIRED AND / OR RECOMMENDED EQUIPMENT

Required Equipment:

EXCLUSION ZONE: A _ foot exclusion zone will be maintained around (indicate equipment).

Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
1. [INSERT JOB STEP]	**1a. CONTACT:** [INSERT HAZARD]	1a.
	1b. CAUGHT: [INSERT HAZARD]	1b.
	1c. FALL: [INSERT HAZARD]	1c.
	1d. EXPOSURE: [INSERT HAZARD]	1d.
	1e. EXERTION: [INSERT HAZARD]	1e.
	1f. ENERGY SOURCE: [INSERT HAZARD]	1f.
2. [INSERT JOB STEP]	**2a. CONTACT:** [INSERT HAZARD]	2a.
	2b. CAUGHT: [INSERT HAZARD]	2b.

[1] Each Job or Operation consists of a set of tasks / steps. Be sure to list all the steps needed to perform job.

[2] A hazard is a potential danger. Break hazards into five types: Contact - victim is struck by or strikes an object; Caught - victim is caught on, caught in or caught between objects; Fall - victim falls to ground or lower level (includes slips and trips); Exertion - excessive strain or stress / ergonomics / lifting techniques; Exposure - inhalation/skin hazards.

[3] Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the risk. List the recommended safe operating procedures. Say exactly what needs to be done - such as "use two persons to lift." Avoid general statements such as, "be careful."

	2c. FALL: [INSERT HAZARD]	2c.
	2d. EXPOSURE: [INSERT HAZARD]	2d.
	2e. EXERTION: [INSERT HAZARD]	2e.
	2f. ENERGY SOURCE: [INSERT HAZARD]	2f.

[1] Each Job or Operation consists of a set of tasks / steps. Be sure to list all the steps needed to perform job.

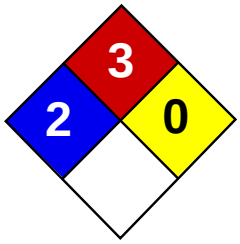
[2] A hazard is a potential danger. Break hazards into five types: Contact - victim is struck by or strikes an object; Caught - victim is caught on, caught in or caught between objects; Fall - victim falls to ground or lower level (includes slips and trips); Exertion - excessive strain or stress / ergonomics / lifting techniques; Exposure - inhalation/skin hazards.

[3] Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the risk. List the recommended safe operating procedures. Say exactly what needs to be done - such as "use two persons to lift". Avoid general statements such as, "be careful".

APPENDIX B

Material Safety Data Sheets (MSDS)







Material Safety Data Sheet
Benzene MSDS

Section 1: Chemical Product and Company Identification

Product Name: Benzene

Catalog Codes: SLB1564, SLB3055, SLB2881

CAS#: 71-43-2

RTECS: CY1400000

TSCA: TSCA 8(b) inventory: Benzene

CI#: Not available.

Synonym: Benzol; Benzine

Chemical Name: Benzene

Chemical Formula: C6-H6

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:
1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Benzene	71-43-2	100

Toxicological Data on Ingredients: Benzene: ORAL (LD50): Acute: 930 mg/kg [Rat]. 4700 mg/kg [Mouse]. DERMAL (LD50): Acute: >9400 mg/kg [Rabbit]. VAPOR (LC50): Acute: 10000 ppm 7 hours [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects:
Very hazardous in case of eye contact (irritant), of inhalation. Hazardous in case of skin contact (irritant, permeator), of ingestion. Inflammation of the eye is characterized by redness, watering, and itching.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human.) by ACGIH, 1 (Proven for human.) by IARC. MUTAGENIC EFFECTS: Classified POSSIBLE for human. Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female [POSSIBLE]. The substance is toxic to blood, bone marrow, central nervous system (CNS). The substance may be toxic to liver, Urinary System. Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. WARM water MUST be used. Get medical attention immediately.

Skin Contact:
In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms appear.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 497.78°C (928°F)

Flash Points: CLOSED CUP: -11.1°C (12°F). (Setaflash)

Flammable Limits: LOWER: 1.2% UPPER: 7.8%

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances:
Highly flammable in presence of open flames and sparks, of heat. Slightly flammable to flammable in presence of oxidizing materials. Non-flammable in presence of shocks.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available. Explosive in presence of oxidizing materials, of acids.

Fire Fighting Media and Instructions:
Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog.

Special Remarks on Fire Hazards:
Extremely flammable liquid and vapor. Vapor may cause flash fire. Reacts on contact with iodine heptafluoride gas. Dioxygenyl tetrafluoroborate is as very powferful oxidant. The addition of a small particle to small samples of benzene, at ambient temperature, causes ignition. Contact with sodium peroxide with benzene causes ignition. Benzene ignites in contact with powdered chromic anhydride. Virgorous or incandescent reaction with hydrogen + Raney nickel (above 210 C) and bromine trifluoride.

Special Remarks on Explosion Hazards:
Benzene vapors + chlorine and light causes explosion. Reacts explosively with bromine pentafluoride, chlorine, chlorine trifluoride, diborane, nitric acid, nitryl perchlorate, liquid oxygen, ozone, silver perchlorate. Benzene + pentafluoride and methoxide (from arsenic pentafluoride and potassium methoxide) in trichlorotrifluoroethane causes explosion. Interaction

of nitryl perchlorate with benzene gave a slight explosion and flash. The solution of permanganic acid (or its explosive anhydride, dimaganese heptoxide) produced by interaction of permanganates and sulfuric acid will explode on contact with benzene. Peroxodisulfuric acid is a very powferful oxidant. Uncontrolled contact with benzene may cause explosion. Mixtures of peroxomonsulfuric acid with benzene explodes.

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:
Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up.. Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, acids.

Storage:
Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 0.5 STEL: 2.5 (ppm) from ACGIH (TLV) [United States] TWA: 1.6 STEL: 8 (mg/m3) from ACGIH (TLV) [United States] TWA: 0.1 STEL: 1 from NIOSH TWA: 1 STEL: 5 (ppm) from OSHA (PEL) [United States] TWA: 10 (ppm) from OSHA (PEL) [United States] TWA: 3 (ppm) [United Kingdom (UK)] TWA: 1.6 (mg/m3) [United Kingdom (UK)] TWA: 1 (ppm) [Canada] TWA: 3.2 (mg/m3) [Canada] TWA: 0.5 (ppm) [Canada]Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor:
Aromatic. Gasoline-like, rather pleasant. (Strong.)

Taste: Not available.

Molecular Weight: 78.11 g/mole

Color: Clear Colorless. Colorless to light yellow.

pH (1% soln/water): Not available.

Boiling Point: 80.1 (176.2°F)

Melting Point: 5.5°C (41.9°F)

Critical Temperature: 288.9°C (552°F)

Specific Gravity: 0.8787 @ 15 C (Water = 1)

Vapor Pressure: 10 kPa (@ 20°C)

Vapor Density: 2.8 (Air = 1)

Volatility: Not available.

Odor Threshold: 4.68 ppm

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 2.1

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, diethyl ether, acetone.

Solubility:
Miscible in alcohol, chloroform, carbon disulfide oils, carbon tetrachloride, glacial acetic acid, diethyl ether, acetone. Very slightly soluble in cold water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Heat, ignition sources, incompatibles.

Incompatibility with various substances: Highly reactive with oxidizing agents, acids.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity:
Benzene vapors + chlorine and light causes explosion. Reacts explosively with bromine pentafluoride, chlorine, chlorine trifluoride, diborane, nitric acid, nitryl perchlorate, liquid oxygen, ozone, silver perchlorate. Benzene + pentafluoride and methoxide (from arsenic pentafluoride and potassium methoxide) in trichlorotrifluoroethane causes explosion. Interaction of nitryl perchlorate with benzene gave a slight explosion and flash. The solution of permanganic acid (or its explosive anhydride, dimaganese heptoxide) produced by interaction of permanganates and sulfuric acid will explode on contact with benzene. Peroxodisulfuric acid is a very powferful oxidant. Uncontrolled contact with benzene may cause explosion. Mixtures of peroxomonsulfuric acid with benzene explodes.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation.

Toxicity to Animals:
WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 930 mg/kg [Rat]. Acute dermal toxicity (LD50): >9400 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 10000 7 hours [Rat].

Chronic Effects on Humans:

CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human.) by ACGIH, 1 (Proven for human.) by IARC. MUTAGENIC EFFECTS: Classified POSSIBLE for human. Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female [POSSIBLE]. Causes damage to the following organs: blood, bone marrow, central nervous system (CNS). May cause damage to the following organs: liver, Urinary System.

Other Toxic Effects on Humans:
Very hazardous in case of inhalation. Hazardous in case of skin contact (irritant, permeator), of ingestion.

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans:
May cause adverse reproductive effects (female fertility, Embryotoxic and/or foetotoxic in animal) and birth defects. May affect genetic material (mutagenic). May cause cancer (tumorigenic, leukemia)) Human: passes the placental barrier, detected in maternal milk.

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: Causes skin irritation. It can be absorbed through intact skin and affect the liver, blood, metabolism,and urinary system. Eyes: Causes eye irritation. Inhalation: Causes respiratory tract and mucous membrane irritation. Can be absorbed through the lungs. May affect behavior/Central and Peripheral nervous systems (somnolence, muscle weakness, general anesthetic, and other symptoms similar to ingestion), gastrointestinal tract (nausea), blood metabolism, urinary system. Ingestion: May be harmful if swallowed. May cause gastrointestinal tract irritation including vomiting. May affect behavior/Central and Peripheral nervous systems (convulsions, seizures, tremor, irritability, initial CNS stimulation followed by depression, loss of coordination, dizziness, headache, weakness, pallor, flushing), respiration (breathlessness and chest constriction), cardiovascular system, (shallow/rapid pulse), and blood.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 3: Flammable liquid.

Identification: : Benzene UNNA: 1114 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Benzene California prop. 65 (no significant risk level): Benzene: 0.007 mg/day (value) California prop. 65: This product contains the following ingredients

for which the State of California has found to cause cancer which would require a warning under the statute: Benzene Connecticut carcinogen reporting list.: Benzene Connecticut hazardous material survey.: Benzene Illinois toxic substances disclosure to employee act: Benzene Illinois chemical safety act: Benzene New York release reporting list: Benzene Rhode Island RTK hazardous substances: Benzene Pennsylvania RTK: Benzene Minnesota: Benzene Michigan critical material: Benzene Massachusetts RTK: Benzene Massachusetts spill list: Benzene New Jersey: Benzene New Jersey spill list: Benzene Louisiana spill reporting: Benzene California Director's list of Hazardous Substances: Benzene TSCA 8(b) inventory: Benzene SARA 313 toxic chemical notification and release reporting: Benzene CERCLA: Hazardous substances.: Benzene: 10 lbs. (4.536 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):
R11- Highly flammable. R22- Harmful if swallowed. R38- Irritating to skin. R41- Risk of serious damage to eyes. R45- May cause cancer. R62- Possible risk of impaired fertility. S2- Keep out of the reach of children. S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S39- Wear eye/face protection. S46- If swallowed, seek medical advice immediately and show this container or label. S53- Avoid exposure - obtain special instructions before use.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 3

Reactivity: 0

Personal Protection: h

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 3

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

Created: 10/10/2005 08:35 PM

Last Updated: 11/06/2008 12:00 PM

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SAFETY DATA SHEET

Version 5.6
Revision Date 02/28/2015
Print Date 08/10/2015

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Product name : Benz[*a*]anthracene

Product Number : B2209
Brand : Aldrich
Index-No. : 601-033-00-9

CAS-No. : 56-55-3

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO 63103
USA

Telephone : +1 800-325-5832
Fax : +1 800-325-5052

1.4 Emergency telephone number

Emergency Phone # : (314) 776-6555

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Carcinogenicity (Category 1B), H350
Acute aquatic toxicity (Category 1), H400
Chronic aquatic toxicity (Category 1), H410

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram



Signal word Danger

Hazard statement(s)
H350 May cause cancer.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statement(s)
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P273 Avoid release to the environment.
P281 Use personal protective equipment as required.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P391 Collect spillage.
P405 Store locked up.

P501 Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Synonyms	:	1,2-Benzanthracene Tetraphene
Formula	:	$C_{18}H_{12}$
Molecular weight	:	228.29 g/mol
CAS-No.	:	56-55-3
EC-No.	:	200-280-6
Index-No.	:	601-033-00-9

Hazardous components

Component	Classification	Concentration
Benz[a]anthracene		
	Carc. 1B; Aquatic Acute 1; Aquatic Chronic 1; H350, H410	<= 100 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Consult a physician.

In case of eye contact
Flush eyes with water as a precaution.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Carbon oxides
Nature of decomposition products not known.

5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
No data available

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.
For personal protection see section 8.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid formation of dust and aerosols.
Provide appropriate exhaust ventilation at places where dust is formed.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place.

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters
Contains no substances with occupational exposure limit values.

8.2 Exposure controls

Appropriate engineering controls
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment

Eye/face protection
Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection
impervious clothing, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: solid
b)	Odour	No data available
c)	Odour Threshold	No data available
d)	pH	No data available
e)	Melting point/freezing point	Melting point/range: 157 - 159 °C (315 - 318 °F)
f)	Initial boiling point and boiling range	437.6 °C (819.7 °F)
g)	Flash point	No data available
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	No data available
k)	Vapour pressure	No data available
l)	Vapour density	No data available
m)	Relative density	No data available
n)	Water solubility	No data available
o)	Partition coefficient: n-octanol/water	No data available
p)	Auto-ignition temperature	No data available
q)	Decomposition temperature	No data available
r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	No data available

9.2 Other safety information
No data available

10. STABILITY AND REACTIVITY

10.1 Reactivity
No data available

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
No data available

10.5 Incompatible materials
Strong oxidizing agents

10.6 Hazardous decomposition products
Other decomposition products - No data available
In the event of fire: see section 5

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
No data available

Inhalation: No data available

Dermal: No data available

LD50 Intravenous - Rat - > 200 mg/kg

Skin corrosion/irritation
No data available

Serious eye damage/eye irritation
No data available

Respiratory or skin sensitisation
No data available

Germ cell mutagenicity
No data available

Carcinogenicity

This product is or contains a component that has been reported to be probably carcinogenic based on its IARC, OSHA, ACGIH, NTP, or EPA classification.

Possible human carcinogen

IARC:	2B - Group 2B: Possibly carcinogenic to humans (Benz[a]anthracene)
NTP:	Reasonably anticipated to be a human carcinogen (Benz[a]anthracene)
OSHA:	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity
No data available

No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

Additional Information
RTECS: Not available

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

12. ECOLOGICAL INFORMATION

12.1 Toxicity
No data available

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Very toxic to aquatic life.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product
Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
Not dangerous goods

IMDG
UN number: 3077 Class: 9 Packing group: III EMS-No: F-A, S-F
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Benz[a]anthracene)
Marine pollutant:yes

IATA
UN number: 3077 Class: 9 Packing group: III
Proper shipping name: Environmentally hazardous substance, solid, n.o.s. (Benz[a]anthracene)

Further information
EHS-Mark required (ADR 2.2.9.1.10, IMDG code 2.10.3) for single packagings and combination packagings containing inner packagings with Dangerous Goods > 5L for liquids or > 5kg for solids.

15. REGULATORY INFORMATION

SARA 302 Components
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
The following components are subject to reporting levels established by SARA Title III, Section 313:

	CAS-No.	Revision Date
Benz[a]anthracene	56-55-3	1993-04-24

Massachusetts Right To Know Components

	CAS-No.	Revision Date
Benz[a]anthracene	56-55-3	1993-04-24

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
Benz[a]anthracene	56-55-3	1993-04-24

New Jersey Right To Know Components

	CAS-No.	Revision Date
Benz[a]anthracene	56-55-3	1993-04-24

California Prop. 65 Components

	CAS-No.	Revision Date
WARNING! This product contains a chemical known to the State of California to cause cancer. Benz[a]anthracene	56-55-3	2007-09-28

16. OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3.

Aquatic Acute	Acute aquatic toxicity
Aquatic Chronic	Chronic aquatic toxicity
Carc.	Carcinogenicity
H350	May cause cancer.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

HMIS Rating

Health hazard:	2
Chronic Health Hazard:	*
Flammability:	0
Physical Hazard	0

NFPA Rating

Health hazard:	2
Fire Hazard:	0
Reactivity Hazard:	0

Further information

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The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

Preparation Information

Sigma-Aldrich Corporation
Product Safety – Americas Region
1-800-521-8956

Version: 5.6 Revision Date: 02/28/2015 Print Date: 08/10/2015

SAFETY DATA SHEET

Version 5.5
Revision Date 02/28/2015
Print Date 08/10/2015

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Product name : Benzo[*b*]fluoranthene

Product Number : 275336
Brand : Aldrich
Index-No. : 601-034-00-4

CAS-No. : 205-99-2

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO 63103
USA

Telephone : +1 800-325-5832
Fax : +1 800-325-5052

1.4 Emergency telephone number

Emergency Phone # : (314) 776-6555

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Carcinogenicity (Category 1B), H350
Acute aquatic toxicity (Category 1), H400
Chronic aquatic toxicity (Category 1), H410

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram



Signal word Danger

Hazard statement(s)
H350 May cause cancer.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statement(s)
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P273 Avoid release to the environment.
P281 Use personal protective equipment as required.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P391 Collect spillage.
P405 Store locked up.

P501 Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Synonyms : 3,4-Benzofluoranthene
Benz[e]acephenanthrylene
2,3-Benzfluoranthene
3,4-Benz[e]acephenanthrylene
Benzo[b]fluoranthene
Benzo[e]fluoranthene
NSC 89265

Formula : $C_{20}H_{12}$
Molecular weight : 252.31 g/mol
CAS-No. : 205-99-2
EC-No. : 205-911-9
Index-No. : 601-034-00-4

Hazardous components

Component	Classification	Concentration
Benz[e]acephenanthrylene		
	Carc. 1B; Aquatic Acute 1; Aquatic Chronic 1; H350, H410	<= 100 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Consult a physician.

In case of eye contact
Flush eyes with water as a precaution.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Carbon oxides

5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
No data available

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.
For personal protection see section 8.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up
Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections
For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Avoid formation of dust and aerosols.Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs.
Provide appropriate exhaust ventilation at places where dust is formed.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Keep container tightly closed in a dry and well-ventilated place.
Storage class (TRGS 510): Non-combustible, acute toxic Cat.3 / toxic hazardous materials or hazardous materials causing chronic effects

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters
Contains no substances with occupational exposure limit values.

8.2 Exposure controls

Appropriate engineering controls
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment

Eye/face protection
Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection
impervious clothing, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: solid
b)	Odour	No data available
c)	Odour Threshold	No data available
d)	pH	No data available
e)	Melting point/freezing point	Melting point/range: 163 - 165 °C (325 - 329 °F) - lit.
f)	Initial boiling point and boiling range	No data available
g)	Flash point	No data available
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	No data available
k)	Vapour pressure	No data available
l)	Vapour density	No data available
m)	Relative density	No data available
n)	Water solubility	No data available
o)	Partition coefficient: n-octanol/water	No data available
p)	Auto-ignition temperature	No data available
q)	Decomposition temperature	No data available
r)	Viscosity	No data available

s) Explosive properties No data available

t) Oxidizing properties No data available

9.2 Other safety information
No data available

10. STABILITY AND REACTIVITY

10.1 Reactivity
No data available

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
No data available

10.5 Incompatible materials
Strong oxidizing agents

10.6 Hazardous decomposition products
Other decomposition products - No data available
In the event of fire: see section 5

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
TDLo Oral - Mouse - 7.57 mg/kg
Remarks: Liver:Changes in liver weight. Endocrine:Changes in thymus weight.

Inhalation: No data available

Dermal: No data available

No data available

Skin corrosion/irritation
No data available

Serious eye damage/eye irritation
No data available

Respiratory or skin sensitisation
No data available

Germ cell mutagenicity
No data available

Carcinogenicity

This product is or contains a component that has been reported to be probably carcinogenic based on its IARC, OSHA, ACGIH, NTP, or EPA classification.

Possible human carcinogen

IARC: 2B - Group 2B: Possibly carcinogenic to humans (Benz[e]acephenanthrylene)

NTP: Reasonably anticipated to be a human carcinogen (Benz[e]acephenanthrylene)

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity
No data available

No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

Additional Information
RTECS: Not available

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to daphnia and other aquatic invertebrates	Immobilization EC50 - Daphnia magna (Water flea) - > 1.024 mg/l - 24 h

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Very toxic to aquatic life.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product
Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
Not dangerous goods

IMDG
UN number: 3077 Class: 9 Packing group: III EMS-No: F-A, S-F
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Benz[e]acephenanthrylene)
Marine pollutant:yes

IATA
UN number: 3077 Class: 9 Packing group: III
Proper shipping name: Environmentally hazardous substance, solid, n.o.s. (Benz[e]acephenanthrylene)

Further information
EHS-Mark required (ADR 2.2.9.1.10, IMDG code 2.10.3) for single packagings and combination packagings containing inner packagings with Dangerous Goods > 5L for liquids or > 5kg for solids.

15. REGULATORY INFORMATION

SARA 302 Components
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
The following components are subject to reporting levels established by SARA Title III, Section 313:

	CAS-No.	Revision Date
Benz[e]acephenanthrylene	205-99-2	2007-03-01

SARA 311/312 Hazards
Chronic Health Hazard

Massachusetts Right To Know Components

	CAS-No.	Revision Date
Benz[e]acephenanthrylene	205-99-2	2007-03-01

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
Benz[e]acephenanthrylene	205-99-2	2007-03-01

New Jersey Right To Know Components

	CAS-No.	Revision Date
Benz[e]acephenanthrylene	205-99-2	2007-03-01

California Prop. 65 Components

WARNING! This product contains a chemical known to the State of California to cause cancer.	CAS-No.	Revision Date
Benz[e]acephenanthrylene	205-99-2	2007-09-28

16. OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3.

Aquatic Acute	Acute aquatic toxicity
Aquatic Chronic	Chronic aquatic toxicity
Carc.	Carcinogenicity
H350	May cause cancer.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

HMIS Rating

Health hazard:	1
Chronic Health Hazard:	*
Flammability:	0
Physical Hazard	0

NFPA Rating

Health hazard:	2
Fire Hazard:	0
Reactivity Hazard:	0

Further information

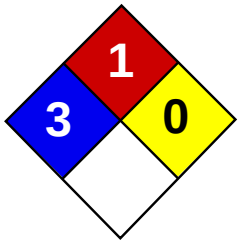
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Preparation Information

Sigma-Aldrich Corporation
Product Safety – Americas Region
1-800-521-8956

Version: 5.5 Revision Date: 02/28/2015 Print Date: 08/10/2015







Material Safety Data Sheet
Cadmium MSDS

Section 1: Chemical Product and Company Identification

Product Name: Cadmium

Catalog Codes: SLC3484, SLC5272, SLC2482

CAS#: 7440-43-9

RTECS: EU9800000

TSCA: TSCA 8(b) inventory: Cadmium

CI#: Not applicable.

Synonym:

Chemical Name: Cadmium

Chemical Formula: Cd

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:
1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Cadmium	7440-43-9	100

Toxicological Data on Ingredients: Cadmium: ORAL (LD50): Acute: 2330 mg/kg [Rat.]. 890 mg/kg [Mouse]. DUST (LC50): Acute: 50 ppm 4 hour(s) [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects:
Hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant, sensitizer), of eye contact (irritant). Severe over-exposure can result in death.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Classified A2 (Suspected for human.) by ACGIH, 2 (Reasonably anticipated.) by NTP. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance is toxic to kidneys, lungs, liver. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section 4: First Aid Measures

Eye Contact: No known effect on eye contact, rinse with water for a few minutes.

Skin Contact:
After contact with skin, wash immediately with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Cover the irritated skin with an emollient. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.

Serious Skin Contact: Not available.

Inhalation: Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion:
Do not induce vomiting. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: May be combustible at high temperature.

Auto-Ignition Temperature: 570°C (1058°F)

Flash Points: Not available.

Flammable Limits: Not available.

Products of Combustion: Some metallic oxides.

Fire Hazards in Presence of Various Substances:
Non-flammable in presence of open flames and sparks, of heat, of oxidizing materials, of reducing materials, of combustible materials, of moisture.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards:
Material in powder form, capable of creating a dust explosion. When heated to decomposition it emits toxic fumes.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill: Use appropriate tools to put the spilled solid in a convenient waste disposal container.

Large Spill:
Use a shovel to put the material into a convenient waste disposal container. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe dust. Wear suitable protective clothing In case of insufficient ventilation, wear suitable respiratory equipment If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents.

Storage:
Keep container dry. Keep in a cool place. Ground all equipment containing material. Keep container tightly closed. Keep in a cool, well-ventilated place. Highly toxic or infectious materials should be stored in a separate locked safety storage cabinet or room.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection: Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 0.01 (ppm) Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid. (Lustrous solid.)

Odor: Not available.

Taste: Not available.

Molecular Weight: 112.4 g/mole

Color: Silvery.

pH (1% soln/water): Not applicable.

Boiling Point: 765°C (1409°F)

Melting Point: 320.9°C (609.6°F)

Critical Temperature: Not available.

Specific Gravity: 8.64 (Water = 1)

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility: Insoluble in cold water, hot water, methanol, diethyl ether, n-octanol.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

Incompatibility with various substances: Reactive with oxidizing agents.

Corrosivity: Not considered to be corrosive for metals and glass.

Special Remarks on Reactivity: Reacts violently with potassium.

Special Remarks on Corrosivity: Not available.

Polymerization: No.

Section 11: Toxicological Information

Routes of Entry: Inhalation. Ingestion.

Toxicity to Animals:
WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 890 mg/kg [Mouse]. Acute toxicity of the dust (LC50): 229.9 mg/m3 4 hour(s) [Rat].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified A2 (Suspected for human.) by ACGIH, 2 (Reasonably anticipated.) by NTP. The substance is toxic to kidneys, lungs, liver.

Other Toxic Effects on Humans:
Hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant, sensitizer).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: An allergen. 0047 Animal: embryotoxic, passes through the placental barrier.

Special Remarks on other Toxic Effects on Humans: May cause allergic reactions, exzema and/or dehydration of the skin.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are as toxic as the original product.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Section 14: Transport Information

DOT Classification:

Identification:

Special Provisions for Transport:

Section 15: Other Regulatory Information

Federal and State Regulations:
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Cadmium California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Cadmium Pennsylvania RTK: Cadmium Massachusetts RTK: Cadmium TSCA 8(b) inventory: Cadmium SARA 313 toxic chemical notification and release reporting: Cadmium CERCLA: Hazardous substances.: Cadmium

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:

WHMIS (Canada):
CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):
R26- Very toxic by inhalation. R45- May cause cancer.

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 1

Reactivity: 0

Personal Protection: E

National Fire Protection Association (U.S.A.):

Health: 3

Flammability: 1

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Safety glasses.

Section 16: Other Information

References:
-Hawley, G.G.. The Condensed Chemical Dictionary, 11e ed., New York N.Y., Van Nostrand Reinold, 1987. -Liste des produits purs tératogènes, mutagènes, cancérogènes. Répertoire toxicologique de la Commission de la Santé et de la Sécurité du Travail du Québec. -Material safety data sheet emitted by: la Commission de la Santé et de la Sécurité du Travail du Québec. -SAX, N.I. Dangerous Properties of Indutrial Materials. Toronto, Van Nostrand Reinold, 6e ed. 1984. -The Sigma-Aldrich Library of Chemical Safety Data, Edition II. -Guide de la loi et du règlement sur le transport des marchandises dangeureuses au canada. Centre de conformité internatinal Ltée. 1986.

Other Special Considerations: Not available.

Created: 10/09/2005 04:29 PM

Last Updated: 05/21/2013 12:00 PM

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Material Safety Data Sheet
Chromium

MSDS# 90875

Section 1 - Chemical Product and Company Identification

MSDS Name:	Chromium
Catalog Numbers:	C318-500
Synonyms:	Chrome
Company Identification:	Fisher Scientific One Reagent Lane Fair Lawn, NJ 07410
For information in the US, call:	201-796-7100
Emergency Number US:	201-796-7100
CHEMTREC Phone Number, US:	800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#:	7440-47-3
Chemical Name:	Chromium
%:	100.0
EINECS#:	231-157-5

Hazard Symbols: XN



Risk Phrases: 40

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Warning! May cause allergic skin reaction. May cause liver damage. May cause kidney damage. May cause lung damage. Causes eye and skin irritation. Causes severe respiratory tract irritation. Target Organs: Liver.

Potential Health Effects

Eye:	Causes eye irritation. May cause conjunctivitis.
Skin:	Causes skin irritation. Prolonged and/or repeated contact may cause irritation and/or dermatitis. May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material.
Ingestion:	May cause irritation of the digestive tract. May cause liver damage.
Inhalation:	Causes respiratory tract irritation. Inhalation of fumes may cause metal fume fever, which is characterized by flu-like symptoms with metallic taste, fever, chills, cough, weakness, chest pain, muscle pain and increased white blood cell count. May cause asthma and shortness of breath. May cause headache, coughing, fever, weight loss, and pneumoconiosis.
Chronic:	Prolonged inhalation may cause respiratory tract inflammation and lung damage.

Section 4 - First Aid Measures

Eyes:	Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.
Skin:	Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists. Wash clothing before reuse.
Ingestion:	Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

Inhalation: Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid. Do NOT use mouth-to-mouth resuscitation.

Notes to Physician:

Section 5 - Fire Fighting Measures

General Information: Evacuate area and fight fire from a safe distance. As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. May burn with invisible flame. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Dust can be an explosion hazard when exposed to heat or flame. Finely divided dusts may exhibit pyrophoric tendencies.

Extinguishing Media: Use dry sand or earth to smother fire. Use dry chemical to fight fire. Contact professional fire-fighters immediately.

Autoignition Temperature: 400 deg C (752.00 deg F)

Flash Point: Not applicable.

Explosion Limits: Lower: .0230oz/ft3

Explosion Limits: Upper: Not available

NFPA Rating: health: 2; flammability: 1; instability: 1;

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Clean up spills immediately, observing precautions in the Protective Equipment section. Sweep up or absorb material, then place into a suitable clean, dry, closed container for disposal. Avoid generating dusty conditions. Remove all sources of ignition. Isolate area and deny entry. Place under an inert atmosphere. Do not use combustible materials such as paper towels to clean up spill.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Minimize dust generation and accumulation. Use spark-proof tools and explosion proof equipment. Avoid contact with skin and eyes. Keep container tightly closed. Keep away from heat, sparks and flame. Avoid ingestion and inhalation. Handle under an inert atmosphere.

Storage: Keep away from heat, sparks, and flame. Store in a tightly closed container. Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances. Keep away from acids. Keep containers tightly closed. Do not expose to air. Store under an inert atmosphere.

Section 8 - Exposure Controls, Personal Protection

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Chromium	0.5 mg/m3	0.5 mg/m3 TWA 250 mg/m3 IDLH	1 mg/m3 TWA

OSHA Vacated PELs: Chromium: 1 mg/m3 TWA

Engineering Controls:

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Exposure Limits

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State:	Solid
Color:	silver-gray
Odor:	odorless
pH:	Not available
Vapor Pressure:	Not applicable.
Vapor Density:	Not available
Evaporation Rate:	Not applicable.
Viscosity:	Not applicable.
Boiling Point:	2640 deg C (4,784.00°F)
Freezing/Melting Point:	1857.2 deg C (3,374.96°F)
Decomposition Temperature:	Not available
Solubility in water:	Insoluble in water.
Specific Gravity/Density:	7.2 @28°C
Molecular Formula:	Cr
Molecular Weight:	51.996

Section 10 - Stability and Reactivity

Chemical Stability:	Stable under normal temperatures and pressures.
Conditions to Avoid:	Ignition sources, dust generation, exposure to air.
Incompatibilities with Other Materials	Not available
Hazardous Decomposition Products	Toxic chromium oxide fumes.
Hazardous Polymerization	Has not been reported.

Section 11 - Toxicological Information

RTECS#:	CAS# 7440-47-3: GB4200000
LD50/LC50:	RTECS: Not available.
Carcinogenicity:	Chromium - IARC: Group 3 (not classifiable)
Other:	See actual entry in RTECS for complete information.

Section 12 - Ecological Information

Not available

Section 13 - Disposal Considerations

Dispose of in a manner consistent with federal, state, and local regulations.

Section 14 - Transport Information

US DOT
Shipping Name: Not regulated as a hazardous material
Hazard Class:
UN Number:
Packing Group:
Canada TDG
Shipping Name: Not available
Hazard Class:
UN Number:
Packing Group:

USA RQ: CAS# 7440-47-3: 5000 lb final RQ (no reporting of releases of this hazardous substa

Section 15 - Regulatory Information

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: XN

Risk Phrases:

R 40 Limited evidence of a carcinogenic effect.

Safety Phrases:

WGK (Water Danger/Protection)

CAS# 7440-47-3: Not available

Canada

CAS# 7440-47-3 is listed on Canada's DSL List

Canadian WHMIS Classifications: Not controlled.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

CAS# 7440-47-3 is listed on Canada's Ingredient Disclosure List

US Federal

TSCA

CAS# 7440-47-3 is listed on the TSCA Inventory.

Section 16 - Other Information

MSDS Creation Date: 5/29/1998

Revision #12 Date 7/20/2009

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantibility or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential, or exemplary damages howsoever arising, even if the company has been advised of the possibility of such damages.

MATERIAL SAFETY DATA SHEET

Date Printed: 10.08.2015
Date Updated: 07.05.2009
Version 1.4

Section 1 - Product and Company Information

Product Name	1,2:5,6-DIBENZANTHRACENE, 97% (NO BULK ORDERS ALLOWED)
Product Number	D31400
Brand	ALDRICH
Company	Sigma-Aldrich
Address	3050 Spruce Street SAINT LOUIS MO 63103 US
Technical Phone:	800-325-5832
Fax:	800-325-5052
Emergency Phone:	314-776-6555

Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313
1,2:5,6-DIBENZANTHRACENE	53-70-3	Yes

Formula	C22H14
Synonyms	1,2:5,6-Benzanthracene * DB(a,h)A * 1,2,5,6-Dba * 1,2,5,6-Dibenzanthraceen (Dutch) * 1,2:5,6-Dibenzanthracene * 1,2:5,6-Dibenz(a)anthracene * Dibenzo(a,h)anthracene * 1,2:5,6-Dibenzoanthracene * RCRA waste number U063
RTECS Number:	HN2625000

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Toxic. Dangerous for the environment.
May cause cancer. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Target organ(s): Lungs. Liver. Calif. Prop. 65 carcinogen.

HMIS RATING

HEALTH: 2*
FLAMMABILITY: 0
REACTIVITY: 0

NFPA RATING

HEALTH: 2
FLAMMABILITY: 0
REACTIVITY: 0

*additional chronic hazards present.

For additional information on toxicity, please refer to Section 11.

Section 4 - First Aid Measures

ORAL EXPOSURE
If swallowed, wash out mouth with water provided person is conscious. Call a physician.

INHALATION EXPOSURE
If inhaled, remove to fresh air. If breathing becomes difficult, call a physician.

DERMAL EXPOSURE
In case of contact, immediately wash skin with soap and copious amounts of water.

EYE EXPOSURE
In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

Section 5 - Fire Fighting Measures

FLASH POINT
N/A

AUTOIGNITION TEMP
N/A

FLAMMABILITY
N/A

EXTINGUISHING MEDIA
Suitable: Carbon dioxide, dry chemical powder, or appropriate foam.

FIREFIGHTING
Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.
Specific Hazard(s): Emits toxic fumes under fire conditions.

Section 6 - Accidental Release Measures

PROCEDURE TO BE FOLLOWED IN CASE OF LEAK OR SPILL
Evacuate area.

PROCEDURE(S) OF PERSONAL PRECAUTION(S)
Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves. Wear disposable coveralls and discard them after use.

METHODS FOR CLEANING UP
Sweep up, place in a bag and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.

Section 7 - Handling and Storage

HANDLING
User Exposure: Do not breathe dust. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure.

STORAGE

Suitable: Keep tightly closed.

Section 8 - Exposure Controls / PPE

ENGINEERING CONTROLS

Use only in a chemical fume hood. Safety shower and eye bath.

PERSONAL PROTECTIVE EQUIPMENT

Respiratory: Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator.
Hand: Compatible chemical-resistant gloves.
Eye: Chemical safety goggles.

GENERAL HYGIENE MEASURES

Wash contaminated clothing before reuse. Wash thoroughly after handling.

EXPOSURE LIMITS

Country	Source	Type	Value
Poland		NDS	0.004 MG/M3
Poland		NDSCh	-
Poland		NDSP	-

Section 9 - Physical/Chemical Properties

Appearance: Physical State: Solid

Property	Value	At Temperature or Pressure
Molecular Weight	278,3500 AMU	
pH	N/A	
BP/BP Range	524,000 °C	760,000 mmHg
MP/MP Range	262,000 °C	
Freezing Point	N/A	
Vapor Pressure	N/A	
Vapor Density	N/A	
Saturated Vapor Conc.	N/A	
Bulk Density	N/A	
Odor Threshold	N/A	
Volatile%	N/A	
VOC Content	N/A	
Water Content	N/A	
Solvent Content	N/A	
Evaporation Rate	N/A	
Viscosity	N/A	
Surface Tension	N/A	
Partition Coefficient	N/A	
Decomposition Temp.	N/A	
Flash Point	N/A	
Explosion Limits	N/A	
Flammability	N/A	
Autoignition Temp	N/A	
Refractive Index	N/A	
Optical Rotation	N/A	
Miscellaneous Data	N/A	

Solubility N/A

N/A = not available

Section 10 - Stability and Reactivity

STABILITY
Stable: Stable.
Materials to Avoid: Strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS
Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide.

HAZARDOUS POLYMERIZATION
Hazardous Polymerization: Will not occur

Section 11 - Toxicological Information

ROUTE OF EXPOSURE
Skin Contact: May cause skin irritation.
Skin Absorption: May be harmful if absorbed through the skin.
Eye Contact: May cause eye irritation.
Inhalation: Material may be irritating to mucous membranes and upper respiratory tract. May be harmful if inhaled.
Ingestion: May be harmful if swallowed.

TARGET ORGAN(S) OR SYSTEM(S)
Lungs. Liver.

SIGNS AND SYMPTOMS OF EXPOSURE
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

CHRONIC EXPOSURE - CARCINOGEN
Result: This product is or contains a component that has been reported to be probably carcinogenic based on its IARC, OSHA, ACGIH, NTP, or EPA classification.

Species: Rat
Route of Application: Intratracheal
Dose: 100 MG/KG
Result: Tumorigenic:Carcinogenic by RTECS criteria. Lungs, Thorax, or Respiration:Tumors.

Species: Mouse
Route of Application: Oral
Dose: 4160 MG/KG
Exposure Time: 26W
Frequency: I
Result: Lungs, Thorax, or Respiration:Tumors. Tumorigenic:Carcinogenic by RTECS criteria.

Species: Mouse
Route of Application: Skin
Dose: 1200 MG/KG
Exposure Time: 50W
Frequency: I
Result: Tumorigenic:Tumors at site or application. Tumorigenic:Carcinogenic by RTECS criteria. Skin and Appendages: Other: Tumors.

Species: Mouse
Route of Application: Subcutaneous
Dose: 445 UG/KG
Result: Skin and Appendages: Other: Tumors.
Tumorigenic:Carcinogenic by RTECS criteria. Tumorigenic:Tumors
at site or application.

Species: Mouse
Route of Application: Intravenous
Dose: 40 MG/KG
Result: Tumorigenic:Neoplastic by RTECS criteria. Lungs, Thorax,
or Respiration:Tumors. Liver:Tumors.

Species: Mouse
Route of Application: Implant
Dose: 80 MG/KG
Result: Kidney, Ureter, Bladder:Tumors. Tumorigenic:Carcinogenic
by RTECS criteria.

Species: Mouse
Route of Application: Multiple
Dose: 40 MG/KG
Exposure Time: 12D
Frequency: I
Result: Tumorigenic:Tumors at site or application. Lungs,
Thorax, or Respiration:Tumors. Tumorigenic:Equivocal tumorigenic
agent by RTECS criteria.

Species: Guinea pig
Route of Application: Subcutaneous
Dose: 250 MG/KG
Exposure Time: 24D
Frequency: I
Result: Tumorigenic:Equivocal tumorigenic agent by RTECS
criteria. Tumorigenic:Tumors at site or application. Lungs,
Thorax, or Respiration:Tumors.

Species: Guinea pig
Route of Application: Intravenous
Dose: 30 MG/KG
Result: Tumorigenic:Tumors at site or application. Lungs,
Thorax, or Respiration:Tumors. Tumorigenic:Equivocal tumorigenic
agent by RTECS criteria.

Species: Pigeon
Route of Application: Intramuscular
Dose: 6 MG/KG
Result: Tumorigenic:Carcinogenic by RTECS criteria.
Liver:Tumors. Tumorigenic:Tumors at site or application.

Species: Frog
Route of Application: Intrarenal
Dose: 12 MG/KG
Result: Kidney, Ureter, Bladder:Kidney tumors. Lungs, Thorax, or
Respiration:Tumors. Tumorigenic:Neoplastic by RTECS criteria.

Species: Mouse
Route of Application: Implant
Dose: 14 MG/KG

Result: Tumorigenic:Neoplastic by RTECS criteria.
Tumorigenic:Tumors at site or application.

Species: Mouse
Route of Application: Subcutaneous
Dose: 78 UG/KG
Result: Tumorigenic:Neoplastic by RTECS criteria.
Tumorigenic:Tumors at site or application.

Species: Mouse
Route of Application: Oral
Dose: 4520 MG/KG
Exposure Time: 36W
Frequency: C
Result: Tumorigenic:Carcinogenic by RTECS criteria. Lungs, Thorax, or Respiration:Tumors. Gastrointestinal:Tumors.

Species: Mouse
Route of Application: Implant
Dose: 200 MG/KG
Result: Tumorigenic:Neoplastic by RTECS criteria. Lungs, Thorax, or Respiration:Bronchiogenic carcinoma. Tumorigenic:Tumors at site or application.

Species: Mouse
Route of Application: Skin
Dose: 6 UG/KG
Result: Tumorigenic:Neoplastic by RTECS criteria. Skin and Appendages: Other: Tumors.

Species: Mouse
Route of Application: Subcutaneous
Dose: 6 MG/KG
Result: Tumorigenic:Equivocal tumorigenic agent by RTECS criteria. Tumorigenic:Tumors at site or application.

Species: Mouse
Route of Application: Skin
Dose: 400 MG/KG
Exposure Time: 40W
Frequency: I
Result: Tumorigenic:Neoplastic by RTECS criteria. Skin and Appendages: Other: Tumors.

Species: Mouse
Route of Application: Implant
Dose: 100 MG/KG
Result: Tumorigenic:Carcinogenic by RTECS criteria. Kidney, Ureter, Bladder:Tumors. Tumorigenic:Tumors at site or application.

Species: Rat
Route of Application: Subcutaneous
Dose: 135 MG/KG
Exposure Time: 9W
Frequency: I
Result: Tumorigenic:Neoplastic by RTECS criteria. Lungs, Thorax, or Respiration:Tumors. Tumorigenic:Tumors at site or application.

Species: Mouse

Route of Application: Subcutaneous
Dose: 400 MG/KG
Exposure Time: 10W
Frequency: I
Result: Tumorigenic:Neoplastic by RTECS criteria.
Tumorigenic:Tumors at site or application.

IARC CARCINOGEN LIST

Rating: Group 2A

NTP CARCINOGEN LIST

Rating: Anticipated to be a carcinogen.

CHRONIC EXPOSURE - MUTAGEN
Result: Laboratory experiments have shown mutagenic effects.

Species: Human
Dose: 360 NMOL/L
Cell Type: Embryo
Mutation test: DNA

Species: Human
Dose: 100 UMOL/L
Cell Type: fibroblast
Mutation test: Unscheduled DNA synthesis

Species: Human
Dose: 10 MG/L
Cell Type: Other cell types
Mutation test: Unscheduled DNA synthesis

Species: Human
Dose: 100 NMOL/L
Cell Type: HeLa cell
Mutation test: Unscheduled DNA synthesis

Species: Human
Dose: 54 UG/L
Cell Type: lymphocyte
Mutation test: Mutation in mammalian somatic cells.

Species: Rat
Route: Intratracheal
Dose: 25500 UG/KG
Exposure Time: 16H
Mutation test: Micronucleus test

Species: Rat
Route: Oral
Dose: 200 MG/KG
Mutation test: Morphological transformation.

Species: Rat
Dose: 100 UG/L
Cell Type: Embryo
Mutation test: Morphological transformation.

Species: Rat

Route: Intratracheal
Dose: 25560 UG/KG
Mutation test: DNA

Species: Rat
Route: Intratracheal
Dose: 51150 UG/KG
Mutation test: Sister chromatid exchange

Species: Mouse
Route: Intraperitoneal
Dose: 500 MG/KG
Mutation test: Micronucleus test

Species: Mouse
Dose: 4250 UG/L (+S9)
Cell Type: lymphocyte
Mutation test: Mutation in microorganisms

Species: Mouse
Dose: 500 UG/L
Cell Type: fibroblast
Mutation test: Morphological transformation.

Species: Mouse
Dose: 100 UG/L
Cell Type: Embryo
Mutation test: Morphological transformation.

Species: Mouse
Dose: 6 UMOL/L
Cell Type: liver
Mutation test: DNA

Species: Mouse
Route: Skin
Dose: 40 UMOL/KG
Mutation test: DNA

Species: Mouse
Dose: 1 MG/L
Cell Type: Other cell types
Mutation test: DNA

Species: Mouse
Dose: 1 MG/L
Cell Type: Other cell types
Mutation test: Other mutation test systems

Species: Mouse
Dose: 510 NMOL/L
Cell Type: Embryo
Mutation test: DNA

Species: Mouse
Dose: 510 NMOL/L
Cell Type: Embryo
Mutation test: Other mutation test systems

Species: Hamster

Dose: 56400 NMOL/L (+S9)
Cell Type: lung
Mutation test: Mutation in microorganisms

Species: Hamster
Dose: 2500 UG/L
Cell Type: Embryo
Mutation test: Morphological transformation.

Species: Hamster
Dose: 25 UG/L
Cell Type: kidney
Mutation test: Morphological transformation.

Species: Hamster
Dose: 5 MG/L
Exposure Time: 24H
Cell Type: fibroblast
Mutation test: DNA damage

Species: Hamster
Dose: 360 NMOL/L
Cell Type: Embryo
Mutation test: DNA

Species: Hamster
Dose: 5 MG/L
Cell Type: kidney
Mutation test: DNA damage

Species: Hamster
Dose: 1 MG/L
Cell Type: lung
Mutation test: DNA

Species: Hamster
Dose: 1 MG/L
Cell Type: lung
Mutation test: Other mutation test systems

Species: Hamster
Dose: 1 MMOL/L
Cell Type: fibroblast
Mutation test: Cytogenetic analysis

Species: Hamster
Route: Intraperitoneal
Dose: 900 MG/KG
Exposure Time: 24H
Mutation test: Sister chromatid exchange

Species: Hamster
Dose: 500 UG/L
Cell Type: lung
Mutation test: Mutation in mammalian somatic cells.

Species: Mammal
Dose: 2 NMOL/L
Cell Type: lymphocyte
Mutation test: DNA damage

Section 12 - Ecological Information

No data available.

Section 13 - Disposal Considerations

APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION
Contact a licensed professional waste disposal service to dispose of this material. Observe all federal, state, and local environmental regulations. (DN)Requires special label: "Contains a substance which is regulated by Dannish work environmental law due to the risk of carcinogenic properties."

Section 14 - Transport Information

DOT
Proper Shipping Name: Environmentally hazardous substances, solid, n.o.s.
UN#: 3077
Class: 9
Packing Group: Packing Group III
Hazard Label: Class 9
PIH: Not PIH

IATA
Proper Shipping Name: Environmentally hazardous substance, solid, n.o.s
IATA UN Number: 3077
Hazard Class: 9
Packing Group: III

Section 15 - Regulatory Information

EU DIRECTIVES CLASSIFICATION
Symbol of Danger: T-N
Indication of Danger: Toxic. Dangerous for the environment.
R: 45-50/53
Risk Statements: May cause cancer. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
S: 53-45-60-61
Safety Statements: Restricted to professional users. Attention - Avoid exposure - obtain special instructions before use. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). This material and its container must be disposed of as hazardous waste. Avoid release to the environment. Refer to special instructions/safety data sheets.

US CLASSIFICATION AND LABEL TEXT
Indication of Danger: Toxic. Dangerous for the environment.
Risk Statements: May cause cancer. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Safety Statements: Restricted to professional users. Attention - Avoid exposure - obtain special instructions before use. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Wear suitable protective clothing, gloves, and eye/face protection. This

material and its container must be disposed of as hazardous waste. Avoid release to the environment. Refer to special instructions/safety data sheets.
US Statements: Target organ(s): Lungs. Liver. Calif. Prop. 65 carcinogen.

UNITED STATES REGULATORY INFORMATION
SARA LISTED: Yes
NOTES: This product is subject to SARA section 313 reporting requirements.
TSCA INVENTORY ITEM: Yes

UNITED STATES - STATE REGULATORY INFORMATION

CALIFORNIA PROP - 65
California Prop - 65: This product is or contains chemical(s) known to the state of California to cause cancer. This product is or contains chemical(s) known to the state of California to cause cancer.

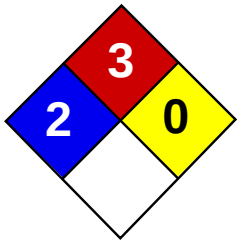
CANADA REGULATORY INFORMATION
WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.
DSL: No
NDSL: Yes

Section 16 - Other Information

DISCLAIMER
For R&D use only. Not for drug, household or other uses.

WARRANTY
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.
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Health	2
Fire	3
Reactivity	0
Personal Protection	H

Material Safety Data Sheet
Ethylbenzene MSDS

Section 1: Chemical Product and Company Identification

Product Name: Ethylbenzene

Catalog Codes: SLE2044

CAS#: 100-41-4

RTECS: DA0700000

TSCA: TSCA 8(b) inventory: Ethylbenzene

CI#: Not available.

Synonym: Ethyl Benzene; Ethylbenzol; Phenylethane

Chemical Name: Ethylbenzene

Chemical Formula: C8H10

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Ethylbenzene	100-41-4	100

Toxicological Data on Ingredients: Ethylbenzene: ORAL (LD50): Acute: 3500 mg/kg [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects:
Hazardous in case of eye contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant, permeator).

Potential Chronic Health Effects:
Slightly hazardous in case of skin contact (irritant, sensitizer). CARCINOGENIC EFFECTS: Classified 2B (Possible for human.) by IARC. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. WARM water MUST be used. Get medical attention.

Skin Contact: Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.

Serious Skin Contact: Not available.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 432°C (809.6°F)

Flash Points:
CLOSED CUP: 15°C (59°F). (Tagliabue.) OPEN CUP: 26.667°C (80°F) (Cleveland) (CHRIS, 2001) CLOSED CUP: 12.8 C (55 F) (Bingham et al, 2001; NIOSH, 2001) CLOSED CUP: 21 C (70 F) (NFPA)

Flammable Limits: LOWER: 0.8% - 1.6%UPPER: 6.7% - 7%

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances: Highly flammable in presence of open flames and sparks, of heat.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available. Slightly explosive in presence of heat.

Fire Fighting Media and Instructions:
Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog.

Special Remarks on Fire Hazards:
Vapor may travel considerable distance to source of ignition and flash back. Vapors may form explosive mixtures with air. When heated to decomposition it emits acrid smoke and irritating fumes.

Special Remarks on Explosion Hazards: Vapors may form explosive mixtures in air.

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:
Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Avoid contact with eyes. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents.

Storage:
Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame). Sensitive to light. Store in light-resistant containers.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 100 STEL: 125 (ppm) from OSHA (PEL) [United States] TWA: 435 STEL: 545 from OSHA (PEL) [United States] TWA: 435 STEL: 545 (mg/m3) from NIOSH [United States] TWA: 100 STEL: 125 (ppm) from NIOSH [United States] TWA: 100 STEL: 125 (ppm) from ACGIH (TLV) [United States] TWA: 100 STEL: 125 (ppm) [United Kingdom (UK)] TWA: 100 STEL: 125 (ppm) [Belgium] TWA: 100 STEL: 125 (ppm) [Finland] TWA: 50 (ppm) [Norway] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Sweetish. Gasoline-like. Aromatic.

Taste: Not available.

Molecular Weight: 106.16 g/mole

Color: Colorless.

pH (1% soln/water): Not available.

Boiling Point: 136°C (276.8°F)

Melting Point: -94.9 (-138.8°F)

Critical Temperature: 617.15°C (1142.9°F)

Specific Gravity: 0.867 (Water = 1)

Vapor Pressure: 0.9 kPa (@ 20°C)

Vapor Density: 3.66 (Air = 1)

Volatility: 100% (v/v).

Odor Threshold: 140 ppm

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 3.1

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, diethyl ether.

Solubility:
Easily soluble in diethyl ether. Very slightly soluble in cold water or practically insoluble in water. Soluble in all proportions in Ethyl alcohol. Soluble in Carbon tetrachloride, Benzene. Insoluble in Ammonia. Slightly soluble in Chloroform. Solubility in Water: 169 mg/l @ 25 deg. C.; 0.014 g/100 ml @ 15 deg. C.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Heat, ingnition sources (flames, sparks, static), incompatible materials, light

Incompatibility with various substances: Reactive with oxidizing agents.

Corrosivity: Not considered to be corrosive for metals and glass.

Special Remarks on Reactivity:
Can react vigorously with oxidizing materials. Sensitive to light.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Inhalation.

Toxicity to Animals: Acute oral toxicity (LD50): 3500 mg/kg [Rat].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified 2B (Possible for human.) by IARC. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. May cause damage to the following organs: central nervous system (CNS).

Other Toxic Effects on Humans:
Hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant, permeator).

Special Remarks on Toxicity to Animals:
Lethal Dose/Conc 50% Kill: LD50 [Rabbit] - Route: Skin; Dose: 17800 ul/kg Lowest Published Lethal Dose/Conc: LDL[Rat] - Route: Inhalation (vapor); Dose: 4000 ppm/4 H

Special Remarks on Chronic Effects on Humans:
May cause adverse reproductive effects and birth defects (teratogenic) based on animal test data. May cause cancer based on animals data. IARC evidence for carcinogenicity in animals is sufficient. IARC evidence of carcinogenicity in humans inadequate. May affect genetic material (mutagenic).

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: Can cause mild skin irritation. It can be absorbed through intact skin. Eyes: Contact with vapor or liquid can cause severe eye irritation depending on concentration. It may also cause conjunctivitis. At a vapor exposure level of 85 - 200 ppm , it is mildly and transiently irritating to the eyes; 1000 ppm causes further irritation and tearing; 2000 ppm results in immediate and severe irritation and tearing; 5,000 ppm is intolerable (ACGIH, 1991; Clayton and Clayton, 1994). Standard draize test for eye irritation using 500 mg resulted in severe irritation (RTECS) Inhalation: Exposure to high concentrations can cause nasal, mucous membrane and respiratory tract irritation and can also result in chest constriction and, trouble breathing, respiratory failure, and even death. It can also affect behavior/Central Nervous System. The effective dose for CNS depression in experimental animals was 10,000 ppm (ACGIH, 1991). Symptoms of CNS depression include

headache, nausea, weakness, dizziness, vertigo, irritability, fatigue, lightheadedness, sleepiness, tremor, loss of coordination, judgement and conciousness, coma, and death. It can also cause pulmonary edema. Inhalation of 85 ppm can produce fatigue, insomnia, headache, and mild irritation of the respiratory tract (Haley & Berndt, 1987). Ingestion: Do not drink, pipet or siphon by mouth. May cause gastroinestinal/digestive tract irritation with Abdominal pain, nausea, vomiting. Ethylbenzene is a pulmonary aspiration hazard. Pulmonary aspiration of even small amounts of the liquid may cause fatal pneumonitis. It may also affect behavior/central nervous system with

Section 12: Ecological Information

Ecotoxicity:
Ecotoxicity in water (LC50): 14 mg/l 96 hours [Fish (Trout)] (static). 12.1 mg/l 96 hours [Fish (Fathead Minnow)] (flow-through)]. 150 mg/l 96 hours [Fish (Blue Gill/Sunfish)] (static). 275 mg/l 96 hours [Fish (Sheepshead Minnow)]. 42.3 mg/l 96 hours [Fish (Fathead Minnow)](soft water). 87.6mg/l 96 hours [Shrimp].

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 3: Flammable liquid.

Identification: : Ethylbenzene UNNA: 1175 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
Connecticut hazardous material survey.: Ethylbenzene Illinois toxic substances disclosure to employee act: Ethylbenzene Illinois chemical safety act: Ethylbenzene New York release reporting list: Ethylbenzene Rhode Island RTK hazardous substances: Ethylbenzene Pennsylvania RTK: Ethylbenzene Minnesota: Ethylbenzene Massachusetts RTK: Ethylbenzene Massachusetts spill list: Ethylbenzene New Jersey: Ethylbenzene New Jersey spill list: Ethylbenzene Louisiana spill reporting: Ethylbenzene California Director's List of Hazardous Substances: Ethylbenzene TSCA 8(b) inventory: Ethylbenzene TSCA 4(a) proposed test rules: Ethylbenzene TSCA 8(d) H and S data reporting: Ethylbenzene: Effective Date: 6/19/87; Sunset Date: 6/19/97 SARA 313 toxic chemical notification and release reporting: Ethylbenzene

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2A: Material causing other toxic effects (VERY TOXIC). CLASSE D-2B: Material causing other toxic effects (TOXIC).

DSCL (EEC):
R11- Highly flammable. R20- Harmful by inhalation. S16- Keep away from sources of ignition - No smoking. S24/25- Avoid contact with skin and eyes. S29- Do not empty into drains.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 3

Reactivity: 0

Personal Protection: h

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 3

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

References:
-Manufacturer's Material Safety Data Sheet. -Fire Protection Guide to Hazardous Materials, 13th ed., National Fire Protection Association (NFPA) -Registry of Toxic Effects of Chemical Substances (RTECS) -Chemical Hazard Response Information System (CHRIS) -Hazardous Substance Data Bank (HSDB) -New Jersey Hazardous Substance Fact Sheet -Ariel Global View -Reprotext System

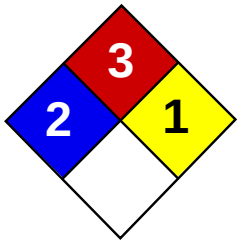
Other Special Considerations: Not available.

Created: 10/09/2005 05:28 PM

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Material Safety Data Sheet
Cumene MSDS

Section 1: Chemical Product and Company Identification

Product Name: Cumene

Catalog Codes: SLC3052

CAS#: 98-82-8

RTECS: GR8575000

TSCA: TSCA 8(b) inventory: Cumene

CI#: Not available.

Synonym: Isopropyl benzene; Cumol; 2-Phenyl propane; (1-Methylethyl)benzene

Chemical Name: Isopropylbenzene

Chemical Formula: C6H5CH(CH3)2

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Cumene	98-82-8	100

Toxicological Data on Ingredients: Cumene: ORAL (LD50): Acute: 1400 mg/kg [Rat]. 12750 mg/kg [Mouse]. DERMAL (LD50): Acute: 12300 mg/kg [Rabbit].

Section 3: Hazards Identification

Potential Acute Health Effects:
Very hazardous in case of skin contact (irritant, permeator), of eye contact (irritant), of ingestion, of inhalation. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Potential Chronic Health Effects:
Very hazardous in case of skin contact (permeator). CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance is toxic to lungs, the nervous system, mucous membranes. Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Do not use an eye ointment. Seek medical attention.

Skin Contact:
After contact with skin, wash immediately with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Cover the irritated skin with an emollient. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation: Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Ingestion:
Do not induce vomiting. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 424°C (795.2°F)

Flash Points: CLOSED CUP: 36°C (96.8°F). OPEN CUP: 44°C (111.2°F).

Flammable Limits: LOWER: 0.9% UPPER: 6.5%

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances: Flammable in presence of open flames and sparks.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:
Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all ignition sources. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapour/spray. In case of insufficient ventilation, wear suitable respiratory equipment If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes

Storage:
Flammable materials should be stored in a separate safety storage cabinet or room. Keep away from heat. Keep away from sources of ignition. Keep container tightly closed. Keep in a cool, well-ventilated place. Ground all equipment containing material. A refrigerated room would be preferable for materials with a flash point lower than 37.8°C (100°F).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 50 CEIL: 75 (ppm) TWA: 245 CEIL: 365 (mg/m3) Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Not available.

Taste: Not available.

Molecular Weight: 120.2 g/mole

Color: Clear Colorless.

pH (1% soln/water): Not available.

Boiling Point: 152.4°C (306.3°F)

Melting Point: -96°C (-140.8°F)

Critical Temperature: Not available.

Specific Gravity: 0.862 (Water = 1)

Vapor Pressure: 8 mm of Hg (@ 20°C)

Vapor Density: 4.14 (Air = 1)

Volatility: Not available.

Odor Threshold: 1.2 ppm

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 3.7

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility: Very slightly soluble in cold water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

Incompatibility with various substances: Not available.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: No.

Section 11: Toxicological Information

Routes of Entry: Dermal contact. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:
Acute oral toxicity (LD50): 1400 mg/kg [Rat]. Acute dermal toxicity (LD50): 12300 mg/kg [Rabbit].

Chronic Effects on Humans: The substance is toxic to lungs, the nervous system, mucous membranes.

Other Toxic Effects on Humans: Very hazardous in case of skin contact (irritant, permeator), of ingestion, of inhalation.

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans: Not available.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are more toxic.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Section 14: Transport Information

DOT Classification: Class 3: Flammable liquid.

Identification: : Isopropylbenzene : UN1918 PG: III

Special Provisions for Transport: Marine Pollutant

Section 15: Other Regulatory Information

Federal and State Regulations:
Pennsylvania RTK: Cumene Massachusetts RTK: Cumene TSCA 8(b) inventory: Cumene SARA 313 toxic chemical notification and release reporting: Cumene CERCLA: Hazardous substances.: Cumene

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:

WHMIS (Canada):
CLASS B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F).

DSCL (EEC):
R10- Flammable. R22- Harmful if swallowed. R38- Irritating to skin. R41- Risk of serious damage to eyes.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 3

Reactivity: 0

Personal Protection: h

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 3

Reactivity: 1

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

References: Not available.

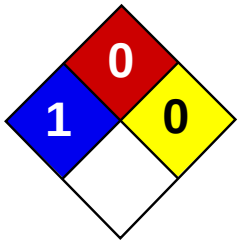
Other Special Considerations: Not available.

Created: 10/11/2005 11:43 AM

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Material Safety Data Sheet
Lead MSDS

Section 1: Chemical Product and Company Identification

Product Name: Lead

Catalog Codes: SLL1291, SLL1669, SLL1081, SLL1459, SLL1834

CAS#: 7439-92-1

RTECS: OF7525000

TSCA: TSCA 8(b) inventory: Lead

CI#: Not available.

Synonym: Lead Metal, granular; Lead Metal, foil; Lead Metal, sheet; Lead Metal, shot

Chemical Name: Lead

Chemical Formula: Pb

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Lead	7439-92-1	100

Toxicological Data on Ingredients: Lead LD50: Not available. LC50: Not available.

Section 3: Hazards Identification

Potential Acute Health Effects: Slightly hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation.

Potential Chronic Health Effects:
Slightly hazardous in case of skin contact (permeator). CARCINOGENIC EFFECTS: Classified A3 (Proven for animal.) by ACGIH, 2B (Possible for human.) by IARC. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to blood, kidneys, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.

Skin Contact: Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.

Serious Skin Contact: Not available.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation: Not available.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: May be combustible at high temperature.

Auto-Ignition Temperature: Not available.

Flash Points: Not available.

Flammable Limits: Not available.

Products of Combustion: Some metallic oxides.

Fire Hazards in Presence of Various Substances: Non-flammable in presence of open flames and sparks, of shocks, of heat.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards: When heated to decomposition it emits highly toxic fumes of lead.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill:
Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Large Spill:
Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up.. Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe dust. Wear suitable

protective clothing. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection: Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 0.05 (mg/m3) from ACGIH (TLV) [United States] TWA: 0.05 (mg/m3) from OSHA (PEL) [United States] TWA: 0.03 (mg/m3) from NIOSH [United States] TWA: 0.05 (mg/m3) [Canada]Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid. (Metal solid.)

Odor: Not available.

Taste: Not available.

Molecular Weight: 207.21 g/mole

Color: Bluish-white. Silvery. Gray

pH (1% soln/water): Not applicable.

Boiling Point: 1740°C (3164°F)

Melting Point: 327.43°C (621.4°F)

Critical Temperature: Not available.

Specific Gravity: 11.3 (Water = 1)

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility: Insoluble in cold water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Incompatible materials, excess heat

Incompatibility with various substances: Reactive with oxidizing agents.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity:
Can react vigorously with oxidizing materials. Incompatible with sodium carbide, chlorine trifluoride, trioxane + hydrogen peroxide, ammonium nitrate, sodium azide, disodium acetylide, sodium acetylide, hot concentrated nitric acid, hot concentrated hydrochloric acid, hot concentrated sulfuric acid, zirconium.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Inhalation. Ingestion.

Toxicity to Animals:
LD50: Not available. LC50: Not available.

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified A3 (Proven for animal.) by ACGIH, 2B (Possible for human.) by IARC. May cause damage to the following organs: blood, kidneys, central nervous system (CNS).

Other Toxic Effects on Humans: Slightly hazardous in case of skin contact (irritant), of ingestion, of inhalation.

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans:
Acute Potential: Skin: Lead metal granules or dust: May cause skin irritation by mechanical action. Lead metal foil, shot or sheets: Not likely to cause skin irritation Eyes: Lead metal granules or dust: Can irritate eyes by mechanical action. Lead metal foil, shot or sheets: No hazard. Will not cause eye irritation. Inhalation: In an industrial setting, exposure to lead mainly occurs from inhalation of dust or fumes. Lead dust or fumes: Can irritate the upper respiratory tract (nose, throat) as well as the bronchi and lungsby mechanical action. Lead dust can be absorbed through the respiratory system. However, inhaled lead does not accumulate in the lungs. All of an inhaled dose is eventually abssorbed or transferred to the gastrointestinal tract. Inhalation effects of exposure to fumes or dust of inorganic lead may not develop quickly. Symptoms may include metallic taste, chest pain, decreased physical fitness, fatigue, sleep disturbance, headache, irritability, reduces memory, mood and personality changes, aching bones and muscles, constipation, abdominal pains, decreasing appetite. Inhalation of large amounts may lead to ataxia, deliriuim, convulsions/seizures, coma, and death. Lead metal foil, shot, or sheets: Not an inhalation hazard unless metal is heated. If metal is heated, fumes will be released. Inhalation of these fumes may cause "fume metal fever", which is characterized by flu-like symptoms. Symptoms may include metallic taste, fever, nausea, vomiting, chills, cough, weakness, chest pain, generalized muscle pain/aches, and increased white blood cell count. Ingestion: Lead metal granules or dust: The symptoms of lead poisoning include abdominal pain or cramps (lead cholic), spasms, nausea, vomiting, headache, muscle weakness, hallucinations, distorted perceptions, "lead line" on the gums, metallic taste, loss of appetite, insomnia, dizziness and other symptoms similar to that of inhalation. Acute poisoning may result in high lead levels in the blood and urine, shock, coma and death in extreme cases. Lead metal foil, shot or sheets: Not an ingestion hazard for usual industrial handling.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: Not a DOT controlled material (United States).

Identification: Not applicable.

Special Provisions for Transport: Not applicable.

Section 15: Other Regulatory Information

Federal and State Regulations:
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Lead California prop. 65: This product contains the following ingredients for which the State of California has found to cause reproductive harm (female) which would require a warning under the statute: Lead California prop. 65: This product contains the following ingredients for which the State of California has found to cause reproductive harm (male) which would require a warning under the statute: Lead California prop. 65 (no significant risk level): Lead: 0.0005 mg/day (value) California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: Lead California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Lead Connecticut hazardous material survey.: Lead Illinois toxic substances disclosure to employee act: Lead Illinois chemical safety act: Lead New York release reporting list: Lead Rhode Island RTK hazardous substances: Lead Pennsylvania RTK: Lead

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada): CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):
R20/22- Harmful by inhalation and if swallowed. R33- Danger of cumulative effects. R61- May cause harm to the unborn child. R62- Possible risk of impaired fertility. S36/37- Wear suitable protective clothing and gloves. S44- If you feel unwell, seek medical advice (show the label when possible). S53- Avoid exposure - obtain special instructions before use.

HMIS (U.S.A.):

Health Hazard: 1

Fire Hazard: 0

Reactivity: 0

Personal Protection: E

National Fire Protection Association (U.S.A.):

Health: 1

Flammability: 0

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Safety glasses.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

Created: 10/10/2005 08:21 PM

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MATERIAL SAFETY DATA SHEET

Prepared to U.S. OSHA, CMA, ANSI and Canadian WHMIS Standards

PART I *What is the material and what do I need to know in an emergency?*

1. PRODUCT IDENTIFICATION

TRADE NAME (AS LABELED):	**MERCURY**
CHEMICAL NAME/CLASS:	Mercury; Element
SYNONYMS:	Colloidal Mercury, Quick Silver; Liquid Silver; NCI-C60399; Hydrargyrum
PRODUCT USE:	Variety of industrial, analytical, and research applications.
SUPPLIER/MANUFACTURER'S NAME:	**BETHLEHEM APPARATUS COMPANY**
ADDRESS:	890 Front Street Hellertown, PA 18055
EMERGENCY PHONE:	610-838-7034
BUSINESS PHONE:	610-838-7034
DATE OF PREPARATION:	May 20, 1997
DATE OF REVISION:	May 2, 2005

2. COMPOSITION and INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS #	%w/w	EXPOSURE LIMITS IN AIR					
			ACGIH-TLV		OSHA-PEL			OTHER
			TWA mg/m^3	STEL mg/m^3	TWA mg/m^3	STEL mg/m^3	IDLH mg/m^3	mg/m^3
Mercury Exposure limits are for Mercury, Inorganic Compounds	7439-97-6	100	0.025, (skin) A4 (Not Classifiable as a Human Carcinogen)	NE	Mercury Vapor: 0.5, Skin; (Vacated 1989 PEL)	0.1 (ceiling) Non-alkyl Mercury Compounds: 0.1 Ceiling, skin (Vacated 1989 PEL)	10	NIOSH REL: STEL = 0.1 (ceiling, skin) DFG MAKs: TWA = 0.1 PEAK = 10•MAK 30 min., momentary value Carcinogen: EPA-D; IARC-3, TLV-A4

NE = Not Established. See Section 16 for Definitions of Terms Used.

NOTE: ALL WHMIS required information is included in appropriate sections based on the ANSI Z400.1-1998 format. This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW: Mercury is a silver-white, odorless, heavy liquid. Mercury is highly toxic, irritating, and causes sensitization and neurological symptoms. The primary health hazard associated with overexposure to this product is the potential for irritation of skin, eyes, or other contaminated tissues. Mercury causes severe, adverse health effects after chronic exposure to low vapor levels; emergency response efforts must be directed to removal of all traces of this product. Mercury is not flammable, and is relatively stable (though it can react with many metals to form amalgams). Emergency responders must wear the personal protective equipment suitable for the situation to which they are responding.

SYMPTOMS OF OVER-EXPOSURE BY ROUTE OF EXPOSURE: The most significant routes of occupational over-exposure are inhalation and contact with skin and eyes. The symptoms of over-exposure to Mercury, via route of exposure, are as follows:

INHALATION: Long-term exposures to Mercury vapors present a severe health hazard. When inhaled, Mercury will be rapidly distributed throughout the body. During this time, Mercury will cross the blood-brain barrier, and become oxidized to the Hg(II) oxidation state. The oxidized species of Mercury cannot cross the blood-brain barrier and thus accumulates in the brain. Mercury in other organs is removed slowly from the body via the kidneys. The average half-time for clearance of Mercury for different parts of the human body is as follows: lung: 1.7 days; head: 21 days; kidney region: 64 days; chest: 43 days; whole body: 58 days.

Long-term inhalation over-exposures can lead to the development of a wide variety of symptoms, including the following: excessive salivation, gingivitis, anorexia, chills, fever, cardiac abnormalities, anemia, digestive problems, abdominal pains, frequent urination, an inability to urinate, diarrhea, peripheral neuropathy (numbness, weakness, or burning sensations in the hands or feet), tremors (especially in the hands, fingers, eyelids, lips, cheeks, tongue, or legs), alteration of tendon reflexes, slurred speech, visual disturbances, and deafness. Allergic reactions (i.e. breathing difficulty) may also occur in sensitive individuals.

The principal target organ associated with chronic Mercury exposures via inhalation is the central nervous system. Such exposures lead to the development of "Erethism". This syndrome consists of subtle or dramatic changes in behavior and personality: depression, fearfulness, restlessness, irritability, timidity, and indecision. These psychic and behavioral characteristics are often accompanied by insomnia, drowsiness, headache, and fatigue. In advanced cases, memory loss, hallucinations, and mental deterioration may occur.

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM

HEALTH	(BLUE)	3
FLAMMABILITY	(RED)	0
REACTIVITY	(YELLOW)	0
PROTECTIVE EQUIPMENT		X

EYES	RESPIRATORY	HANDS	BODY
	See Section 8		See Section 8

For a variety of applications involving elemental Mercury.

See Section 16 for Definition of Ratings

Another, less common, syndrome associated with Mercury over-exposure is "Acrodynia". Symptoms of this syndrome include a pink color to the extremities, apathy, fever, kidney problems, sensitivity to light, generalized edema, and a painful scaling of the skin of the hands and feet. Other symptoms of chronic over-exposure to Mercury can include loosening of the teeth, inflammation of the mucous membranes, a dark blue line appearing along gingival margins, abnormal blushing, excessive sweating, and rashes. Reproductive effects, sexual disorders, and impotence may also develop in the event of Mercury over-exposure.

Short-term over-exposures to high concentrations of mercury vapors can lead to breathing difficulty, coughing, acute, chemical pneumonia, and pulmonary edema (a potentially fatal accumulation of fluid in the lungs). Depending on the concentration of over-exposure, cardiac abnormalities, damage to the kidney, liver or nerves and effects on the brain may occur.

If this product is heated, and exposure to Mercury fumes occurs, "Metal Fume Fever" may develop. This syndrome is a flu-like illness which occurs when metal oxides below 1.5 microns in size are inhaled. Symptoms of this syndrome may develop 4-12 hours after exposure and begin with the onset of thirst, metallic taste in the mouth, and symptoms of Mercury poisoning as described above. All symptoms generally subside within 24-36 hours after the over-exposure ends.

CONTACT WITH SKIN or EYES: Mercury can be irritating to contaminated skin and eyes. Symptoms of skin exposure can include redness, dry skin, and pain. Prolonged contact may lead to ulceration of the skin. Allergic reactions (i.e. rashes, welts) may occur in sensitive individuals. Dermatitis (redness and inflammation of the skin) may occur after repeated skin exposures. Symptoms of eye exposure can include redness, pain, and watery eyes. A symptom of Mercury exposure is discoloration of the lens of the eyes.

3. HAZARD IDENTIFICATION (Continued)

SKIN ABSORPTION: Skin absorption is a significant route of potential over-exposure to Mercury. Currently, no quantitative estimates of the rate of penetration are available. Symptoms of such over-exposure would include redness and irritation of the contaminated area, as well as the development of symptoms described for "Inhalation".

INGESTION: Ingestion is not anticipated to be a significant route of occupational over-exposure. If Mercury is swallowed, symptoms of such over-exposure can include metallic taste in mouth, nausea, vomiting, central nervous system effects, and damage to the kidneys. Metallic mercury is not usually absorbed sufficiently from the gastrointestinal tract to induce an acute, toxic response. Damage to the tissues of the mouth, throat, esophagus, and other tissues of the digestive system may occur. Ingestion may be fatal, due to effects on gastrointestinal system and kidneys.

INJECTION: Injection is not anticipated to be a significant route of over-exposure for this product. If Mercury is injected (i.e. though abrasions and lacerations of the skin), local redness and pain will occur. Other symptoms of such exposure can include the development of embolisms (Mercury blocking a vein or artery), malaise, chest pain, and difficulty in breathing.

HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Explanation in **Lay Terms**. The most severe health effects associated with Mercury exposure are related to long-term exposures to vapors. In the event of over-exposure, the following symptoms may be observed:

ACUTE: Mercury can be irritating to contaminated skin and eyes. Short-term over-exposures to high concentrations of mercury vapors can lead to breathing difficulty, coughing, acute, and potentially fatal lung disorders. Depending on the concentration of inhalation over-exposure, heart problems, damage to the kidney, liver or nerves and effects on the brain may occur.

CHRONIC: Long-term over-exposure can lead to a wide range of adverse health effects. Anyone using Mercury must pay attention to personality changes, weight loss, skin or gum discolorations, stomach pains, and other signs of Mercury over-exposure. Gradually developing syndromes ("Erethism" and "Acrodynia") are indicative of potentially severe health problems. Mercury can cause the development of allergic reactions (i.e. dermatitis, rashes, breathing difficulty) upon prolonged or repeated exposures. Refer to Section 11 (Toxicology Information) for additional data.

TARGET ORGANS: ACUTE: Skin, eyes, respiratory system, central nervous system, brain. CHRONIC: Skin, respiratory system, central nervous system, brain, blood system, kidneys, and reproductive system.

PART II *What should I do if a hazardous situation occurs?*

4. FIRST-AID MEASURES

Contaminated individuals must be taken for medical attention. Rescuers should be taken for medical attention, if necessary. Take a copy of label and MSDS to health professional with victim.

SKIN EXPOSURE: If Mercury contaminates the skin, immediately begin decontamination with running water. Minimum flushing is for 15 minutes. Remove exposed or contaminated clothing, taking care not to contaminate eyes. The contaminated individual must seek immediate medical attention.

EYE EXPOSURE: If Mercury contaminates the eyes, open the victim's eyes while under gently running water. Use sufficient force to open eyelids. Have the contaminated individual "roll" eyes. Minimum flushing is for 15 minutes. The contaminated individual must seek immediate medical attention.

INHALATION: If Mercury vapors are inhaled, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. Remove or cover gross contamination to avoid exposure to rescuers. The contaminated individual must seek immediate medical attention.

INGESTION: If Mercury is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. If professional advice is not available, induce vomiting. Have victim rinse mouth with water, or drink several cupfuls of water, if conscious. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or unable to swallow.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Preexisting respiratory problems, dermatitis, central nervous system disorders, kidney problems, and liver dysfunctions can be aggravated by exposure to this product.

RECOMMENDATIONS TO PHYSICIANS: Treatment for Mercury over-exposure must be given. The following treatment protocol for ingestion of Mercury is from Clinical Toxicology of Commercial Products (5th Edition, 1984).

1. As soon as possible, have patient drink milk or slurry of activated charcoal to help precipitate mercury in the stomach.
2. Gastric lavage with tap water, milk, or 2-5% solution of sodium bicarbonate, unless spontaneous vomiting is intense and productive,
3. Administer through the lavage tube 0.5-1.0 oz. of sodium or magnesium sulfate in 6-8 oz. of water (unless spontaneous purging has already begun) and a slurry of activated charcoal.
4. Administer BAL (Dimercaprol; 3 mg/kg or 0.3 mL/10 kg) intramuscularly as a 10% solution in oil. If given within three hours after ingestion, severe renal damage may be prevented. Collect urine before and after BAL therapy for mercury analysis.
5. Demulcents (i.e. milk of magnesia, starch, bismuth subcarbonate) and analgesic drugs may be useful and necessary.

4. FIRST-AID MEASURES (Continued)

RECOMMENDATIONS TO PHYSICIANS (continued):

6. Because the BAL-Mercury Complex excreted in bile may be partly resorbed in the bowel, it is probably useful to administer activated charcoal every few hours, starting as soon as vomiting subsides.
7. Treat shock by correcting dehydration and electrolyte imbalances. If renal insufficiency develops, treat for acute renal failure.
8. The maintenance of an adequate nutritional status may be troublesome if gastrointestinal disorders becomes severe or persistent.
9. If toxic signs or symptoms recur after an apparent recovery, another course of chelation therapy is warranted. BAL is still appropriate, but a trial with D-Penicillamine or N-acetyl-D,L-penicillamine may be preferable. Either penicillamine compound is given by mouth, usually on an empty stomach, in a dose of 250 mg (4 times daily for adults; 3 times daily in children; 5-10 days). Penicillamine should be withheld until mercury is cleared out of the bowels. A chelating agent should be used until the urine-mercury level falls below 50μg/24 hours.

Laboratory Analysis: Determination of β2-Microglobulins has been recommended as a useful test for renal function. Electroencephalographic changes may be correlated closely with the clinical state. Analysis of the blood, hair, urine, or feces can be done to determine the level of Mercury exposure. Mercury deposits in the body can be observed in X-Rays.

5. FIRE-FIGHTING MEASURES

FLASH POINT: Not flammable.

AUTOIGNITION TEMPERATURE: Not applicable.

FLAMMABLE LIMITS (in air by volume, %): Lower (LEL): Not applicable. Upper (UEL): Not applicable.

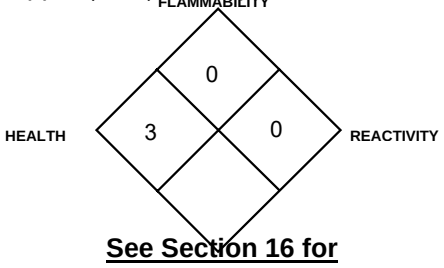
FIRE EXTINGUISHING MATERIALS:

Water Spray: YES Carbon Dioxide: YES
Foam: YES Dry Chemical: YES
Halon: YES Other: Any "ABC" Class.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Mercury vapors and mercury oxides generated during fires involving this product are toxic; additionally, this element can be irritating to contaminated tissue. Therefore, this product presents a severe health hazard to firefighters. Mercury is not flammable, and is relatively stable (though it can react with many metals to form amalgams).

Explosion Sensitivity to Mechanical Impact: Not sensitive.
Explosion Sensitivity to Static Discharge: Not sensitive.

NFPA RATING



See Section 16 for Definition of Ratings

SPECIAL FIRE-FIGHTING PROCEDURES: Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Move fire-exposed containers if it can be done without risk to firefighters. Apply cooling water to sides of containers that are exposed to flame until well after fire is out. Decontaminate all equipment thoroughly after the conclusion of fire-fighting activities. If possible, prevent run-off water from entering storm drains, bodies of water, or other environmentally sensitive areas.

6. ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK RESPONSE: Uncontrolled releases should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used. In case of a Mercury release, clear the affected area, protect people, and respond with trained personnel. In the event of a release under 1 pound of Mercury, the minimum Personal Protective Equipment should be **Level C: triple-gloves (rubber gloves and nitrile gloves over latex gloves), chemical resistant suit and boots, hard-hat, and Air-Purifying Respirator with cartridge appropriate for Mercury. Level B, which includes Self-Contained Breathing Apparatus, must be worn if the amount of Mercury released is over 1 pound or when the concentration of oxygen in atmospheres is less than 19.5% or unknown.** If necessary, dike area of release with suitable absorbent materials. There are a variety of methods which can be used to clean-up Mercury spills. Use a commercially-available Mercury Spill Kit for small spills. A suction pump with aspirator can also be used during clean-up operations. For larger releases, a Mercury vacuum can be used. Calcium polysulfide or excess sulfur can also be used for clean-up. Mercury can migrate into cracks and other difficult-to-clean areas; calcium polysulfide and sulfur can be sprinkled effectively into these areas. Decontaminate the area thoroughly. The area should be inspected visually and with colorimetric tubes for Mercury to ensure all traces of Mercury have been removed prior to re-occupation by non-emergency personnel. Decontaminate all equipment used in response thoroughly. If such equipment cannot be adequately decontaminated, it must be discarded with other spill residue. Place all spill residue in an appropriate container, seal immediately, and label appropriately. Dispose of in accordance with U.S. Federal, State, and local hazardous waste disposal regulations and regulations of Canada and it's Provinces. (see Section 13, Disposal Considerations).

PART III *How can I prevent hazardous situations from occurring?*

7. HANDLING and STORAGE

WORK PRACTICES AND HYGIENE PRACTICES: As with all chemicals, avoid getting Mercury ON YOU or IN YOU. Wash thoroughly after handling this product. Avoid breathing vapors or spays of this product. Do not eat or drink while handling this product. Remove contaminated clothing immediately. Report all Mercury releases promptly. Clean-up all releases of this product immediately. Supervisors and other responsible personnel must be aware of personality changes, weight loss, or other signs of Mercury over-exposure in employees using this product; these symptoms can develop gradually and are indicative of potentially severe health effects related to Mercury contamination.

STORAGE AND HANDLING PRACTICES: All employees who handle this material should be trained to handle it safely. Use in a well-ventilated location. Open containers slowly on a stable surface. Drums, flask, and bottles of this product must be properly labeled. Empty containers may contain residual amounts of Mercury; therefore, empty containers should be handled with care. Store drums, flasks, and bottles in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Store away from incompatible materials (see Section 10, Stability and Reactivity). Material should be stored in secondary containers or in a diked area, as appropriate. Keep drums, flasks, and bottles tightly closed when not in use. Storage areas should be made of fire-resistant materials. If appropriate, post warning signs in storage and use areas. Inspect all incoming containers before storage to ensure containers are properly labeled and not damaged.

PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT: Follow practices indicated in Section 6 (Accidental Release Measures). Make certain that application equipment is locked and tagged-out safely. Always use this product in areas where adequate ventilation is provided. Decontaminate equipment thoroughly before maintenance begins.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation to ensure exposure levels are maintained below the limits provided in Section 2 (Composition and Information on Ingredients), if applicable. Ensure eyewash/safety shower stations are available near areas where this product is used.

RESPIRATORY PROTECTION: Maintain airborne contaminant concentrations below exposure limits listed in Section 2 (Composition and Information on Ingredients), if applicable. If necessary, use only respiratory protection authorized in the U.S. Federal OSHA Respiratory Protection Standard (29 CFR 1910.134) or equivalent U.S. State standards, and Canadian CSA Standard Z94.4-93. Oxygen levels below 19.5% are considered IDLH by OSHA. In such atmospheres, use of a full-facepiece pressure/demand SCBA or a full facepiece, supplied air respirator with auxiliary self-contained air supply is required under OSHA's Respiratory Protection Standard (1910.134-1998).The following respirator selection guidelines from NIOSH are provided for additional information:

RECOMMENDATIONS FOR MERCURY COMPOUNDS [except (organo) alkyls] (as Hg) CONCENTRATIONS IN AIR:

Up to 0.5 mg/m^3: Chemical cartridge respirator with cartridge(s) to protect against mercury compounds (an End-of-Service Life Indicator is required); or Supplied-Air Respirator (SAR).

Up to 1.25 mg/m^3: SAR operated in a continuous-flow mode; or powered air- purifying respirator with cartridge(s) to protect against mercury compounds (canister) (an End-of-Service Life Indicator is required.)

Up to 2.5 mg/m^3: Full-facepiece chemical cartridge respirator with cartridge(s) to protect against mercury compounds; or gas mask with canister to protect against mercury compounds; or SAR with a tight-fitting facepiece operated in a continuous-flow mode; or powered air-purifying respirator with a tight-fitting facepiece and cartridge(s) to protect against mercury compounds (canister) (an End-of-Service Life Indicator is required); or full-facepiece Self-Contained Breathing Apparatus (SCBA); or full-facepiece SAR.

Up to 10 mg/m^3: Positive pressure SAR.

Emergency or Planned Entry into Unknown Concentrations or IDLH Conditions: Positive pressure, full-facepiece SCBA; or positive pressure, full-facepiece SAR with an auxiliary positive pressure SCBA.

Escape: Gas mask with canister to protect against mercury compounds; or escape-type SCBA.

EYE PROTECTION: Splash goggles or safety glasses. For operations involving the use of more than 1 pound of Mercury, or if the operation may generate a spray of Mercury, the use of a faceshield is recommended.

HAND PROTECTION: Wear neoprene gloves for routine industrial use. Use triple gloves for spill response, as stated in Section 6 (Accidental Release Measures) of this MSDS.

BODY PROTECTION: Use body protection appropriate for task (i.e. lab coat, coveralls, Tyvek suit).

9. PHYSICAL and CHEMICAL PROPERTIES

RELATIVE VAPOR DENSITY (air = 1): 6.9

EVAPORATION RATE (n-BuAc = 1): Not determined.

SPECIFIC GRAVITY (water = 1): 13.5939

MELTING/FREEZING POINT: -38.87°C (-37.97°F)

SOLUBILITY IN WATER: Insoluble.

BOILING POINT: 356.72°C (674.1°F)

VAPOR PRESSURE, mm Hg @ 25°C: 0.002

pH: Not applicable.

ODOR THRESHOLD: Not applicable.

COEFFICIENT OF OIL/WATER DISTRIBUTION (PARTITION COEFFICIENT): Not available.

APPEARANCE, ODOR AND COLOR: Mercury is a silver-white, heavy liquid which is odorless.

HOW TO DETECT THIS SUBSTANCE (warning properties): The appearance of this product is a distinguishing characteristic.

10. STABILITY and REACTIVITY

STABILITY: Stable

DECOMPOSITION PRODUCTS: If this product is exposed to extremely high temperatures in the presence of oxygen or air, toxic vapors of mercury and mercury oxides will be generated.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Mercury is incompatible with acetylene and acetylene derivatives, amines, ammonia, 3-bromopropyne, boron diiodophosphide, methyl azide, sodium carbide, heated sulfuric acid, methylsilane/oxygen mixtures; nitric acid/alcohol mixtures, tetracarbonylnickel/oxygen mixtures, alkyne/silver perchlorate mixtures, halogens (i.e. chlorine, bromine) and strong oxidizers (i.e. chlorine dioxide, perchlorates). Mercury can attack copper and copper alloys. Additionally, mercury can react with many metals (i.e. calcium, lithium, potassium, sodium, rubidium, aluminum) to form amalgams.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Avoid exposure or contact to extreme temperatures, incompatible chemicals

PART IV *Is there any other useful information about this material?*

11. TOXICOLOGICAL INFORMATION

TOXICITY DATA: The specific toxicology data available for Mercury are as follows.

TDLo (Subcutaneous-Man) 254 mg/kg: Skin and Appendages: dermatitis, other (after systemic exposure)

TDLo (Oral-Man) 43 mg/kg: Behavioral: tremor; Liver: jaundice, other or unclassified, other changes

TDLo (Skin-Man) 129 mg/kg/5 hours-continuous: Sense Organs and Special Senses (Ear): tinnitus; Behavioral: headache; Skin and Appendages: dermatitis, allergic (after systemic exposure)

TDLo (Intravenous-Man) 571 μL/kg: Peripheral Nerve and Sensation: paresthesis; Lungs, Thorax, or Respiration: dyspnea; Skin and Appendages: sweating

TDLo (Intraperitoneal-Rat) 400 mg/kg/14 days-intermittent: Tumorigenic: equivocal tumorigenic agent by RTECS criteria, tumors at site of application

TCLo (Inhalation-Woman) 150 μg/m^3/46 days: Behavioral: wakefulness, anorexia (human); Gastrointestinal: hypermotility, diarrhea

TCLo (Inhalation-Man) 44300 μg/m^3/8 hours: Behavioral: muscle weakness; Liver: other changes; Nutritional and Gross Metabolic: body temperature increase

TCLo (Inhalation-Rat) 4 mg/m^3/2 hours/11 days-intermittent: Brain and Coverings: other degenerative changes; Kidney, Ureter, Bladder: other changes; Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: other Enzymes

TCLo (Inhalation-Rat) 1 mg/m^3/24 hours/5 weeks-continuous: Kidney, Ureter, Bladder: proteinuria

TCLo (Inhalation-Rat) 8 μg/m^3/6.5 hours/41 weeks-intermittent: Behavioral: alteration of classical conditioning

TCLo (Inhalation-Rat) 17 mg/m^3/2 hours/30 days-continuous: Brain and Coverings: other degenerative changes; Behavioral: alteration of classical conditioning, alteration of operant conditioning

TCLo (Inhalation-Rat) 890 ng/m^3/24 hours: male 16 week(s) pre-mating: Reproductive: Paternal Effects: spermatogenesis (incl. genetic material, sperm morphology, motility, and count)

TCLo (Inhalation-Rat) 7440 ng/m^3/24 hours: male 16 week(s) pre-mating: Reproductive: Fertility: post-implantation mortality (e.g. dead and/or resorbed implants per total number of implants)

TCLo (Inhalation-Rat) 1 mg/m^3/24 hours: female 1-20 day(s) after conception: Reproductive: Effects on Embryo or Fetus: fetotoxicity (except death, e.g., stunted fetus)

TCLo (Inhalation-Rat) 300 μg/m^3/4 hours: female 7-21 day(s) after conception: Reproductive: Specific Developmental Abnormalities: Central Nervous System

LCLo (Inhalation-Rabbit) 29 mg/m^3/30 hours

Cytogenetic Analysis (Unreported-Man) 150 μg/m^3

SUSPECTED CANCER AGENT: Mercury is listed as follows by agencies tracking carcinogenic potential:

ACGIH TLV-A4 (Not Classifiable as a Human Carcinogen: Agents which cause concern that they could be carcinogenic for humans, but which cannot be assessed conclusively because of a lack of data); EPA- D (Not Classifiable as to Human Carcinogenicity-Inadequate human and animal evidence of carcinogenicity or no data are available); IARC-3 (Possibly Carcinogenic to Humans)

Mercury is not found on the following lists: FEDERAL OSHA Z LIST, NTP, or CAL/OSHA and therefore is not considered to be, nor suspected to be, a cancer-causing agent by these agencies.

11. TOXICOLOGICAL INFORMATION (Continued)

IRRITANCY OF PRODUCT: Mercury can be irritating to skin, eyes, or other contaminated tissue.

SENSITIZATION TO THE PRODUCT: Mercury is a sensitizer capable of causing allergic reactions (i.e. breathing difficulty, dermatitis, rashes) after prolonged or repeated over-exposures.

REPRODUCTIVE TOXICITY INFORMATION: Listed below is information concerning the effects of Mercury on the human reproductive system.

Mutagenicity: Human mutation data are available for Mercury; these data were obtained during clinical studies on specific human tissues exposed to high doses of this element.

Embryotoxicity: This product may cause embryotoxic effects in humans. Refer to the paragraph on "Teratogenicity" for additional information.

Teratogenicity: This product may cause teratogenic effects in humans. Intrauterine exposure may result in tremors and involuntary movements in the fetus. Mercury has also been reported to produce teratogenic effects in test animals.

Reproductive Toxicity: This product is reported to cause reproductive effects in humans. Impotence has been reported in over-exposed males. Women occupationally exposed have reported menstrual disturbances, reduced ovulation, and spontaneous abortions. Mercury is excreted in breast milk. Mercury has also been reported to produce adverse reproductive effects in test animals.

A mutagen is a chemical which causes permanent changes to genetic material (DNA) such that the changes will propagate through generational lines. An embryotoxin is a chemical which causes damage to a developing embryo (i.e. within the first eight weeks of pregnancy in humans), but the damage does not propagate across generational lines. A teratogen is a chemical which causes damage to a developing fetus, but the damage does not propagate across generational lines. A reproductive toxin is any substance which interferes in any way with the reproductive process.

BIOLOGICAL EXPOSURE INDICES: The following Biological Exposure Indices (BEIs) have been determined for Mercury.

CHEMICAL DETERMINANT	SAMPLING TIME	BEI
MERCURY • Total inorganic mercury in urine • Total inorganic mercury in blood	 • Preshift • End of shift at end of workweek	 • 35 μg/g creatinine • 15 μg/L

Note: Women of child-bearing potential, whose blood Pb exceeds 10 μg/dl, are at risk of delivering a child with a blood Pb over the current Center for Disease Control Quideline of 10 μg/dl. If the blood Pb of such children remains elevated, they may be at increased risk of cognitive deficits. The blood Pb of these children should be closely monitored and appropriate steps should be taken to minimize the child's exposure to environmental lead.

12. ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

ENVIRONMENTAL STABILITY: Mercury is stable, and persists for long periods in ambient environmental conditions. The following environmental data are available for this element:

The biological half-life of mercury in fish is approximately 2 to 3 years. Mercury bioaccumulates and concentrates in the food chain. Concentration may be as much as 10,000 times that of water. Mercury is concentrated by animals, plants and fishes. Chinook salmon fed contaminated fingerlings concentrated Mercury in the liver and kidneys. Methyl mercury is formed naturally in aquatic and terrestrial environments from elemental mercury. Methylation is likely to occur in upper sedimentary layers of sea or lake bottoms.

EFFECT OF MATERIAL ON PLANTS or ANIMALS: Mercury can be harmful or fatal to contaminated plant or animal life.

EFFECT OF CHEMICAL ON AQUATIC LIFE: Mercury can be harmful or fatal to contaminated aquatic plant or animal life in contaminated bodies of water. The following aquatic toxicity data are available for Mercury:

MERCURY:

LC_{50} (Catfish) = 0.35 mg/L/ 96 hours (conditions of bioassay not specified)
LC_{50} (*Modiolus carvalhoi*) (mollusk) = 0.5 ppm / 48 hours; 0.19 ppm - 96 hours (conditions of bioassay not specified)
LC_{50} (*Rana hexadactyla*) (tadpoles) = 0.051 ppm / 96 hours (conditions of bioassay not specified)

13. DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: Waste disposal must be in accordance with appropriate Federal, State, and local regulations. This product, if unaltered by use, should be recycled. If altered by use, recycling may be possible. Consult Bethlehem Apparatus Company for information. If Mercury must be disposed of as hazardous waste, it must be handled at a permitted facility or as advised by your local hazardous waste regulatory authority.

EPA WASTE NUMBER: Depending on the nature of the waste, one of the following RCRA codes will be applicable: U151 (Toxic Commercial Chemical Products/Mercury); D009 (Characteristic; Toxicity Characteristic Leaching Procedure; Regulated Level: 0.2 mg/L).

14. TRANSPORTATION INFORMATION

THIS MATERIAL IS HAZARDOUS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.

PROPER SHIPPING NAME: Mercury
HAZARD CLASS NUMBER and DESCRIPTION: 8 (Corrosive Material)
UN IDENTIFICATION NUMBER: UN 2809
PACKING GROUP: PG III
DOT LABEL(S) REQUIRED: Corrosive

NOTE: For transport by aircraft, Mercury must be packaged in packagings which meet the requirements of Packing Group I Performance Level. For transportation by other modes, Mercury must be packaged in packagings which meet the requirements of Packing Group III Performance Level or in non-specification reusable metal packagings. Refer to 49 CFR 173.164 for specific packaging requirements.

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MARINE POLLUTANT: Mercury is not listed as a Marine Pollutant, per Appendix B to 49 CFR 172.101.

TRANSPORT CANADA, TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: This material is considered as dangerous goods, per regulations of Transport Canada. Use the above U.S. DOT information for the preparation of Canadian Shipments.

15. REGULATORY INFORMATION

ADDITIONAL U.S. REGULATIONS:

U.S. SARA REPORTING REQUIREMENTS: Mercury is subject to the reporting requirements of Sections 302, 304, and 313 of Title III of the Superfund Amendments and Reauthorization Act, as follows:

CHEMICAL NAME	SARA 302 (40 CFR 355, Appendix A)	SARA 304 (40 CFR Table 302.4)	SARA 313 (40 CFR 372.65)
Mercury	No	YES	YES

U.S. SARA THRESHOLD PLANNING QUANTITY: There are no specific Threshold Planning Quantities for Mercury. The default Federal MSDS submission and inventory requirement filing threshold of 10,000 lbs. (4,540 kg) therefore applies, per 40 CFR 370.20.

U.S. TSCA INVENTORY STATUS: Mercury is listed on the TSCA Inventory.

U.S. CERCLA REPORTABLE QUANTITY (RQ): Mercury = 1 lb (0.454 kg)

OTHER U.S. FEDERAL REGULATIONS: Mercury is regulated as follows (other regulations may be applicable):

EPA: Mercury is listed as a Hazardous Air Pollutant (HAP) generally known or suspected to cause serious health problems. The Clean Air Act, as amended in 1990, directs EPA to set standards requiring major sources to sharply reduce routine emissions of toxic pollutants. EPA is required to establish and phase in specific performance based standards for all air emission sources that emit one or more of the listed pollutants. Mercury is included on this list.

FDA: The action level of 1.0 ppm total mercury in fish has been revised on September 12, 1984 by FDA to apply only to methyl mercury.

FIFRA: All uses of mercury are cancelled except the following: 1) as a fungicide in the treatment of textiles and fabrics intended for continuous outdoor use; 2) as a fungicide to control brown mold on freshly sawn lumber; 3) as a fungicide treatment to control Dutch elm disease; 4) as an in-can preservative in water based paints and coatings; 5) as a fungicide in water-based paints and coatings used for exterior application; 6) as a fungicide to control "winter turf diseases" such as Sclerotinia borealis, and gray and pink snow mold subject to the following: a. the use of these products shall be prohibited within 25 feet of any water body where fish are taken for human consumption. b. these products can be applied only by or under the direct supervision of golf course superintendents. These types of Mercury-containing products will be classified as restricted use pesticides when they are reregistered and classified in accordance with Section 4(C) of FEPCA.

U.S. STATE REGULATORY INFORMATION: Mercury is covered under specific State regulations, as denoted below:

Alaska - Designated Toxic and Hazardous Substances: Mercury.
California - Permissible Exposure Limits for Chemical Contaminants: Mercury.
Florida - Substance List: Mercury.
Illinois - Toxic Substance List: Mercury.
Kansas - Section 302/313 List: Mercury.
Massachusetts - Substance List: Mercury.
Michigan – Critical Materials Register: Mercury.
Minnesota - List of Hazardous Substances: Mercury.
Missouri - Employer Information/Toxic Substance List: Mercury.
New Jersey - Right to Know Hazardous Substance List: Mercury.
North Dakota - List of Hazardous Chemicals, Reportable Quantities: Mercury.
Pennsylvania - Hazardous Substance List: Mercury.
Rhode Island - Hazardous Substance List: Mercury.
Texas - Hazardous Substance List: Mercury.
West Virginia - Hazardous Substance List: Mercury.
Wisconsin - Toxic and Hazardous Substances: Mercury.

15. REGULATORY INFORMATION (Continued)

ADDITIONAL U.S. REGULATIONS (continued):

CALIFORNIA PROPOSITION 65: Mercury is on the California Proposition 65 lists. WARNING: Contains a chemical known to the State of California to cause birth defects or other reproductive harm.

LABELING (Precautionary Statements) ANSI LABELING (Z129.1):: **DANGER!** HIGHLY TOXIC AFTER LONG-TERM EXPOSURE. DANGER OF CUMULATIVE EFFECTS. MAY CAUSE DAMAGE TO THE NERVOUS SYSTEM, BLOOD SYSTEM, KIDNEYS, LIVER. REPRODUCTIVE HAZARD. HARMFUL OR FATAL IF INHALED OR SWALLOWED. MAY CAUSE ALLERGIC SKIN AND RESPIRATORY REACTION. CAUSES SKIN AND EYE IRRITATION Do not get on skin, in eyes, or on clothing. Avoid prolonged contact with the skin. Avoid breathing vapors and fumes. Do not take internally. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Wear gloves, goggles, face-shield, body protection, and NIOSH-approved respiratory protection, as appropriate. FIRST-AID: In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. If inhaled, remove to fresh air. If ingested, induce vomiting. Get medical attention immediately. IN CASE OF FIRE: Use water fog, dry chemical, CO_2, or "alcohol" foam. IN CASE OF SPILL: Vacuum released material, or use a Mercury Spill Kit. Containerize residue immediately, and label appropriately. Consult Material Safety Data Sheet for additional information.

ADDITIONAL CANADIAN REGULATIONS:

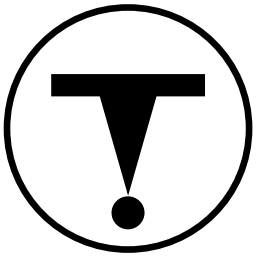
CANADIAN DSL/NDSL INVENTORY STATUS: Mercury is listed on the DSL Inventory.

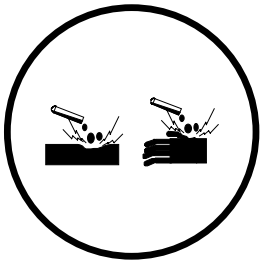
OTHER CANADIAN REGULATIONS: Not applicable.

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITIES SUBSTANCES LISTS: Mercury is not on the CEPA Priorities Substances Lists.

CANADIAN WHMIS SYMBOLS:
- D1B: Materials Causing Immediate and Serious Toxic Effects/Toxic Material
- D2A: Materials Causing Other Toxic Effects/Very Toxic Material
- D2B: Materials Causing Other Toxic Effects/Toxic Material
- E: Corrosive Material







16. OTHER INFORMATION

PREPARED BY: CHEMICAL SAFETY ASSOCIATES, Inc.
9163 Chesapeake Drive, San Diego, CA 92123-1002
(858) 565 - 0302

DATE OF PRINTING: May 1, 2000

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. Bethlehem Apparatus Company responsibility for injury to the vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, Bethlehem Apparatus Company for injury to vendee or third persons proximately caused by abnormal use of the material even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in his use of the material.

DEFINITIONS OF TERMS

A large number of abbreviations and acronyms appear on a MSDS. Some of these which are commonly used include the following:

CAS #: This is the Chemical Abstract Service Number which uniquely identifies each constituent.

EXPOSURE LIMITS IN AIR:

ACGIH - American Conference of Governmental Industrial Hygienists, a professional association which establishes exposure limits. **TLV -** Threshold Limit Value - an airborne concentration of a substance which represents conditions under which it is generally believed that nearly all workers may be repeatedly exposed without adverse effect. The duration must be considered, including the 8-hour Time Weighted Average **(TWA)**, the 15-minute Short Term Exposure Limit, and the instantaneous Ceiling Level **(C)**. Skin absorption effects must also be considered.

OSHA - U.S. Occupational Safety and Health Administration.

PEL - Permissible Exposure Limit - This exposure value means exactly the same as a TLV, except that it is enforceable by OSHA. The OSHA Permissible Exposure Limits are based in the 1989 PELs and the June, 1993 Air Contaminants Rule (Federal Register: 58: 35338-35351 and 58: 40191). Both the current PELs and the vacated PELs are indicated. The phrase, "Vacated 1989 PEL," is placed next to the PEL which was vacated by Court Order. **IDLH -** Immediately Dangerous to Life and Health **-** This level represents a concentration from which one can escape within 30-minutes without suffering escape-preventing or permanent injury. **The DFG - MAK** is the Republic of Germany's Maximum Exposure Level, similar to the U.S. PEL. **NIOSH** is the National Institute of Occupational Safety and Health, which is the research arm of the U.S. Occupational Safety and Health Administration (**OSHA**). NIOSH issues exposure guidelines called Recommended Exposure Levels (**REL**s). When no exposure guidelines are established, an entry of **NE** is made for reference.

HAZARD RATINGS:

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM: Health Hazard: **0** (minimal acute or chronic exposure hazard); **1** (slight acute or chronic exposure hazard); **2** (moderate acute or significant chronic exposure hazard); **3** (severe acute exposure hazard; onetime overexposure can result in permanent injury and may be fatal); **4** (extreme acute exposure hazard; onetime overexposure can be fatal). Flammability Hazard: **0** (minimal hazard); **1** (materials that require substantial pre-heating before burning); **2** (combustible liquid or solids; liquids with a flash point of 38-93°C [100-200°F]); **3** (Class IB and IC flammable liquids with flash points below 38°C [100°F]); **4** (Class IA flammable liquids with flash points below 23°C [73°F] and boiling points below 38°C [100°F]. Reactivity Hazard: **0** (normally stable); 1 (material that can become unstable at elevated temperatures or which can react slightly with water); **2** (materials that are unstable but do not detonate or which can react violently with water); **3** (materials that can detonate when initiated or which can react explosively with water); **4** (materials that can detonate at normal temperatures or pressures).

NATIONAL FIRE PROTECTION ASSOCIATION: Health Hazard: **0** (material that on exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials); **1** (materials that on exposure under fire conditions could cause irritation or minor residual injury); **2** (materials that on intense or continued exposure under fire conditions could cause temporary incapacitation or possible residual injury); **3** (materials that can on short exposure could cause serious temporary or residual injury); **4** (materials that under very short exposure causes death or major residual injury). Flammability Hazard and Reactivity Hazard: Refer to definitions for "Hazardous Materials Identification System".

FLAMMABILITY LIMITS IN AIR:

Much of the information related to fire and explosion is derived from the National Fire Protection Association (**NFPA**). Flash Point - Minimum temperature at which a liquid gives off sufficient vapors to form an ignitable mixture with air. Autoignition Temperature: The minimum temperature required to initiate combustion in air with no other source of ignition. LEL - the lowest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source. UEL - the highest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source.

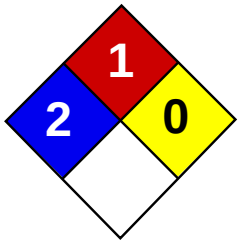
TOXICOLOGICAL INFORMATION:

Human and Animal Toxicology: Possible health hazards as derived from human data, animal studies, or from the results of studies with similar compounds are presented. Definitions of some terms used in this section are: **LD_{50}** - Lethal Dose (solids & liquids) which kills 50% of the exposed animals; **LC_{50}** - Lethal Concentration (gases) which kills 50% of the exposed animals; **ppm** concentration expressed in parts of material per million parts of air or water; **mg/m^3** concentration expressed in weight of substance per volume of air; **mg/kg** quantity of material, by weight, administered to a test subject, based on their body weight in kg. Other measures of toxicity include **TDLo**, the lowest dose to cause a symptom and **TCLo** the lowest concentration to cause a symptom; **TDo**, **LDLo**, and **LDo**, or **TC**, **TCo**, **LCLo**, and **LCo**, the lowest dose (or concentration) to cause lethal or toxic effects. **Cancer Information:** The sources are: **IARC** - the International Agency for Research on Cancer; **NTP** - the National Toxicology Program, **RTECS** - the Registry of Toxic Effects of Chemical Substances, **OSHA** and **CAL/OSHA**. IARC and NTP rate chemicals on a scale of decreasing potential to cause human cancer with rankings from 1 to 4. Subrankings (2A, 2B, etc.) are also used. **Other Information: BEI** - ACGIH Biological Exposure Indices, represent the levels of determinants which are most likely to be observed in specimens collected from a healthy worker who has been exposed to chemicals to the same extent as a worker with inhalation exposure to the TLV. **Ecological Information:** EC is the effect concentration in water. **BCF** = Bioconcentration Factor, which is used to determine if a substance will concentrate in lifeforms which consume contaminated plant or animal matter. Coefficient of Oil/Water Distribution is represented by **log K_{ow}** or **log K_{oc}** and is used to assess a substance's behavior in the environment.

REGULATORY INFORMATION:

This section explains the impact of various laws and regulations on the material. **U.S.: EPA** is the U.S. Environmental Protection Agency. **DOT** is the U.S. Department of Transportation. **SARA** is the Superfund Amendments and Reauthorization Act. **TSCA** is the U.S. Toxic Substance Control Act. **CERCLA (or Superfund)** refers to the Comprehensive Environmental Response, Compensation, and Liability Act. Labeling is per the American National Standards Institute (**ANSI Z129.1**). **CANADA: CEPA** is the Canadian Environmental Protection Act. **WHMIS** is the Canadian Workplace Hazardous Materials Information System. **TC** is Transport Canada. **DSL/NDSL** are the Canadian Domestic/Non-Domestic Substances Lists. **The CPR is the Canadian Product Regulations.** This section also includes information on the precautionary warnings which appear on the materials package label.







Material Safety Data Sheet
Phenanthrene MSDS

Section 1: Chemical Product and Company Identification

Product Name: Phenanthrene

Catalog Codes: SLP1318

CAS#: 85-01-8

RTECS: SF7175000

TSCA: TSCA 8(b) inventory: Phenanthrene

CI#: Not available.

Synonym:

Chemical Name: Not available.

Chemical Formula: C14H10

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:
1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Phenanthrene	85-01-8	100

Toxicological Data on Ingredients: Phenanthrene: ORAL (LD50): Acute: 700 mg/kg [Mouse].

Section 3: Hazards Identification

Potential Acute Health Effects:
Hazardous in case of skin contact (irritant, sensitizer), of eye contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (permeator).

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. Repeated or prolonged exposure is not known to aggravate medical condition.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Do not use an eye ointment. Seek medical attention.

Skin Contact:
After contact with skin, wash immediately with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Cover the irritated skin with an emollient. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation: Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

Serious Inhalation: Not available.

Ingestion:
Do not induce vomiting. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: May be combustible at high temperature.

Auto-Ignition Temperature: Not available.

Flash Points: OPEN CUP: 171°C (339.8°F).

Flammable Limits: Not available.

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances: Not available.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill:
Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Large Spill:
Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.

Section 7: Handling and Storage

Precautions:
Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe dust. Wear suitable protective clothing In

case of insufficient ventilation, wear suitable respiratory equipment If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes

Storage:
Keep container dry. Keep in a cool place. Ground all equipment containing material. Keep container tightly closed. Keep in a cool, well-ventilated place. Combustible materials should be stored away from extreme heat and away from strong oxidizing agents.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection:
Splash goggles. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits: Not available.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid.

Odor: Not available.

Taste: Not available.

Molecular Weight: 178.22 g/mole

Color: Not available.

pH (1% soln/water): Not available.

Boiling Point: 340°C (644°F)

Melting Point: 101°C (213.8°F)

Critical Temperature: Not available.

Specific Gravity: 1.179 (Water = 1)

Vapor Pressure: Not applicable.

Vapor Density: 6.14 (Air = 1)

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility: Very slightly soluble in cold water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

Incompatibility with various substances: Not available.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: No.

Section 11: Toxicological Information

Routes of Entry: Eye contact. Inhalation. Ingestion.

Toxicity to Animals: Acute oral toxicity (LD50): 700 mg/kg [Mouse].

Chronic Effects on Humans: Not available.

Other Toxic Effects on Humans:
Hazardous in case of skin contact (irritant, sensitizer), of ingestion, of inhalation. Slightly hazardous in case of skin contact (permeator).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans: Not available.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are more toxic.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Section 14: Transport Information

DOT Classification: Not a DOT controlled material (United States).

Identification: Not applicable.

Special Provisions for Transport: Not applicable.

Section 15: Other Regulatory Information

Federal and State Regulations: TSCA 8(b) inventory: Phenanthrene

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:

WHMIS (Canada): Not controlled under WHMIS (Canada).

DSCL (EEC):
R36/38- Irritating to eyes and skin. R43- May cause sensitization by skin contact.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 1

Reactivity: 0

Personal Protection: E

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 1

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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Last Updated: 11/06/2008 12:00 PM

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MATERIAL SAFETY DATA SHEET

(POLYCHLORINATED BIPHENYLS)

COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients Name: polychlorinated biphenyls (PCBs)

HAZARD IDENTIFICATION

Reports of Carcinogenicity: YES

HEALTH HAZARDS ACUTE AND CHRONIC

- **Eyes**: Moderately irritating to eye tissues.
- **Skin**: Can be absorbed through intact skin, may cause de-fatting, potential for chloracne.
- **Inhalation**: Possible liver injury.
- **Ingestion**: Slightly toxic; reasonably anticipated to be carcinogenic.

EFFECTS OF OVER-EXPOSURE

Can cause dermatological symptoms; however, these are reversible upon removal of exposure source.

FIRST AID MEASURES

- **Eyes**: Irrigate immediately with copious quantities of running water for at least 15 minutes if liquid or solid PCBs get into them.
- **Skin:** Contaminated clothing should be removed and the skin washed thoroughly with soap and water. Hot PCBs may cause thermal burns.
- **Inhalation**: Remove to fresh air; if skin rash or respiratory irritation persists, consult a physician (if electrical equipment arcs over, PCBs may decompose to produce hydrochloric acid).
- **Ingestion**: Consult a physician. Do not induce vomiting or give any oily laxatives. (If large amounts are ingested, gastric lavage is suggested).

FIRE FIGHTING MEASURES: Flash Point: >141 ^{o}C (285.8 ^{o}F)

EXTINGUISHING MEDIA: PCBs are fire-resistant compounds.

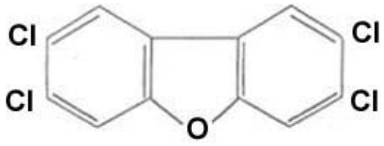
FIRE-FIGHTING PROCEDURES

Standard fire-fighting wearing apparel and self-contained breathing apparatus should be worn when fighting fires that involve possible exposure to chemical combustion products. Fire fighting equipment should be thoroughly cleaned and decontaminated after use.

UNUSUAL FIRE/EXPLOSION HAZARD

If a PCB transformer is involved in a fire-related incident, the owner of the transformer is required to report the incident. Consult and follow appropriate federal, provincial and local regulations.

***Note**: When askarel liquid becomes involved in a fire, toxic by-products of combustion are typically produced including polychlorinated dibenzofurans and polychlorinated dibenzodioxins, both known carcinogens. The structures of these chemical species are as follows:*

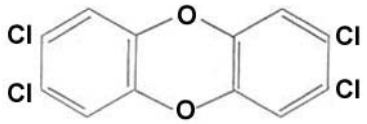


TCDF

$C_{12}H_{8-n}Cl_nO$

$n = 4 - 8$

2,3,7,8-tetrachlorodibenzofuran



TCDD

$C_{12}H_{8-n}Cl_nO_2$

$n = 4 - 8$

2,3,7,8-tetrachloro-dibenzo-p-dioxin

***Note**: 2,3,7,8-tetrachloro-dibenzo-p-dioxin is one of the most potent teratogenic, mutagenic and carcinogenic agents known to man.*

SPILL RELEASE PROCEDURES

Cleanup & disposal of liquid PCBs are strictly regulated by the federal government. Ventilate area. Contain spill/leak. Remove spill by means of absorptive material. Spill clean-up personnel should use proper protective clothing. All wastes and residues containing PCBs should be collected, containerized, marked and disposed of in the manner prescribed by applicable federal, provincial and local laws.

HANDLING AND STORAGE PRECAUTIONS

Care should be taken to prevent entry into the environment through spills, leakage, use, vaporization, or disposal of liquid. Avoid prolonged breathing of vapours or mists. Avoid contact with eyes or prolonged contact with skin. Comply with all federal, provincial and local regulations.

OTHER PRECAUTIONS

Federal regulations require PCBs, PCB items, storage areas, transformer vaults, and transport vehicles to be appropriately labelled.

RESPIRATORY PROTECTION

Use OHSA approved equipment when airborne exposure limits are exceeded. Full facepiece equipment is recommended and, if used, replaces need for face shield and/or chemical splash goggles. The respirator use limitations specified by the manufacturer must be observed.

VENTILATION

Provide natural or mechanical ventilation to control exposure levels below airborne exposure levels.

PROTECTIVE GLOVES: Wear appropriate chemical resistant gloves to prevent skin contact.

EYE PROTECTION: Wear chemical splash goggles and have eye baths available.

OTHER PROTECTIVE EQUIPMENT

Wear appropriate protective clothing. Provide a safety shower at any location where skin contact can occur.

WORK HYGIENIC PRACTICES

Wash thoroughly after handling. Supplemental safety and health : none

PHYSICAL/CHEMICAL PROPERTIES

- **Vapour pressure:** (mm Hg @100 ^{o}F) 0.005 - 0.00006
- **Viscosity:** (CENTISTOKES) 3.6 - 540
- **Stability indicator/materials to avoid:** Yes
- **Stability Condition to Avoid:** PCBs are very stable, fire-resistant compounds.

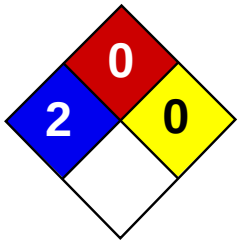
HAZARDOUS DECOMPOSITION PRODUCTS

Carbon monoxide, carbon dioxide, hydrogen chloride, phenolics, aldehydes, furans, dioxins

WASTE DISPOSAL METHODS

Consult the applicable PCB regulations prior to any disposal of PCBs or PCB-contaminated items.







Material Safety Data Sheet
Tetrachloroethylene MSDS

Section 1: Chemical Product and Company Identification

Product Name: Tetrachloroethylene

Catalog Codes: SLT3220

CAS#: 127-18-4

RTECS: KX3850000

TSCA: TSCA 8(b) inventory: Tetrachloroethylene

CI#: Not available.

Synonym: Perchloroethylene; 1,1,2,2-Tetrachloroethylene; Carbon bichloride; Carbon dichloride; Ankilostin; Didakene; Dilatin PT; Ethene, tetrachloro-; Ethylene tetrachloride; Perawin; Perchlor; Perclene; Perclene D; Percosolvel; Tetrachloroethene; Tetraleno; Tetralex; Tetravec; Tetroguer; Tetropil

Chemical Name: Ethylene, tetrachloro-

Chemical Formula: C2-Cl4

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Tetrachloroethylene	127-18-4	100

Toxicological Data on Ingredients: Tetrachloroethylene: ORAL (LD50): Acute: 2629 mg/kg [Rat]. DERMAL (LD): Acute: >3228 mg/kg [Rabbit]. MIST(LC50): Acute: 34200 mg/m 8 hours [Rat]. VAPOR (LC50): Acute: 5200 ppm 4 hours [Mouse].

Section 3: Hazards Identification

Potential Acute Health Effects:
Hazardous in case of skin contact (irritant), of inhalation. Slightly hazardous in case of skin contact (permeator), of eye contact (irritant), of ingestion.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Classified A3 (Proven for animal.) by ACGIH. Classified 2A (Probable for human.) by IARC, 2 (anticipated carcinogen) by NTP. MUTAGENIC EFFECTS: Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to kidneys, liver, peripheral nervous system, respiratory tract, skin, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.

Skin Contact:
In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms appear.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Non-flammable.

Auto-Ignition Temperature: Not applicable.

Flash Points: Not applicable.

Flammable Limits: Not applicable.

Products of Combustion: Not available.

Fire Hazards in Presence of Various Substances: Not applicable.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions: Not applicable.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:
Absorb with an inert material and put the spilled material in an appropriate waste disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Do not ingest. Do not breathe gas/fumes/ vapor/spray. Avoid contact with skin. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents, metals, acids, alkalis.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value.

Personal Protection:
Safety glasses. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 25 (ppm) from OSHA (PEL) [United States] TWA: 25 STEL: 100 (ppm) from ACGIH (TLV) [United States] TWA: 170 (mg/m3) from OSHA (PEL) [United States] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Ethereal.

Taste: Not available.

Molecular Weight: 165.83 g/mole

Color: Clear Colorless.

pH (1% soln/water): Not available.

Boiling Point: 121.3°C (250.3°F)

Melting Point: -22.3°C (-8.1°F)

Critical Temperature: 347.1°C (656.8°F)

Specific Gravity: 1.6227 (Water = 1)

Vapor Pressure: 1.7 kPa (@ 20°C)

Vapor Density: 5.7 (Air = 1)

Volatility: Not available.

Odor Threshold: 5 - 50 ppm

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 3.4

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility:
Miscible with alcohol, ether, chloroform, benzene, hexane. It dissolves in most of the fixed and volatile oils. Solubility in water: 0.015 g/100 ml @ 25 deg. C It slowly decomposes in water to yield Trichloroacetic and Hydrochloric acids.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Incompatible materials

Incompatibility with various substances: Reactive with oxidizing agents, metals, acids, alkalis.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity:
Oxidized by strong oxidizing agents. Incompatible with sodium hydroxide, finely divided or powdered metals such as zinc, aluminum, magnesium, potassium, chemically active metals such as lithium, beryllium , barium. Protect from light.

Special Remarks on Corrosivity: Slowly corrodes aluminum, iron, and zinc.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:
WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 2629 mg/kg [Rat]. Acute dermal toxicity (LD50): >3228 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 5200 4 hours [Mouse].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified A3 (Proven for animal.) by ACGIH. Classified 2A (Probable for human.) by IARC, 2 (Some evidence.) by NTP. MUTAGENIC EFFECTS: Mutagenic for bacteria and/or yeast. May cause damage to the following organs: kidneys, liver, peripheral nervous system, upper respiratory tract, skin, central nervous system (CNS).

Other Toxic Effects on Humans:
Hazardous in case of skin contact (irritant), of inhalation. Slightly hazardous in case of skin contact (permeator), of ingestion.

Special Remarks on Toxicity to Animals:
Lowest Publishe Lethal Dose/Conc: LDL [Rabbit] - Route: Oral; Dose: 5000 mg/kg LDL [Dog] - Route: Oral; Dose: 4000 mg/kg LDL [Cat] - Route: Oral; Dose: 4000 mg/kg

Special Remarks on Chronic Effects on Humans:
May cause adverse reproductive effects and birth defects(teratogenic). May affect genetic material (mutagenic). May cause cancer.

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: Causes skin irritation with possible dermal blistering or burns. Symtoms may include redness, itching, pain, and possible dermal blistering or burns. It may be absorbed through the skin with possible systemic effects. A single prolonged skin exposure is not likely to result in the material being absorbed in harmful amounts. Eyes: Contact causes transient eye irritation, lacrimation. Vapors cause eye/conjunctival irritation. Symptoms may include redness and pain. Inhalation: The main route to occupational exposure is by inhalation since it is readily absorbed through the lungs. It causes respiratory tract irritation, . It can affect behavior/central nervous system (CNS depressant and anesthesia ranging from slight inebriation to death, vertigo, somnolence, anxiety, headache, excitement, hallucinations, muscle incoordination, dizziness, lightheadness, disorentiation, seizures, enotional instability, stupor, coma). It may cause pulmonary edema Ingestion: It can cause nausea, vomiting, anorexia, diarrhea, bloody stool. It may affect the liver, urinary system (proteinuria, hematuria, renal failure, renal tubular disorder), heart (arrhythmias). It may affect behavior/central nervous system with symptoms similar to that of inhalation. Chronic Potential Health Effects: Skin: Prolonged or repeated skin contact may result in excessive drying of the skin, and irritation. Ingestion/Inhalation: Chronic exposure can affect the liver(hepatitis,fatty liver degeneration), kidneys, spleen, and heart (irregular heartbeat/arrhythmias, cardiomyopathy, abnormal EEG), brain, behavior/ central nervous system/peripheral nervous system (impaired memory, numbness of extremeties, peripheral neuropathy and other

Section 12: Ecological Information

Ecotoxicity:
Ecotoxicity in water (LC50): 18.4 mg/l 96 hours [Fish (Fatthead Minnow)]. 18 mg/l 48 hours [Daphnia (daphnia)]. 5 mg/l 96 hours [Fish (Rainbow Trout)]. 13 mg/l 96 hours [Fish (Bluegill sunfish)].

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The product itself and its products of degradation are not toxic.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 6.1: Poisonous material.

Identification: : Tetrachloroethylene UNNA: 1897 PG: III

Special Provisions for Transport: Marine Pollutant

Section 15: Other Regulatory Information

Federal and State Regulations:
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Tetrachloroethylene California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Tetrachloroethylene Connecticut hazardous material survey.: Tetrachloroethylene Illinois toxic substances disclosure to employee act: Tetrachloroethylene Illinois chemical safety act: Tetrachloroethylene New York release reporting list: Tetrachloroethylene Rhode Island RTK hazardous substances: Tetrachloroethylene Pennsylvania RTK: Tetrachloroethylene Minnesota: Tetrachloroethylene Michigan critical material: Tetrachloroethylene Massachusetts RTK: Tetrachloroethylene Massachusetts spill list: Tetrachloroethylene New Jersey: Tetrachloroethylene New Jersey spill list: Tetrachloroethylene Louisiana spill reporting: Tetrachloroethylene California Director's List of Hazardous Substances: Tetrachloroethylene TSCA 8(b) inventory: Tetrachloroethylene TSCA 8(d) H and S data reporting: Tetrachloroethylene: Effective date: 6/1/87; Sunset date: 6/1/97 SARA 313 toxic chemical notification and release reporting: Tetrachloroethylene CERCLA: Hazardous substances.: Tetrachloroethylene: 100 lbs. (45.36 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS D-1B: Material causing immediate and serious toxic effects (TOXIC). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):
R40- Possible risks of irreversible effects. R51/53- Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. S23- Do not breathe gas/fumes/vapour/spray S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S37- Wear suitable gloves. S61- Avoid release to the environment. Refer to special instructions/Safety data sheets.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 0

Reactivity: 0

Personal Protection: g

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 0

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Safety glasses.

Section 16: Other Information

References: Not available.

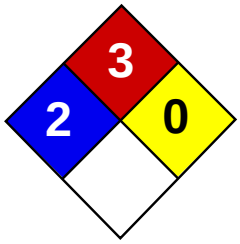
Other Special Considerations: Not available.

Created: 10/10/2005 08:29 PM

Last Updated: 11/06/2008 12:00 PM

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Material Safety Data Sheet
Toluene MSDS

Section 1: Chemical Product and Company Identification

Product Name: Toluene

Catalog Codes: SLT2857, SLT3277

CAS#: 108-88-3

RTECS: XS5250000

TSCA: TSCA 8(b) inventory: Toluene

CI#: Not available.

Synonym: Toluol, Tolu-Sol; Methylbenzene; Methacide; Phenylmethane; Methylbenzol

Chemical Name: Toluene

Chemical Formula: C6-H5-CH3 or C7-H8

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Toluene	108-88-3	100

Toxicological Data on Ingredients: Toluene: ORAL (LD50): Acute: 636 mg/kg [Rat]. DERMAL (LD50): Acute: 14100 mg/kg [Rabbit]. VAPOR (LC50): Acute: 49000 mg/m 4 hours [Rat]. 440 ppm 24 hours [Mouse].

Section 3: Hazards Identification

Potential Acute Health Effects:
Hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (permeator).

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to blood, kidneys, the nervous system, liver, brain, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

Skin Contact:
In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 480°C (896°F)

Flash Points: CLOSED CUP: 4.4444°C (40°F). (Setaflash) OPEN CUP: 16°C (60.8°F).

Flammable Limits: LOWER: 1.1% UPPER: 7.1%

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances:
Flammable in presence of open flames and sparks, of heat. Non-flammable in presence of shocks.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
Flammable liquid, insoluble in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray or fog.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards:
Toluene forms explosive reaction with 1,3-dichloro-5,5-dimethyl-2,4-imidazolididione; dinitrogen tetraoxide; concentrated nitric acid, sulfuric acid + nitric acid; N2O4; AgClO4; BrF3; Uranium hexafluoride; sulfur dichloride. Also forms an explosive mixture with tetranitromethane.

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:
Toxic flammable liquid, insoluble or very slightly soluble in water. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents.

Storage:
Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 200 STEL: 500 CEIL: 300 (ppm) from OSHA (PEL) [United States] TWA: 50 (ppm) from ACGIH (TLV) [United States] SKIN TWA: 100 STEL: 150 from NIOSH [United States] TWA: 375 STEL: 560 (mg/m3) from NIOSH [United States] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Sweet, pungent, Benzene-like.

Taste: Not available.

Molecular Weight: 92.14 g/mole

Color: Colorless.

pH (1% soln/water): Not applicable.

Boiling Point: 110.6°C (231.1°F)

Melting Point: -95°C (-139°F)

Critical Temperature: 318.6°C (605.5°F)

Specific Gravity: 0.8636 (Water = 1)

Vapor Pressure: 3.8 kPa (@ 25°C)

Vapor Density: 3.1 (Air = 1)

Volatility: Not available.

Odor Threshold: 1.6 ppm

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 2.7

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, diethyl ether, acetone.

Solubility:
Soluble in diethyl ether, acetone. Practically insoluble in cold water. Soluble in ethanol, benzene, chloroform, glacial acetic acid, carbon disulfide. Solubility in water: 0.561 g/l @ 25 deg. C.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Heat, ignition sources (flames, sparks, static), incompatible materials

Incompatibility with various substances: Reactive with oxidizing agents.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity:
Incompatible with strong oxidizers, silver perchlorate, sodium difluoride, Tetranitromethane, Uranium Hexafluoride. Frozen Bromine Trifluoride reacts violently with Toluene at -80 deg. C. Reacts chemically with nitrogen oxides, or halogens to form nitrotoluene, nitrobenzene, and nitrophenol and halogenated products, respectively.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:
WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 636 mg/kg [Rat]. Acute dermal toxicity (LD50): 14100 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 440 24 hours [Mouse].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC. May cause damage to the following organs: blood, kidneys, the nervous system, liver, brain, central nervous system (CNS).

Other Toxic Effects on Humans:
Hazardous in case of skin contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (permeator).

Special Remarks on Toxicity to Animals:
Lowest Published Lethal Dose: LDL [Human] - Route: Oral; Dose: 50 mg/kg LCL [Rabbit] - Route: Inhalation; Dose: 55000 ppm/40min

Special Remarks on Chronic Effects on Humans:
Detected in maternal milk in human. Passes through the placental barrier in human. Embryotoxic and/or foetotoxic in animal. May cause adverse reproductive effects and birth defects (teratogenic). May affect genetic material (mutagenic)

Special Remarks on other Toxic Effects on Humans:

Acute Potential Health Effects: Skin: Causes mild to moderate skin irritation. It can be absorbed to some extent through the skin. Eyes: Cauess mild to moderate eye irritation with a burning sensation. Splash contact with eyes also causes conjunctivitis, blepharospasm, corneal edema, corneal abraisons. This usually resolves in 2 days. Inhalation: Inhalation of vapor may cause respiratory tract irritation causing coughing and wheezing, and nasal discharge. Inhalation of high concentrations may affect behavior and cause central nervous system effects characterized by nausea, headache, dizziness, tremors, restlessness, lightheadedness, exhilaration, memory loss, insomnia, impaired reaction time, drowsiness, ataxia, hallucinations, somnolence, muscle contraction or spasticity, unconsciousness and coma. Inhalation of high concentration of vapor may also affect the cardiovascular system (rapid heart beat, heart palpitations, increased or decreased blood pressure, dysrhythmia,), respiration (acute pulmonary edema, respiratory depression, apnea, asphyxia), cause vision disturbances and dilated pupils, and cause loss of appetite. Ingestion: Aspiration hazard. Aspiration of Toluene into the lungs may cause chemical pneumonitis. May cause irritation of the digestive tract with nausea, vomiting, pain. May have effects similar to that of acute inhalation. Chronic Potential Health Effects: Inhalation and Ingestion: Prolonged or repeated exposure via inhalation may cause central nervous system and cardiovascular symptoms similar to that of acute inhalation and ingestion as well liver damage/failure, kidney damage/failure (with hematuria, proteinuria, oliguria, renal tubular acidosis), brain damage, weight loss, blood (pigmented or nucleated red blood cells, changes in white blood cell count), bone marrow changes, electrolyte imbalances (Hypokalemia, Hypophostatemia), severe, muscle weakness and Rhabdomyolysis. Skin: Repeated or prolonged skin contact may cause defatting dermatitis.

Section 12: Ecological Information

Ecotoxicity:
Ecotoxicity in water (LC50): 313 mg/l 48 hours [Daphnia (daphnia)]. 17 mg/l 24 hours [Fish (Blue Gill)]. 13 mg/l 96 hours [Fish (Blue Gill)]. 56 mg/l 24 hours [Fish (Fathead minnow)]. 34 mg/l 96 hours [Fish (Fathead minnow)]. 56.8 ppm any hours [Fish (Goldfish)].

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 3: Flammable liquid.

Identification: : Toluene UNNA: 1294 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Toluene California prop. 65 (no significant risk level): Toluene: 7 mg/day (value) California prop. 65 (acceptable daily intake level): Toluene: 7 mg/day (value) California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: Toluene Connecticut hazardous material survey.: Toluene Illinois

toxic substances disclosure to employee act: Toluene Illinois chemical safety act: Toluene New York release reporting list: Toluene Rhode Island RTK hazardous substances: Toluene Pennsylvania RTK: Toluene Florida: Toluene Minnesota: Toluene Michigan critical material: Toluene Massachusetts RTK: Toluene Massachusetts spill list: Toluene New Jersey: Toluene New Jersey spill list: Toluene Louisiana spill reporting: Toluene California Director's List of Hazardous Substances.: Toluene TSCA 8(b) inventory: Toluene TSCA 8(d) H and S data reporting: Toluene: Effective date: 10/04/82; Sunset Date: 10/0/92 SARA 313 toxic chemical notification and release reporting: Toluene CERCLA: Hazardous substances.: Toluene: 1000 lbs. (453.6 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):
R11- Highly flammable. R20- Harmful by inhalation. S16- Keep away from sources of ignition - No smoking. S25- Avoid contact with eyes. S29- Do not empty into drains. S33- Take precautionary measures against static discharges.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 3

Reactivity: 0

Personal Protection: h

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 3

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

References: Not available.

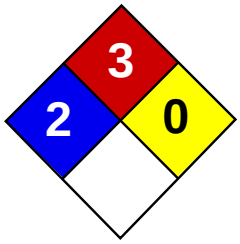
Other Special Considerations: Not available.

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Material Safety Data Sheet
Xylenes MSDS

Section 1: Chemical Product and Company Identification

Product Name: Xylenes

Catalog Codes: SLX1075, SLX1129, SLX1042, SLX1096

CAS#: 1330-20-7

RTECS: ZE2100000

TSCA: TSCA 8(b) inventory: Xylenes

CI#: Not available.

Synonym: Xylenes; Dimethylbenzene; xylol; methyltoluene

Chemical Name: Xylenes (o-, m-, p- isomers)

Chemical Formula: C6H4(CH3)2

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Xylenes	1330-20-7	100

Toxicological Data on Ingredients: Xylenes: ORAL (LD50): Acute: 4300 mg/kg [Rat]. 2119 mg/kg [Mouse]. DERMAL (LD50): Acute: >1700 mg/kg [Rabbit].

Section 3: Hazards Identification

Potential Acute Health Effects: Hazardous in case of skin contact (irritant, permeator), of eye contact (irritant), of ingestion, of inhalation.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: 3 (Not classifiable for human.) by IARC. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to blood, kidneys, liver, mucous membranes, bone marrow, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

Skin Contact:
In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms appear.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 464°C (867.2°F)

Flash Points: CLOSED CUP: 24°C (75.2°F). (Tagliabue.) OPEN CUP: 37.8°C (100°F).

Flammable Limits: LOWER: 1% UPPER: 7%

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances:
Highly flammable in presence of open flames and sparks, of heat. Non-flammable in presence of shocks.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Slightly explosive in presence of open flames and sparks, of heat.

Fire Fighting Media and Instructions:
Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion.

Special Remarks on Fire Hazards: Vapors may travel to source of ignition and flash back.

Special Remarks on Explosion Hazards:
Vapors may form explosive mixtures with air. Containers may explode when heated. May polymerize explosively when heated. An attempt to chlorinate xylene with 1,3-Dichloro-5,5-dimethyl-2,4-imidazolidindione (dichlorohydrantoin) caused a violent explosion

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:
Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined

areas; dike if needed. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, acids.

Storage:
Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 100 (ppm) [Canada] TWA: 435 (mg/m3) [Canada] TWA: 434 STEL: 651 (mg/m3) from ACGIH (TLV) [United States] TWA: 100 STEL: 150 (ppm) from ACGIH (TLV) [United States] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Sweetish.

Taste: Not available.

Molecular Weight: 106.17 g/mole

Color: Colorless. Clear

pH (1% soln/water): Not available.

Boiling Point: 138.5°C (281.3°F)

Melting Point: -47.4°C (-53.3°F)

Critical Temperature: Not available.

Specific Gravity: 0.864 (Water = 1)

Vapor Pressure: 0.9 kPa (@ 20°C)

Vapor Density: 3.7 (Air = 1)

Volatility: Not available.

Odor Threshold: 1 ppm

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 3.1

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility:
Insoluble in cold water, hot water. Miscible with absolute alcohol, ether, and many other organic liquids.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Heat, ignition sources, incompatibles

Incompatibility with various substances: Reactive with oxidizing agents, acids.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Store away from acetic acid, nitric acid, chlorine, bromine, and fluorine.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation.

Toxicity to Animals:
WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 2119 mg/kg [Mouse]. Acute dermal toxicity (LD50): >1700 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 5000 4 hours [Rat].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: 3 (Not classifiable for human.) by IARC. May cause damage to the following organs: blood, kidneys, liver, mucous membranes, bone marrow, central nervous system (CNS).

Other Toxic Effects on Humans: Hazardous in case of skin contact (irritant, permeator), of ingestion, of inhalation.

Special Remarks on Toxicity to Animals:
Lowest Lethal Dose: LDL [Human] - Route: Oral; Dose: 50 mg/kg LCL [Man] - Route: Oral; Dose: 10000 ppm/6H

Special Remarks on Chronic Effects on Humans:
Detected in maternal milk in human. Passes through the placental barrier in animal. Embryotoxic and/or foetotoxic in animal. May cause adverse reproductive effects (male and femael fertility (spontaneous abortion and fetotoxicity)) and birth defects based animal data.

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: Causes skin irritation. Can be absorbed through skin. Eyes: Causes eye irritation. Inhalation: Vapor causes respiratory tract and mucous membrane irritation. May affect central nervous system and behavior (General anesthetic/CNS depressant with effects including headache, weakness, memory loss, irritability, dizziness, giddiness, loss of coordination and judgement, respiratory depression/arrest or difficulty breathing, loss of appetite, nausea, vomiting, shivering, and possible coma and death). May also affects blood, sense organs, liver, and peripheral nerves. Ingestion: May cause gastrointestinal irritation including abdominal pain, vomiting, and nausea. May also affect liver and urinary system/ kidneys. May cause effects similar to those of acute inhalation. Chronic Potential Health Effects: Chronic inhalation may affect the urinary system (kidneys) blood (anemia), bone marrow (hyperplasia of bone marrow) brain/behavior/Central Nervous system. Chronic inhalation may alsocause mucosal bleeding. Chronic ingestion may affect the liver and metabolism (loss of appetite) and may affect urinary system (kidney damage)

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 3: Flammable liquid.

Identification: : Xylenes UNNA: 1307 PG: III

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
Connecticut hazardous material survey.: Xylenes Illinois chemical safety act: Xylenes New York acutely hazardous substances: Xylenes Rhode Island RTK hazardous substances: Xylenes Pennsylvania RTK: Xylenes Minnesota: Xylenes Michigan critical material: Xylenes Massachusetts RTK: Xylenes Massachusetts spill list: Xylenes New Jersey: Xylenes New Jersey spill list: Xylenes Louisiana spill reporting: Xylenes California Director's List of Hazardous Substances: Xylenes TSCA 8(b) inventory: Xylenes SARA 302/304/311/312 hazardous chemicals: Xylenes SARA 313 toxic chemical notification and release reporting: Xylenes CERCLA: Hazardous substances.: Xylenes: 100 lbs. (45.36 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):
R10- Flammable. R21- Harmful in contact with skin. R36/38- Irritating to eyes and skin. S2- Keep out of the reach of children. S36/37- Wear suitable protective clothing and gloves. S46- If swallowed, seek medical advice immediately and show this container or label.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 3

Reactivity: 0

Personal Protection: h

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 3

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

Created: 10/11/2005 12:54 PM

Last Updated: 11/06/2008 12:00 PM

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Lessons Learned/Accident Reporting & Investigation Forms

☐ **Roux Associates, Inc.** ☐ **Remedial Engineering, P.C.**
(Check applicable company name)

ACCIDENT REPORT

Joe Gentile, Corporate Health and Safety Manager
Cell: (610) 844-6911; Office: (856) 423-8800; Office FAX: (856) 423-3220; Home: (484) 373-0953

PART 1: ADMINISTRATIVE INFORMATION

Project #: _____
Project Name: _____
Project Location (street address/city/state)**:**
_____
_____

Client Corporate Name / Contact / Address / Phone #:
_____
_____
_____
_____
_____

Immediate Verbal Notifications Given To:

Corporate Health & Safety	☐Yes	☐No
Office Health & Safety	☐Yes	☐No
Office Manager	☐Yes	☐No
Project Principal	☐Yes	☐No
Project Manager	☐Yes	☐No
Client Contact	☐Yes	☐No

REPORT STATUS (time due):
☐ Initial (24 hr) ☐ Final (5-10 days)
Date: _____ Date: _____

Accident Report Delivered To:

Corporate Health & Safety	☐Yes	☐No
Office Health & Safety	☐Yes	☐No
Office Manager	☐Yes	☐No
Project Principal	☐Yes	☐No
Project Manager	☐Yes	☐No

REPORT TYPE: ☐ Loss ☐ Near Loss Estimated Costs: $ _____

OSHA CASE # Assigned by Corporate Health & Safety if Applicable:

Corporate Health & Safety Confirmed Final Accident Report
☐Yes ☐No

DATE OF INCIDENT: _____

TIME INCIDENT OCCURRED: _____ ☐AM ☐PM

INCIDENT LOCATION – City, State, and Country (If outside U.S.A.)

INCIDENT TYPES: (Select most appropriate if Loss occurred.)
From lists below, please select the option that best categories the incident. When selecting an injury or illness, also indicate the severity level.

☐**INJURY** ☐**ILLNESS**

----------Severity Level----------
☐Fatality ☐First Aid ☐Medical
☐Restricted Work ☐Lost Time Treatment

OTHER INCIDENT TYPES
☐Spill / Release
Material involved:_____
Quantity (U.S. Gallons): _____
☐Misdirected Waste ☐Consent Order ☐NOV
☐Property Damage ☐Exceedance
☐Motor Vehicle ☐Fine / Penalty

ACTIVITY TYPE (Check most appropriate one.)
☐Decommissioning ☐Geoprobe ☐Sampling
☐Demolition ☐Motor Vehicle ☐System Start-up
☐Dewatering ☐Operations/ Maintenance ☐Trenching
☐Drilling ☐AST/UST Removal
☐Excavation ☐Pump/Pilot Test ☐Other_____
☐Gauging ☐Rigging/Lifting

INJURY TYPE (Check all applicable.)
☐Abrasion ☐Occupational Illness
☐Amputation ☐Puncture
☐Burn ☐Rash
☐Cold/Heat Stress ☐Repetitive Motion
☐Inflammation ☐Sprain/Strain
☐Laceration ☐Other_____

BODY PART AFFECTED (Check all applicable.)
☐Respiratory ☐Shoulder ☐Face
☐Neck ☐Arm ☐Leg
☐Chest ☐Wrist ☐Knee
☐Abdomen ☐Hand/Fingers ☐Ankle
☐Groin ☐Eye ☐Foot/Toes
☐Back ☐Head ☐Other_____

I. PERSON(S) DIRECTLY / INDIRECTLY INVOLVED IN INCIDENT (Attach additional information as necessary/applicable.)

Name/Phone # of Each Person Directly/Indirectly Involved in Incident:	Designate: Roux/Remedial Employee; Roux/Remedial Subcontractor; Client Employee; Client Contractor; Third Party	As applicable, Current Occupation; Yrs in Current Occupation; Current Position; and Yrs in Current Position:	As applicable, Employer Name; Address; and Phone #:	As applicable, Supervisor Name; and Phone #:
1)				
2)				

II. PERSONS INJURED IN INCIDENT (Attach additional information as necessary/applicable.)

Name/Phone # of Each Person Injured in Incident:	Designate: Roux/Remedial Employee; Roux/Remedial Subcontractor; Client Employee; Client Contractor; Third Party	As applicable, Current Occupation; Yrs in Current Occupation; Current Position; and Yrs in Current Position:	As applicable, Employer Name; Address; and Phone #:	As applicable, Supervisor Name; and Phone #:	Description of Injury:
1)					
2)					

III. PROPERTY DAMAGED IN INCIDENT (Attach additional information as necessary/applicable.)

Property Damaged:	Property Location:	Owner Name, Address & Phone #:	Description of Damage:	Estimated Cost:
1)				

No One Gets Hurt!

2)				$

IV. WITNESSES TO INCIDENT (Attach additional information as necessary/applicable.)

Witness Name:	Address:	Phone #:
1)		
2)		

PART 2: WHAT HAPPENED AND INCIDENT DETAILS

PROVIDE FACTUAL DESCRIPTION OF INCIDENT (e.g., describe loss/near loss, injury, response / treatment).

I. AUTHORITIES/GOVERNMENTAL AGENCIES NOTIFIED (Attach additional information as necessary/applicable.)

Authority/Agency Notified:	Name/Phone #/Fax # of Person Notified:	Address of Person Notified:	Date & Time of Notification:	Exact Information Reported/Provided:

II. PUBLIC RESPONSES TO INCIDENT (if applicable)

Response/Inquiry By: (check one)	Entity Name:	Name/Phone # of Respondent/ Inquirer:	Address of Entity/Person:	Date & Time of Response/Inquiry:
☐Newspaper ☐Television ☐Community Group ☐Neighbors ☐Other _____				

Describe Response/Inquiry:

Roux/Remedial Response:

(Check all that apply.) (Attach photos, drawings, etc. to help illustrate the incident.)
ATTACHED INFORMATION: ☐Photo ☐Sketches ☐Vehicle Acord Form ☐Police Report ☐Other

Name(s) of person(s) who prepared Initial and Final Report:	**Title(s):**	**Phone number(s):**

PART 3: INVESTIGATION TEAM ANALYSIS

CONCLUSION: WHY IT HAPPENED (LIST CAUSAL FACTORS AND CORRESPONDING ROOT CAUSES)

(Root Causes: Lack of knowledge or skill, Doing the task according to procedures or acceptable practices takes more time or effort, Short-cuts or not following acceptable practices is reinforced or tolerated, Not following procedures or acceptable practices did not result in an accident, Lack of or inadequate procedures, Inadequate communications of expectations regarding procedures or acceptable practices, Inadequate tools or equipment, External Factors)

ROOT CAUSE(S) AND SOLUTION(S): HOW TO PREVENT INCIDENT FROM RECURRING

PERSONAL FACTORS:

A. LACK OF SKILL OR KNOWLEDGE

B. DOING THE JOB ACCORDING TO PROCEDURES OR ACCEPTABLE PRACTICES TAKES MORE TIME OR EFFORT

C. SHORT-CUTTING PROCEDURES OR ACCEPTABLE PRACTICES IS POSITIVELY REINFORCED OR TOLERATED

D. IN PAST, DID NOT FOLLOW PROCEDURES OR ACCEPTABLE PRACTICES AND NO INCIDENT OCCURRED

JOB FACTORS:

E. LACK OF OR INADEQUATE PROCEDURES

F. INADEQUATE COMMUNICATION OF EXPECTATIONS REGARDING PROCEDURES OR ACCEPTABLE STANDARDS

G. INADEQUATE TOOLS OR EQUIPMENT (available, maintained, etc.)

CAUSAL FACTOR / BEHAVIOR / CONDITION	ROOT CAUSE	SOLUTION(S) [Must Match Root Cause(s)]		PERSON RESPONSIBLE	AGREED DUE DATE	ACTUAL COMPLETION DATE
		#	Solution(s)			

INVESTIGATION TEAM:

PRINT NAME	JOB POSITION	DATE	SIGNATURE

QUALITY REVIEW Correct root cause(s) identified? Do root cause(s) and solution(s) match? Are solution(s) feasible / maintainable?

Name: **Job Title:**

PART 4: Date Solutions were Implemented & Validated (Were Solutions Effective?)

Date	Solution	Verifier / Validator Name and Job Title	**Details** (of I & V performed)

☐ **Roux Associates, Inc.** ☐ **Remedial Engineering, P.C.**
(Check applicable company name)

PART 1: ADMINISTRATIVE INFORMATION

Office: ☐ New York ☐ Massachusetts ☐ New Jersey ☐ Illinois ☐ CA - Los Angeles ☐ CA - San Francisco

Project Manager:	**Project Principal:**
Project Name:	**Project Location:**

PART 2: LESSONS LEARNED INCIDENT DETAILS

Date\Time Occurred (MM/DD/YYYY HH:MM)**:**	**Date\Time Submitted** (MM/DD/YYYY HH:MM)**:**

LESSONS LEARNED INCIDENT TYPE - What could have happened? - Select all that apply (1-7)

1. ☐ Fire / Explosion
2. ☐ Injury / Illness
3. ☐ Security (e.g, theft, trespassing, vandalism)
4. ☐ Environmental (spill, permit exceedance, etc.)
5. ☐ Transportation of personnel (vehicle accident)
6. ☐ Property/Equipment Damage
7. ☐ Business Interruption

Event Leading to Potential Injury/Illness:

Job Task*:	**Equipment Involved*:**

WHAT HAPPENED? Do not include individuals' names. Ensure photos, sketches, etc. are not personally identifiable unless written consent has been obtained.

Summary (1-2 sentences. Provide brief description of the incident. Provide facts only, no speculation or opinion)**:**

Incident Details (Brief factual details of what, where, when; include photos, sketches, etc. as attachments)**:**

Immediate Corrective Actions Taken:

SERIOUS INJURY OR FATALITY (SIF): IF AN ACTUAL SIF, USE EXISTING ROUX ACCIDENT REPORTING FORM

Could this have resulted in a SIF? ☐ **Yes** ☐ **No**

A potential SIF is defined as likely to have caused an injury resulting in significant physical body damage with probable long term and/or life altering complications.

INCIDENT INVOLVED:

Roux Employee: ☐ **Yes** ☐ **No** **Subcontractor Company Name:**

INVESTIGATION TEAM

NAME	JOB TITLE	NAME	JOB TITLE

PART 3: INCIDENT INVESTIGATION FINDINGS AND REPORT QUALITY REVIEW

Date Investigation Team Assigned (mm/dd/yyyy):

INVESTIGATION SUMMARY: Determine from list below what behaviors and/or conditions may have contributed to the H&S Lessons Learned Incident. Then, use the "Multiple-Why Technique" for each of these behaviors/conditions; provide a narrative for each that explains how the associated Root Cause(s) was determined. Do not include individuals' names.

ROOT CAUSES: HOW TO REDUCE POSSIBILITY OF INCIDENT RECURRING

Selection of RCs and solutions reflects the analysis of investigation team. It is not meant as a legally binding conclusion as to causal factors and/or solutions.

PERSONAL FACTORS:

A. LACK OF SKILL OR KNOWLEDGE

B. DOING THE JOB ACCORDING TO PROCEDURES OR ACCEPTABLE PRACTICES TAKES MORE TIME OR EFFORT

C. SHORT-CUTTING PROCEDURES OR ACCEPTABLE PRACTICES IS POSITIVELY REINFORCED OR TOLERATED

D. IN PAST, DID NOT FOLLOW PROCEDURES OR ACCEPTABLE PRACTICES AND NO INCIDENT OCCURRED

JOB FACTORS:

E. LACK OF OR INADEQUATE PROCEDURES

F. INADEQUATE COMMUNICATION OF EXPECTATIONS REGARDING PROCEDURES OR ACCEPTABLE STANDARDS

G. INADEQUATE TOOLS OR EQUIPMENT (available, maintained, etc.)

Behavior / Condition	Root Cause	Solution(s) (Must Match Root Cause)	Person Responsible for Completion	Completion Target Date	Completion Actual Date

QUALITY REVIEW Correct root cause(s) identified? Do root cause(s) and solution(s) match? Are solution(s) feasible / maintainable?

Name: **Job Title:**

PART 4: Date Solutions were Implemented & Validated (Were Solutions Effective?)

Date	Solution	Verifier / Validator Name and Job Title	**Details** (of I & V performed)

JOB TASK - Select the most appropriate one (primary job associated with incident-related work activity, avoid "Other" if possible)

1. Carbon Change
2. Construction
3. Demolition
4. Dewatering
5. Drilling (well install)
6. Excavation / Trenching
7. Gauging
8. Geoprobe / Direct Push
9. Mobil Remediation (includes vacuum event and chemical injection)
10. NAPL Recovery
11. O&M (remediation system)
12. Pavement Cutting
13. Pump Test
14. Sampling
15. Site Visit / Survey
16. Subsurface Clearance
17. System Install
18. System Startup
19. UST Removal (includes exposure and backfill)
20. Waste Management
21. Well Abandonment
22. Other:

EQUIPMENT INVOLVED THAT CONTRIBUTED TO H&S LESSONS LEARNED - Select all that apply

1. Air Stripper
2. API Separator
3. Automobile
4. Boom Material
5. Bulldozer
6. Cable
7. Carbon Drum / Vessel
8. Chain Block
9. Compressor, Air
10. Control Panel (local)
11. Crane (mobile)
12. Drill Rig
13. Drilling Equipment, Vacuum
14. Drum, Vertical
15. Dump Truck
16. Electric Heater
17. Electrical Power Supply
18. Engine, Combustion
19. Equipment Safety Grounding
20. Excavator / Power Shovel
21. Exclusion Zone Equipment
22 Fan / Blower
23 Fencing
24 Filter
25. Fire Extinguisher
26. Forklift
27. Front End Loader
28. Grader
29. Hammer
30. Knife
31. Non-Powered Equipment
32. Powered Equipment
33. Drill
34. Grinder
35. Hydraulic Torque Wrench
36. Powered Saw
37. Impact Wrench
38. Saw
39. Screwdriver
40. Shears
41. Shovel
42. Snip
43. Wrench
44. Hoist
45, Hook/Clamp/Buckle, etc.
46. Jack
47. Ladder, Extension
48. Ladder, Platform
49. Ladder, Step
50. Lock Out / Tag Out
51. Maintenance Tool, General
52. Manifold
53, Manlift/Basket/Cherry Picker
54. Motor, Electric
55. Oxidizer
56. Pallet
57. Piping
58. Piping, Hose
59. Piping, Injection/Mixing Point
60. Hydrojet
61. Centrifugal Pump
62. Diaphragm Pump
63. Reciprocating Pump
64. Regenerative Pump
65. Rotary Pump
66. Transfer Pump
67. Submersible Pump
68. Face Shield
69. Fall Protection
70. Gloves
71. Hard Hat / Helmet
72. Hearing Protection
73. Respiratory PPE (Chemical)
74. Respiratory PPE (Particulate)
75. Safety Glasses
76. Safety Goggles
77. Safety Shoes / Boots
78. Safety Vest / Clothing
79. Rope
80. Bailer
81. Geoprobe
82. Hand Auger
83. PID
84. Multi-Gas Meter
85. Sample Container
86. Split-Spoon Sampler
87. Sling
88. Snow Blower
89. Snow Plow
90. Space Heater
91. Air Sparging System
92. Carbon Treatment System
93. Chemical Oxidation System
94. Dual Phase Product Recovery System
95. Groundwater Pump and Treat System
96. POET System
97. Shed or Trailer
98. Vapor Extraction System
99. Vapor-Phase Treatment System
100. Other System, Type:_____
101. Surge Tank
102. Underground Tank
103. Telemetry System
104. Testing Devices
105. Tractor Trailer
106. Truck, Flatbed
107. Truck, Pickup
108. Truck, Tank Truck
109. Truck, Vacuum
110. Safety Valve
111. Block Valve
112. Extraction Well
113. Monitoring Well
114. Recovery Well
115. Winch
116. Wire Rope
117. No Equipment Involved
118. MPT – Traffic Control Devices
118. Not in List (describe):_____

Health and Safety Briefing/Tailgate Meeting Form

DAILY SITE SAFETY CHECKLIST

Job Name: _____ **Date(s)** _____

Location: _____ **Client Site #** _____

Weather: **M-** **T-** **W-** **TR-** **F-**

•"On the Job" interactive meeting held before work starts •Conducted at least once per day	•Provide details of work planned for the day •Review the Job Safety Analysis (JSA) and work hazards
•Involves everyone working at the Site	•Required PPE for the planned work
•Should familiarize everyone with work area & vicinity	•SPSAs are discussed
•Work permit procedures	•HASP is reviewed
•Emergency access/exits & "rally" point	•Ensure safety equipment is on Site
•Emergency contacts/phone #s, hospital route	•Test required safety equipment (such as emergency stop controls)
•Should be interactive	•Can also include inspection of tools and equipment to be used

Instructions: Please only use form for Monday through Friday of one calander week. All attending must initial in boxes below.

#	CHECKLIST ITEM	DATE				
		M-	T-	W-	TR-	F-
1	The HASP (including emergency phone #s) has been reviewed & signed by Roux staff & subcontractors.					
2	Personnel are LPS and OSHA-40 (as applicable) trained and SSE are identified and have an on-site mentor.					
3	Emergency meeting point known, First Care facility and ER identified.					
4	Applicable JSAs have been identified and approved by Roux management. (JSAs Reviewed?)					
5	Roux personnel & subcontractors have discussed hazards associated with Site-specific work.					
6	Any potential slips, trips or fall hazards have been identified.					
7	All workers have appropriate PPE, including long sleeves and have signed in for the day (2nd Page).					
8	No person on-Site has the appearance of being under the influence of motor skill altering substances and are familiar with D&A policy.					
9	Critical equipment on-Site is noted and is in safe working order.					
10	Site control has been established and exclusion zone is identified (using safety cones or barricades to mark out work area).					
11	Appropriate permits has been obtained and potential ignition sources were identified if applicable for Hot Permits					
12	If applicable, all third party permits to construct are on hand and access is permissible.					
13	Lock Out / Tag Out procedures have been followed where applicable, for electric and water.					
14	Electrical power operated tools shall be properly grounded and used with a GFCI.					
15	Traffic Safety Control measures have been put in place where applicable.					
16	All vessels containing flammable/corrosive material are labeled and MSDSs are available for all chemicals.					
17	Subsurface work : Drilling, trenching, etc. conducted according to required Protocol, including pre-field preparations, utility mark-out and "hand" clearing					
18	Excavated soils are properly stored; excavations are properly shored/sloped and barricaded.					
19	Good housekeeping procedures are meet; food and beverages are consumed outside of the work area.					
20	A first aid kit, eye wash bottle/station, and fire extinguishers are available for use.					
21	No smoking signs are visibly posted in areas of potential flammable vapors.					
Initial on right to verify that these actions have taken place						

Comments and Exceptions _____

_____

NOTE: THIS IS A TWO-SIDED FORM; PLEASE COMPLETE BOTH SIDES

DAILY SITE SAFETY CHECKLIST

Job Name: _____ **Date(s)** _____

Location: _____ **Client Site #** _____

Weather: **M-** **T-** **W-** **TR-** **F-**

•"On the Job" interactive meeting held before work starts	•Provide details of work planned for the day
•Conducted at least once per day	•Review the Job Safety Analysis (JSA) and work hazards
•Involves everyone working at the Site	•Required PPE for the planned work
•Should familiarize everyone with work area & vicinity	•SPSAs are discussed
•Work permit procedures	•HASP is reviewed
•Emergency access/exits & "rally" point	•Ensure safety equipment is on Site
•Emergency contacts/phone #s, hospital route	•Test required safety equipment (such as emergency stop controls)
•Should be interactive	•Can also include inspection of tools and equipment to be used

Instructions: Please only use form for Monday through Friday of one calander week. All attending must initial in boxes below.

#	CHECKLIST ITEM	DATE				
		M-	T-	W-	TR-	F-
1	The HASP (including emergency phone #s) has been reviewed & signed by Roux staff & subcontractors.					
2	Personnel are LPS and OSHA-40 (as applicable) trained and SSE are identified and have an on-site mentor.					
3	Emergency meeting point known, First Care facility and ER identified.					
4	Applicable JSAs have been identified and approved by Roux management. (JSAs Reviewed?)					
5	Roux personnel & subcontractors have discussed hazards associated with Site-specific work.					
6	Any potential slips, trips or fall hazards have been identified.					
7	All workers have appropriate PPE, including long sleeves and have signed in for the day (2nd Page).					
8	No person on-Site has the appearance of being under the influence of motor skill altering substances and are familiar with D&A policy.					
9	Critical equipment on-Site is noted and is in safe working order.					
10	Site control has been established and exclusion zone is identified (using safety cones or barricades to mark out work area).					
11	Appropriate permits has been obtained and potential ignition sources were identified if applicable for Hot Permits					
12	If applicable, all third party permits to construct are on hand and access is permissible.					
13	Lock Out / Tag Out procedures have been followed where applicable, for electric and water.					
14	Electrical power operated tools shall be properly grounded and used with a GFCI.					
15	Traffic Safety Control measures have been put in place where applicable.					
16	All vessels containing flammable/corrosive material are labeled and MSDSs are available for all chemicals.					
17	Subsurface work : Drilling, trenching, etc. conducted according to required Protocol, including pre-field preparations, utility mark-out and "hand" clearing					
18	Excavated soils are properly stored; excavations are properly shored/sloped and barricaded.					
19	Good housekeeping procedures are meet; food and beverages are consumed outside of the work area.					
20	A first aid kit, eye wash bottle/station, and fire extinguishers are available for use.					
21	No smoking signs are visibly posted in areas of potential flammable vapors.					
Initial on right to verify that these actions have taken place						

Comments and Exceptions _____

_____

NOTE: THIS IS A TWO-SIDED FORM; PLEASE COMPLETE BOTH SIDES

DAILY TAILGATE HEALTH & SAFETY MEETING LOG

Job Name _____ **Date(s)** _____

Location: _____ **Client Site #** _____

SUBCONTRACTOR: _____

Activities Planned _____

_____

_____

JSAs Utilized	

Potential Hazards *NOT IN JSA*	Mitigative Measures
LPO Scheduled for:	

PLEASE COMPLETE BOTH SIDES

Meeting Attendance

Name	Company	Mon.	Tue.	Wed.	Thur.	Fri.

Initial in Boxes

Heavy Equipment Exclusion Zone Policy

STANDARD OPERATING PROCEDURE 1.13

HEAVY EQUIPMENT EXCLUSION ZONE POLICY

CORPORATE HEALTH AND SAFETY MANAGER	:	Joseph W. Gentile
EFFECTIVE DATE	:	November 2011
REVISION NUMBER	:	0

Objective

The purpose of the Exclusion Zone Policy is to establish the minimum clearance distance that must be maintained between workers and heavy equipment while equipment is in operation (i.e., engaged or moving). The intent is to have no personnel or other equipment entering the Exclusion Zone while the equipment is in operation/moving to ensure that Roux and Subcontractor employees are not unnecessarily exposed to the hazards of the equipment.

A. Definition

For the purpose of this policy, heavy equipment includes, but is not necessarily limited to: excavation equipment, drill rigs, vacuum trucks, forklifts, lull telehandlers, man lifts, bobcats, delivery trucks, etc.

B. Requirements

1. Exclusion Zones must be established and maintained during activities involving the movement/operation of heavy equipment. The Exclusion Zone requirements apply to all personnel on the site but are primarily focused on those personnel who are required to be working in the vicinity of the equipment. The exclusion zone is in effect when heavy equipment is moving or engaged (ex. movement of an arm or bucket of an excavator, rotation of an auger, lifting of a load with a forklift, raising/lowering of a man lift, etc.).

2. The Exclusion Zone must meet the following minimum requirements:

- A minimum distance of 10 feet from all heavy equipment and loads being moved by the equipment; and
- Greater than the swing/reach radius of any moving part on the heavy equipment (i.e., for large equipment this may mean an exclusion zone distance larger than 20 feet); and
- Greater than the tip-over distance of the heavy equipment.

3. The size of the Exclusion Zone will need to be determined on a task-specific basis considering the size of the heavy equipment in use and the task being performed. Prior to all heavy equipment operations, the Exclusion Zone(s) distance must be specifically identified in the Job Safety Analysis (JSA).

4. The spotter (or another individual) should be assigned responsibility for enforcing the Exclusion Zone. This spotter should be positioned immediately outside of the Exclusion Zone within a clear line of sight of the equipment operator. The spotter must signal the operator to stop work if anyone or anything has the potential to enter or compromise the Exclusion Zone. The operator should stop work if the spotter is not within his/her line of sight. If multiple pieces of equipment are being used, each piece of equipment must have its own Exclusion Zone and spotter.

5. If an individual must enter the Exclusion Zone, the designated Spotter must signal the Equipment Operator to stop the equipment. Once the equipment is no longer moving (ex. movement of an arm of an excavator is STOPPED, lifting of a load with a forklift STOPPED, raising/lowering of a man lift is STOPPED, etc.), the operator must **DISENGAGE THE CONTROLS and STOP and SIGNAL BY "SHOWING HIS HANDS"**. This signal will indicate that it is that it is safe for the personnel to enter the limits of the Exclusion Zone to perform the required activity. The equipment must remain completely stopped/disengaged until all personnel have exited the limits

of the Exclusion Zone and the designated Spotter has signaled by "SHOWING HIS HANDS" to the Equipment Operator that it is safe to resume.

6. When entering the limits of the Exclusion Zone, personnel must at a minimum:
   - Establish eye contact with the operator and approach the heavy equipment in a manner that is in direct line of sight to the Equipment Operator;
   - Never walk under any suspended loads or raised booms/arms of the heavy equipment; and
   - Identify a travel path that is free of Slip/Trip/Fall hazards.

7. The Exclusion Zone should be delineated using cones, fencing, barrels, tape or other measures. For certain types of wide-spread or moving/mobile equipment operations, such delineation may not be practicable around pieces of equipment or individual work areas. In such instances it is expected that the entire operation will be within a larger secure work area or that additional means will be utilized to ensure security of the work zone.

C. Exceptions

It is recognized that certain heavy equipment activities may require personnel to work within the limits of the Exclusion Zone as specified in this policy. Such activities may include certain excavation clearance tasks, drill crew activities or construction tasks. However, any such activity must be pre-planned with emphasis on limiting the amount and potential exposure of any activity required within the zone. The critical safety steps to mitigate the hazards associated with working within the Exclusion Zone must be defined in the JSA and potentially other project-specific plans (i.e., critical lift plans, etc.), and approved by the Roux Project Principal and client representative, if required, prior to implementation.

D. Responsibilities

1. Corporate Health and Safety Manager

   Overall responsibility for administration, implementation and auditing of this policy.

2. Office Managers

   Responsible for communicating this policy to all of their employees who perform or may perform field work involving heavy equipment.

3. Office Health and Safety Managers

   Providing training to office field staff in this policy.

4. Project Principals

   a. Responsible for ensuring their projects address heavy equipment exclusion zones.

   b. Approving exceptions to this policy.

5. Project Managers

   a. Responsible for incorporating this policy into their project HASPs and applicable procedures to include JSAs.

b. Communicating to and enforcing the policy requirements for subcontractors who work on their projects.

6. Field Workers

   a. Attending training in the policy.

   b. Following the requirements of the policy.

E. Project and Site-Specific Orientation and Training

Many Roux projects have different requirements that are client-specific or site-specific in nature. It is the responsibility of the Project Principal (or Project Manager if delegated this responsibility by the Project Principal) to ensure that the workers assigned to his/her projects are provided orientation and training with respect to these client and/or site-specific requirements.

F. Subcontractors

All subcontractors who provide heavy equipment operations to field projects must implement a policy that meets or exceeds the expectations described above as well as any additional requirements that may be required on a client or site-specific basis.

All One Health Form

ALLONE HEALTH

ROUX

REPORT WORK-RELATED INJURIES OR A NEW ILLNESS TO ALLONE HEALTH (AOH) IMMEDIATELY!

Employee Responsibilities

1. **Report the injury to your supervisor/manager**
2. **Call AllOne Health at 1.800.350.4511, PRESS 1 to report an injury for Roux Associates, Inc.** The nurses will help determine the best type of care needed for the immediate situation, where to go for treatment, and work with you and providers on an ongoing basis.
3. **Be ready to supply**:
   - ✓ Your name & contact information, including mobile phone
   - ✓ Your location (nearest city, town or area)
   - ✓ Supervisor/Manager name & contact information
   - ✓ Description of the injury, details of incident, and any existing medical conditions the nurse should be aware of (e.g., allergies, pacemaker…)
4. **Follow AllOne Health instructions (e.g., first aid, go to urgent care center, or other)**
5. **Immediately after your visit, contact the AllOne Health Nurse Care Manager at 1.800.350.4511 (press 1)** or the direct number provided by the nurse to discuss your condition, treatment and any next steps.
6. **Follow the company protocols as communicated to you by your supervisor, CHSM or OHSM.**
7. **Contact the AllOne Health Nurse with any questions or concerns about your condition.**
8. **Communicate with your AllOne Health Nurse Care Manager about ALL further treatment relating to this case.** They are available to assist you in your recovery and make sure you receive the proper medical care you need!

In case of serious injury, call 911 or head to the nearest emergency center, calling AOH along the way!

AllOne Health Responsibilities

1. **AOH Nurse speaks to supervisor (if available) to gather information about employee and injury**
2. **AOH Nurse speaks to employee about incident, level of pain, and any other medical conditions that could impact treatment**
3. **AOH Nurse provides first aid measures to the injured employee**
4. **When a medical evaluation is recommended, AOH calls the Roux Associates, Inc. identified facility to advise them the employee is coming and why, and faxes a release form and return-to-work form to the facility. After the visit, the Nurse reaches out to the facility to obtain the diagnosis and information on any treatment that was received and/or recommended.**
5. **AOH Nurse contacts the employee within 24 hours to assess their condition and answer any questions**
6. **Care management will continue until the employee returns to full duty or the care management is turned over to the Workers' Compensation provider.**
7. **Throughout the process, AOH will communicate with the employee and his/her providers, and provide Roux Associates, Inc. management with email updates.**

Community Air Monitoring Program

APPENDIX G

New York State Department of Health
Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical-specific monitoring with appropriately sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing

monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring

particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

ACORD Automobile Loss Form

AUTOMOBILE LOSS NOTICE

DATE (MM/DD/YYYY)

AGENCY AJ Gallagher Risk Management Services 377 Oak Street Garden City, NY 11530	**INSURED LOCATION CODE** / **DATE OF LOSS AND TIME** ☐ AM ☐ PM
CONTACT NAME: Teresa Garzia **PHONE (A/C, No, Ext):** (516) 622-2418 **FAX (A/C, No):** **E-MAIL ADDRESS:** **CODE:** / **SUBCODE:** **AGENCY CUSTOMER ID:** ROUXASS-01	**CARRIER** Great Divide Insurance Company / **NAIC CODE** **POLICY NUMBER** BAP154979912 **POLICY TYPE** Commercial Automobile

INSURED

NAME OF INSURED (First, Middle, Last) Roux Associates, Inc. **DATE OF BIRTH** / **FEIN (if applicable)** 11-2579482 / **MARITAL STATUS / CIVIL UNION (if applicable)** **PRIMARY PHONE #** ☐ HOME ☒ BUS ☐ CELL (631) 232-2600 **SECONDARY PHONE #** ☐ HOME ☐ BUS ☐ CELL	**INSURED'S MAILING ADDRESS** 209 Shafter Street Islandia, NY 11749 **PRIMARY E-MAIL ADDRESS:** legaldept@rouxinc.com **SECONDARY E-MAIL ADDRESS:** Fax Notice of Loss to (631) 232-1525

CONTACT

☐ CONTACT INSURED

NAME OF CONTACT (First, Middle, Last) Cindy Albanese **PRIMARY PHONE #** ☐ HOME ☒ BUS ☐ CELL (631) 630-2376 **SECONDARY PHONE #** ☐ HOME ☒ BUS ☐ CELL (631) 232-2600 **WHEN TO CONTACT**	**CONTACT'S MAILING ADDRESS** Same as above **PRIMARY E-MAIL ADDRESS:** legaldept@rouxinc.com **SECONDARY E-MAIL ADDRESS:** Fax (631) 232-1525

LOSS

LOCATION OF LOSS **STREET:**	**POLICE OR FIRE DEPARTMENT CONTACTED**
CITY, STATE, ZIP:	**REPORT NUMBER**
COUNTRY:	
DESCRIBE LOCATION OF LOSS IF NOT AT SPECIFIC STREET ADDRESS:	
DESCRIPTION OF ACCIDENT (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)	

INSURED VEHICLE

VEH #	YEAR	MAKE:	BODY TYPE:	PLATE NUMBER	STATE
		MODEL:	V.I.N.:		

OWNER'S NAME AND ADDRESS ☐ (Check if same as insured)	**PRIMARY PHONE #** ☐ HOME ☐ BUS ☐ CELL / **SECONDARY PHONE #** ☐ HOME ☐ BUS ☐ CELL **PRIMARY E-MAIL ADDRESS:** **SECONDARY E-MAIL ADDRESS:**
DRIVER'S NAME AND ADDRESS ☐ (Check if same as owner)	**PRIMARY PHONE #** ☐ HOME ☐ BUS ☐ CELL / **SECONDARY PHONE #** ☐ HOME ☐ BUS ☐ CELL **PRIMARY E-MAIL ADDRESS:** **SECONDARY E-MAIL ADDRESS:**

RELATION TO INSURED (Employee, family, etc.)	DATE OF BIRTH	DRIVER'S LICENSE NUMBER	STATE	PURPOSE OF USE	USED WITH PERMISSION? (Y/N)

DESCRIBE DAMAGE

1. WAS A STANDARD CHILD PASSENGER RESTRAINT SYSTEM (CHILD SEAT) INSTALLED IN THE VEHICLE AT THE TIME OF THE ACCIDENT?	Y / N
2. WAS THE CHILD PASSENGER RESTRAINT SYSTEM (CHILD SEAT) IN USE BY A CHILD DURING THE TIME OF THE ACCIDENT?	Y / N
3. DID THE CHILD PASSENGER RESTRAINT SYSTEM (CHILD SEAT) SUSTAIN A LOSS AT THE TIME OF THE ACCIDENT?	Y / N

ESTIMATE AMOUNT:	**WHERE CAN VEHICLE BE SEEN?:**	**WHEN CAN VEHICLE BE SEEN?:**
OTHER INSURANCE ON VEHICLE - CARRIER:		**POLICY NUMBER:**

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OTHER VEHICLE / PROPERTY DAMAGED

NON - VEHICLE? ☐

AGENCY CUSTOMER ID: _____

VEH #	YEAR	MAKE:	BODY TYPE:	PLATE NUMBER	STATE
		MODEL:	V.I.N.:		

DESCRIBE PROPERTY (Other Than Vehicle) | OTHER VEH/PROP INS? (Y/N) ☐

CARRIER OR AGENCY NAME | NAIC CODE | POLICY NUMBER

OWNER'S NAME AND ADDRESS

PRIMARY PHONE # ☐ HOME ☐ BUS ☐ CELL | SECONDARY PHONE # ☐ HOME ☐ BUS ☐ CELL

PRIMARY E-MAIL ADDRESS:

SECONDARY E-MAIL ADDRESS:

DRIVER'S NAME AND ADDRESS ☐ (Check if same as owner)

PRIMARY PHONE # ☐ HOME ☐ BUS ☐ CELL | SECONDARY PHONE # ☐ HOME ☐ BUS ☐ CELL

PRIMARY E-MAIL ADDRESS:

SECONDARY E-MAIL ADDRESS:

DESCRIBE DAMAGE

ESTIMATE AMOUNT	WHERE CAN DAMAGE BE SEEN?	

INJURED

NAME & ADDRESS	PHONE (A/C, No)	PED	INS VEH	OTH VEH	AGE	EXTENT OF INJURY
		☐	☐	☐		
		☐	☐	☐		
		☐	☐	☐		
		☐	☐	☐		

WITNESSES OR PASSENGERS

NAME & ADDRESS	PHONE (A/C, No)	INS VEH	OTH VEH	OTHER (Specify)
		☐	☐	
		☐	☐	
		☐	☐	

REPORTED BY	REPORTED TO

REMARKS (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

APPLICABLE IN ALABAMA

Any person who knowingly presents a false or fraudulent claim for payment of a loss or benefit or who knowingly presents false information in an application for insurance is guilty of a crime and may be subject to restitution fines or confinement in prison, or any combination thereof.

APPLICABLE IN ALASKA

A person who knowingly and with intent to injure, defraud, or deceive an insurance company files a claim containing false, incomplete, or misleading information may be prosecuted under state law.

APPLICABLE IN ARIZONA

For your protection, Arizona law requires the following statement to appear on this form. Any person who knowingly presents a false or fraudulent claim for payment of a loss is subject to criminal and civil penalties.

APPLICABLE IN ARKANSAS, DELAWARE, KENTUCKY, LOUISIANA, MAINE, MICHIGAN, NEW JERSEY, NEW MEXICO, NORTH DAKOTA, PENNSYLVANIA, RHODE ISLAND, SOUTH DAKOTA, TENNESSEE, TEXAS, VIRGINIA, AND WEST VIRGINIA

Any person who knowingly and with intent to defraud any insurance company or another person, files a statement of claim containing any materially false information, or conceals for the purpose of misleading, information concerning any fact, material thereto, commits a fraudulent insurance act, which is a crime, subject to criminal prosecution and civil penalties. In LA, ME, TN, and VA, insurance benefits may also be denied.

APPLICABLE IN CALIFORNIA

For your protection, California law requires the following to appear on this form: Any person who knowingly presents a false or fraudulent claim for payment of a loss is guilty of a crime and may be subject to fines and confinement in state prison.

APPLICABLE IN COLORADO

It is unlawful to knowingly provide false, incomplete, or misleading facts or information to an insurance company for the purpose of defrauding or attempting to defraud the company. Penalties may include imprisonment, fines, denial of insurance, and civil damages. Any insurance company or agent of an insurance company who knowingly provides false, incomplete, or misleading facts or information to a policy holder or claimant for the purpose of defrauding or attempting to defraud the policy holder or claimant with regard to a settlement or award payable from insurance proceeds shall be reported to the Colorado Division of Insurance within the Department of Regulatory Agencies.

APPLICABLE IN THE DISTRICT OF COLUMBIA

Warning: It is a crime to provide false or misleading information to an insurer for the purpose of defrauding the insurer or any other person. Penalties include imprisonment and/or fines. In addition, an insurer may deny insurance benefits, if false information materially related to a claim was provided by the applicant.

APPLICABLE IN FLORIDA

Pursuant to S. 817.234, Florida Statutes, any person who, with the intent to injure, defraud, or deceive any insurer or insured, prepares, presents, or causes to be presented a proof of loss or estimate of cost or repair of damaged property in support of a claim under an insurance policy knowing that the proof of loss or estimate of claim or repairs contains any false, incomplete, or misleading information concerning any fact or thing material to the claim commits a felony of the third degree, punishable as provided in S. 775.082, S. 775.083, or S. 775.084, Florida Statutes.

APPLICABLE IN HAWAII

For your protection, Hawaii law requires you to be informed that presenting a fraudulent claim for payment of a loss or benefit is a crime punishable by fines or imprisonment, or both.

APPLICABLE IN IDAHO

Any person who knowingly and with the intent to injure, defraud, or deceive any insurance company files a statement of claim containing any false, incomplete or misleading information is guilty of a felony.

APPLICABLE IN INDIANA

A person who knowingly and with intent to defraud an insurer files a statement of claim containing any false, incomplete, or misleading information commits a felony.

APPLICABLE IN KANSAS

Any person who, knowingly and with intent to defraud, presents, causes to be presented or prepares with knowledge or belief that it will be presented to or by an insurer, purported insurer, broker or any agent thereof, any written statement as part of, or in support of, an application for the issuance of, or the rating of an insurance policy for personal or commercial insurance, or a claim for payment or other benefit pursuant to an insurance policy for commercial or personal insurance which such person knows to contain materially false information concerning any fact material thereto; or conceals, for the purpose of misleading, information concerning any fact material thereto commits a fraudulent insurance act.

APPLICABLE IN MARYLAND

Any person who knowingly or willfully presents a false or fraudulent claim for payment of a loss or benefit or who knowingly or willfully presents false information in an application for insurance is guilty of a crime and may be subject to fines and confinement in prison.

APPLICABLE IN MINNESOTA

A person who files a claim with intent to defraud or helps commit a fraud against an insurer is guilty of a crime.

APPLICABLE IN NEVADA

Pursuant to NRS 686A.291, any person who knowingly and willfully files a statement of claim that contains any false, incomplete or misleading information concerning a material fact is guilty of a felony.

APPLICABLE IN NEW HAMPSHIRE

Any person who, with purpose to injure, defraud or deceive any insurance company, files a statement of claim containing any false, incomplete or misleading information is subject to prosecution and punishment for insurance fraud, as provided in RSA 638:20.

APPLICABLE IN NEW YORK

Any person who knowingly and with intent to defraud any insurance company or other person files an application for commercial insurance or a statement of claim for any commercial or personal insurance benefits containing any materially false information, or conceals for the purpose of misleading, information concerning any fact material thereto, and any person who in connection with such application or claim knowingly makes or knowingly assists, abets, solicits or conspires with another to make a false report of the theft, destruction, damage or conversion of any motor vehicle to a law enforcement agency, the Department of Motor Vehicles or an insurance company, commits a fraudulent insurance act, which is a crime, and shall also be subject to a civil penalty not to exceed five thousand dollars and the value of the subject motor vehicle or stated claim for each violation.

APPLICABLE IN OHIO

Any person who, with intent to defraud or knowing that he/she is facilitating a fraud against an insurer, submits an application or files a claim containing a false or deceptive statement is guilty of insurance fraud.

APPLICABLE IN OKLAHOMA

WARNING: Any person who knowingly and with intent to injure, defraud or deceive any insurer, makes any claim for the proceeds of an insurance policy containing any false, incomplete or misleading information is guilty of a felony.

APPLICABLE IN WASHINGTON

It is a crime to knowingly provide false, incomplete, or misleading information to an insurance company for the purpose of defrauding the company. Penalties include imprisonment, fines and denial of insurance benefits.

OSHA 300 Form

OSHA's Form 300 (Rev. 01/2004)

Log of Work-Related Injuries and Illnesses

Attention: This form contains information relating to employee health and must be used in a manner that protects the confidentiality of employees to the extent possible while the information is being used for occupational safety and health purposes.

Year _____

U.S. Department of Labor
Occupational Safety and Health Administration

You must record information about every work-related injury or illness that involves loss of consciousness, restricted work activity or job transfer, days away from work, or medical treatment beyond first aid. You must also record significant work-related injuries and illnesses that are diagnosed by a physician or licensed health care professional. You must also record work-related injuries and illnesses that meet any of the specific recording criteria listed in 29 CFR 1904.8 through 1904.12. Feel free to use two lines for a single case if you need to. You must complete an injury and illness incident report (OSHA Form 301) or equivalent form for each injury or illness recorded on this form. If you're not sure whether a case is recordable, call your local OSHA office for help.

Form approved OMB no. 1218-0176

Establishment name _____

City _____ State _____

Identify the person			Describe the case			Classify the case											
						CHECK ONLY ONE box for each case based on the most serious outcome for that case:				Enter the number of days the injured or ill worker was:		Check the "injury" column or choose one type of illness:					
(A) Case No.	(B) Employee's Name	(C) Job Title (e.g., Welder)	(D) Date of injury or onset of illness (mo./day)	(E) Where the event occurred (e.g. Loading dock north end)	(F) Describe injury or illness, parts of body affected, and object/substance that directly injured or made person ill (e.g. Second degree burns on right forearm from acetylene torch)	Death	Days away from work	Remained at work		Away From Work (days)	On job transfer or restriction (days)	(M) Injury	Skin Disorder	Respiratory Condition	Poisoning	Hearing Loss	All other illnesses
								Job transfer or restriction	Other record-able cases								
						(G)	(H)	(I)	(J)	(K)	(L)	(1)	(2)	(3)	(4)	(5)	(6)
					Page totals	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*

Be sure to transfer these totals to the Summary page (Form 300A) before you post it.

Public reporting burden for this collection of information is estimated to average 14 minutes per response, including time to review the instruction, search and gather the data needed, and complete and review the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments about these estimates or any aspects of this data collection, contact: US Department of Labor, OSHA Office of Statistics, Room N-3644, 200 Constitution Ave, NW, Washington, DC 20210. Do not send the completed forms to this office.

OSHA's Form 300A (Rev. 01/2004)

Summary of Work-Related Injuries and Illnesses

Year _____

U.S. Department of Labor
Occupational Safety and Health Administration

Form approved OMB no. 1218-0176

All establishments covered by Part 1904 must complete this Summary page, even if no injuries or illnesses occurred during the year. Remember to review the Log to verify that the entries are complete

Using the Log, count the individual entries you made for each category. Then write the totals below, making sure you've added the entries from every page of the log. If you had no cases write "0."

Employees former employees, and their representatives have the right to review the OSHA Form 300 in its entirety. They also have limited access to the OSHA Form 301 or its equivalent. See 29 CFR 1904.35, in OSHA's Recordkeeping rule, for further details on the access provisions for these forms.

Number of Cases

Total number of deaths	Total number of cases with days away from work	Total number of cases with job transfer or restriction	Total number of other recordable cases
0	0	0	0
(G)	(H)	(I)	(J)

Number of Days

Total number of days away from work	Total number of days of job transfer or restriction
0	0
(K)	(L)

Injury and Illness Types

Total number of…	(M)		(M)
(1) Injury	0	(4) Poisoning	0
(2) Skin Disorder	0	(5) Hearing Loss	0
(3) Respiratory Condition	0	(6) All Other Illnesses	0

Post this Summary page from February 1 to April 30 of the year following the year covered by the form

Public reporting burden for this collection of information is estimated to average 50 minutes per response, including time to review the instruction, search and gather the data needed, and complete and review the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments about these estimates or any aspects of this data collection, contact: US Department of Labor, OSHA Office of Statistics, Room N-3644, 200 Constitution Ave. NW, Washington, DC 20210. Do not send the completed forms to this office.

Establishment information

Your establishment name _____

Street _____

City _____ State _____ Zip _____

Industry description (e.g., Manufacture of motor truck trailers)

_____

Standard Industrial Classification (SIC), if known (e.g., SIC 3715)

____ ____ ____ ____

OR North American Industrial Classification (NAICS), if known (e.g., 336212)

____ ____ ____ ____ ____ ____

Employment information

Annual average number of employees _____

Total hours worked by all employees last year _____

Sign here

Knowingly falsifying this document may result in a fine.

I certify that I have examined this document and that to the best of my knowledge the entries are true, accurate, and complete.

_____ Company executive

_____ Title

_____ Phone

_____ Date

OSHA's Form 301
Injuries and Illnesses Incident Report

Attention: This form contains information relating to employee health and must be used in a manner that protects the confidentiality of employees to the extent possible while the information is being used for occupational safety and health purposes.

U.S. Department of Labor
Occupational Safety and Health Administration

Form approved OMB no. 1218-0176

This *Injury and Illness Incident Repor* t is one of the first forms you must fill out when a recordable work-related injury or illness has occurred. Together with the *Log of Work-Related injuries and Illnesses* and the accompanying *Summary*, these forms help the employer and OSHA develop a picture of the extent and severity of work-related incidents.

Within 7 calendar days after you receive information that a recordable work-related injury or illness has occurred, you must fill out this form or an equivalent. Some state workers' compensation, insurance, or other reports may be acceptable substitutes. To be considered an equivalent form, any substitute must contain all the information asked for on this form.

According to Public Law 91-596 and 29 CFR 1904, OSHA's recordkeeping rule, you must keep this form on file for 5 years following the year to which it pertains

If you need additional copies of this form, you may photocopy and use as many as you need.

Completed by _____

Title _____

Phone _____ Date _____

Information about the employee

1) Full Name _____

2) Street _____

City _____ State _____ Zip _____

3) Date of birth _____

4) Date hired _____

5) ☐ Male
☐ Female

Information about the physician or other health care professional

6) Name of physician or other health care professional

_____

_____

7) If treatment was given away from the worksite, where was it given?

Facility _____

Street _____

City _____ State _____ Zip _____

8) Was employee treated in an emergency room?
☐ Yes
☐ No

9) Was employee hospitalized overnight as an in-patient?
☐ Yes
☐ No

Information about the case

10) Case number from the Log _____ *(Transfer the case number from the Log after you record the case.)*

11) Date of injury or illness _____

12) Time employee began work _____ AM/PM

13) Time of event _____ AM/PM ☐ Check if time cannot be determined

14) **What was the employee doing just before the incident occurred?** Describe the activity, as well as the tools, equipment or material the employee was using. Be specific. Examples: "climbing a ladder while carrying roofing materials"; "spraying chlorine from hand sprayer"; "daily computer key-entry."

15) **What happened?** Tell us how the injury occurred. Examples: "When ladder slipped on wet floor, worker fell 20 feet"; "Worker was sprayed with chlorine when gasket broke during replacement"; "Worker developed soreness in wrist over time."

16) **What was the injury or illness?** Tell us the part of the body that was affected and how it was affected; be more specific than "hurt", "pain", or "sore." Examples: "strained back"; "chemical burn, hand"; "carpal tunnel syndrome."

17) **What object or substance directly harmed the employee?** Examples: "concrete floor"; "chlorine"; "radial arm saw." If this question does not apply to the incident, leave it blank.

18) **If the employee died, when did death occur?** Date of death

Public reporting burden for this collection of information is estimated to average 22 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Persons are not required to respond to the collection of information unless it displays a current valid OMB control number. If you have any comments about this estimate or any other aspects of this data collection, including suggestions for reducing this burden, contact: US Department of Labor, OSHA Office of Statistics, Room N-3644, 200 Constitution Ave, NW, Washington, DC 20210. Do not send the completed forms to this office.

APPENDIX G

Site Management Forms

ANNUAL SITE INSPECTION FORM

Client: **Acadia Republic Farmingdale, LLC**
Location: **East Farmingdale, NY**
Inspector: _____
Date: _____

Site Observations: Performed by ( ) on ( )

Yes	No	
[ ]	[ ]	Have any Site improvements been made since last inspection?
[ ]	[ ]	Has there been any maintenance activity impacting engineering controls?
[ ]	[ ]	Are monitoring wells intact?
		-Include sketches or photos of observations

Inspection of Soil/Clay Caps: Performed by ( ) on ( )

Yes	No	
[ ]	[ ]	Significant rills or gullies observed?
[ ]	[ ]	Signs of settlement/ subsidenceobserved?
[ ]	[ ]	Significant animal burrows observed?
[ ]	[ ]	Significant bare spotsobserved?
[ ]	[ ]	Woody shrubs/ trees observed?
[ ]	[ ]	Underlying demarcation barrier exposed?
[ ]	[ ]	Are soil caps sloped to allow for drainage away from the peak?
[ ]	[ ]	Other conditions (i.e., stressed vegetation, invasive plants, insect infestation, etc.) observed?
		If yes, refer to Page 3 for additional clarification.
		-Include sketches or photos of observations

Inspection of Asphalt/Concrete Caps: Performed by ( ) on ( )

Yes	No	
[ ]	[ ]	Significant cracksobserved?
[ ]	[ ]	Signs of settlement/ subsidenceobserved?
[ ]	[ ]	Other damage observed? If yes, refer to Page 2 for additional clarification.
		-Include sketches or photos of observations

Inspection of Building Covers: Performed by ( ) on ( )

Yes	No	
[ ]	[ ]	Were all buildings inspected?
[ ]	[ ]	Significant cracksobserved?
[ ]	[ ]	Signs of settlement/ subsidenceobserved?
[ ]	[ ]	Other damage observed? If yes, refer to Page 3 for additional clarification.
[ ]	[ ]	Any new slab penetrations observed? If yes, include description on page 2.
		-Include sketched or photos of observations

ROUX ASSOCIATES, INC. / REMEDIAL ENGINEERING, P.C.
MONTHLY SITE MONITORING, INSPECTION AND MAINTENANCE FORM

Client: **Acadia Republic Farmingdale, LLC**
Location: **East Farmingdale, NY**
Inspector: _____
Date: _____

Site Observations

Additional Comments or Clarification Where Corrective Actions May Be Required:

Summary of Green Remediation Metrics for Site Management

Site Name: _____ Site Code: _____
Address: _____ City: _____
State: _____ Zip Code: _____ County: _____

Initial Report Period (Start Date of period covered by the Initial Report submittal)

Start Date: _____

Current Reporting Period

Reporting Period From: _____ To: _____

Contact Information

Preparer's Name: _____ Phone No.: _____
Preparer's Affiliation: _____

I. Energy Usage: Quantify the amount of energy used directly on-site and the portion of that derived from renewable energy sources.

	Current Reporting Period	**Total to Date**
Fuel Type 1 (e.g. natural gas (cf))		
Fuel Type 2 (e.g. fuel oil, propane (gals))		
Electricity (kWh)		
Of that Electric usage, provide quantity:		
Derived from renewable sources (e.g. solar, wind)		
Other energy sources (e.g. geothermal, solar thermal (Btu))		

Provide a description of all energy usage reduction programs for the site in the space provided on Page 3.

II. Solid Waste Generation: Quantify the management of solid waste generated on-site.

	Current Reporting Period (tons)	**Total to Date (tons)**
Total waste generated on-site		
OM&M generated waste		
Of that total amount, provide quantity:		
Transported off-site to landfills		
Transported off-site to other disposal facilities		
Transported off-site for recycling/reuse		
Reused on-site		

Provide a description of any implemented waste reduction programs for the site in the space provided on Page 3.

III. Transportation/Shipping: Quantify the distances travelled for delivery of supplies, shipping of laboratory samples, and the removal of waste.

	Current Reporting Period (miles)	**Total to Date (miles)**
Standby Engineer/Contractor		
Laboratory Courier/Delivery Service		
Waste Removal/Hauling		

Provide a description of all mileage reduction programs for the site in the space provided on Page 3. Include specifically any local vendor/services utilized that are within 50 miles of the site.

IV. Water Usage: Quantify the volume of water used on-site from various sources.

	Current Reporting Period (gallons)	**Total to Date (gallons)**
Total quantity of water used on-site		
Of that total amount, provide quantity:		
Public potable water supply usage		
Surface water usage		
On-site groundwater usage		
Collected or diverted storm water usage		

Provide a description of any implemented water consumption reduction programs for the site in the space provided on Page 3.

V. Land Use and Ecosystems: Quantify the amount of land and/or ecosystems disturbed and the area of land and/or ecosystems restored to a pre-development condition (i.e. Green Infrastructure).

	Current Reporting Period (acres)	**Total to Date (acres)**
Land disturbed		
Land restored		

Provide a description of any implemented land restoration/green infrastructure programs for the site in the space provided on Page 3.

Description of green remediation programs reported above (Attach additional sheets if needed)
Energy Usage:
Waste Generation:
Transportation/Shipping:
Water usage:
Land Use and Ecosystems:
Other:

CERTIFICATION BY CONTRACTOR

I, _____ (**Name**) do hereby certify that I am _____ (**Title**) of the Company/Corporation herein referenced and contractor for the work described in the foregoing application for payment. According to my knowledge and belief, all items and amounts shown on the face of this application for payment are correct, all work has been performed and/or materials supplied, the foregoing is a true and correct statement of the contract account up to and including that last day of the period covered by this application.

_____ _____

Date **Contractor**

PROPOSED REMEDIAL ACTION PLAN

Fairchild Republic Aircraft; Old Sump
State Superfund Project
East Farmingdale, Suffolk County
Site No. 152004
February 2015



Prepared by
Division of Environmental Remediation
New York State Department of Environmental Conservation

PROPOSED REMEDIAL ACTION PLAN

Fairchild Republic Aircraft; Old Sump
East Farmingdale, Suffolk County
Site No. 152004
February 2015

SECTION 1: SUMMARY AND PURPOSE OF THE PROPOSED PLAN

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), is proposing a remedy for the above referenced site. The disposal of hazardous wastes at the site has resulted in threats to public health and the environment that would be addressed by the remedy proposed by this Proposed Remedial Action Plan (PRAP). The disposal of hazardous wastes at this site, as more fully described in Section 6 of this document, has contaminated various environmental media. The proposed remedy is intended to attain the remedial action objectives identified for this site for the protection of public health and the environment. This PRAP identifies the preferred remedy, summarizes the other alternatives considered, and discusses the reasons for the preferred remedy.

The New York State Inactive Hazardous Waste Disposal Site Remedial Program (also known as the State Superfund Program) is an enforcement program, the mission of which is to identify and characterize suspected inactive hazardous waste disposal sites and to investigate and remediate those sites found to pose a significant threat to public health and environment.

The Department has issued this document in accordance with the requirements of New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York; (6 NYCRR) Part 375. This document is a summary of the information that can be found in the site-related reports and documents in the document repository identified below.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all PRAPs. This is an opportunity for public participation in the remedy selection process. The public is encouraged to review the reports and documents, which are available at the following repository:

Farmingdale Public Library
116 Merritts Road
Farmingdale, NY 11735
Phone: 516-249-9090

A public comment period has been set from:

2/26/2015 to 3/28/2015

A public meeting is scheduled for the following date:

3/18/2015 at 7:30 PM

Public meeting location:

Farmingdale Public Library, 116 Merritts Road, Farmingdale, NY

At the meeting, the findings of the remedial investigation (RI) and the feasibility study (FS) will be presented along with a summary of the proposed remedy. After the presentation, a question-and-answer period will be held, during which verbal or written comments may be submitted on the PRAP.

Written comments may also be sent through 3/28/2015 to:

Bob Corcoran
NYS Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, NY 12233
bob.corcoran@dec.ny.gov

The Department may modify the proposed remedy or select another of the alternatives presented in this PRAP based on new information or public comments. Therefore, the public is encouraged to review and comment on the proposed remedy identified herein. Comments will be summarized and addressed in the responsiveness summary section of the Record of Decision (ROD). The ROD is the Department's final selection of the remedy for this site.

Receive Site Citizen Participation Information By Email

Please note that the Department's Division of Environmental Remediation (DER) is "going paperless" relative to citizen participation information. The ultimate goal is to distribute citizen participation information about contaminated sites electronically by way of county email listservs. Information will be distributed for all sites that are being investigated and cleaned up in a particular county under the State Superfund Program, Environmental Restoration Program, Brownfield Cleanup Program, Voluntary Cleanup Program, and Resource Conservation and Recovery Act Program. We encourage the public to sign up for one or more county listservs at http://www.dec.ny.gov/chemical/61092.html

SECTION 3: SITE DESCRIPTION AND HISTORY

Location: The Fairchild Republic Aircraft Old Sump (aka: Old Recharge Basin) Site is located near the intersection of State Route 110 (Broad Hollow Road) and Conklin Street in East Farmingdale, Suffolk County. Across Route 110 is the Airport Plaza shopping center – site of the former Fairchild Republic Main Plant Site, and Republic Airport.

Vacant property and Conklin Street lie to the north, State Route 110 to the east, East Carmens Road to the west, and industrial and commercial buildings to the south. A chain link fence completely surrounds the former Old Sump property along with a contiguous 6-acre parcel of vacant land to the north, all under the same ownership. The Brandt Airflex Superfund site (Site No. 152183) lies 500-feet north of, and hydraulically upradiant of the Old Sump site.

Site Features: The site is a 13-acre vacant sand lot. Areas of young trees and native vegetation have marginally taken hold since the basin was filled and graded in 1997-98. Approximately 25,000 cubic yards of petroleum contaminated soil, once approved for on-site use as asphalt sub-base material, are stockpiled on the site. The northern portion of the site lies in the runway protection zone of the Republic Airport and building height in the zone is restricted by local ordinance.

Current Zoning and Land Use: The site is currently inactive, comprised of five tax parcels, and is zoned G- Industry (Light). Retail development- shopping/dining is being contemplated for the property.

Historic Uses: The Old Sump is the site of a former sand mining operation that was later converted to a stormwater recharge basin and wastewater/cooling water repository. The basin was used by NYSDOT to collect storm water runoff, and by Fairchild Republic for runoff and disposal of up to 2 million gallons per day of non-contact cooling water and treated waste water from the Fairchild Main Plant Site (Site No. 152130). Fairchild stopped discharging to the basin in 1983 when it constructed a new recharge basin on the east side of Route 110. The Fairchild Main Plant Site produced sludge from metal precipitation alodining, anodizing, chemical milling and wash water paint spray booths.

The site was first listed on the Registry of Inactive Hazardous Waste Disposal Sites (Registry) as Class 2 in August 1989. A remedial Investigation (RI), completed on the site in 1995, found that basin bottom sediments contained elevated levels of total chromium, polynuclear aromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs). In light of the fact that the site was not found to be impacting groundwater, the Record of Decision in 1996 did not require active remediation and instead selected fencing of the property and institutional controls as the remedy to prevent potential exposure to the bottom sediments. In 1997, the Department executed an Order on Consent with Fairchild, allowing Fairchild the option to fill in the recharge basin with acceptable alternative grading material and soils from demolition of their Main Plant Site. The site was delisted in 1997 with the expectation that filling the basin would result in the contamination being encapsulated approximately 30 feet below grade. The filling, completed in 1998, was problematic and created new concerns of potential exposure to contamination. Subsequent sampling by a prospective buyer indicated that the expected result from filling the

recharge basin was not achieved. A review of the process revealed that the basin was not dewatered prior to filling, and the denser fill material and concrete debris displaced the contaminated bottom sediments, resulting in an apparent upwelling of PCB and metals contamination to the surface and shallow subsurface soils. Negotiations with Fairchild (in bankruptcy) seeking mitigation of the continued threat to public health and the environment failed. The site was re-listed on the Registry in April 2010 with the filling of the recharge basin resulting in a changed condition and the need for a new characterization of the site to assure remedial goals had been achieved.

Acadia Republic Farmingdale LLC, acquired title to the site in 2013 and entered into a settlement Order on Consent with the Department in July of 2014. The Department, then re-investigated the site.

Site Geology and Hydrogeology: The site is underlain by the Upper Glacial and Magothy Aquifers which are designated by the United States Environmental Protection Agency (USEPA) as sole source aquifers. Depth to groundwater ranges from 20 to 30 feet below ground surface (bgs) and flows generally to the south. Based on borings completed at the site, the native subsurface geology is comprised of fine to coarse brown sand and rounded gravel to a depth of approximately 120 feet bgs. Below this is a layer of a mottled fine to medium sand with trace silt and mica. Mixed in with this layer are silt and clay lenses. Mixed into the upper 30 feet of subsurface is solid waste from demolition of the former Main Plant Site. The solid waste is comprised primarily of heterogeneous chunks of cement, rebar and relocated soils.

A site location map is attached as Figure 1.

SECTION 4: LAND USE AND PHYSICAL SETTING

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. For this site, alternatives (or an alternative) that restrict(s) the use of the site to commercial use (which allows for industrial use) as described in Part 375-1.8(g) are/is being evaluated in addition to an alternative which would allow for unrestricted use of the site.

A comparison of the results of the investigation to the appropriate standards, criteria and guidance values (SCGs) for the identified land use and the unrestricted use SCGs for the site contaminants is included in the Tables for the media being evaluated in Exhibit A.

SECTION 5: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

The PRPs for the site, documented to date, include:

FAIRCHILD Corp.

Mairoll, Inc.

Avilas, Inc.

Acadia Republic Farmingdale LLC

On July 24, 2014, the Department entered into an Order on Consent with Acadia Republic Farmingdale LLC, allowing the Department to conduct a remedial investigation of the site, and committing Acadia Republic to certain obligations relative to the site's remedial program, when selected.

The Department has determined that Volatile Organic Compound (VOC) contamination found at this site is associated with an off-site source. The extent of on-site VOC contamination, as well as associated human exposure assessments and abatement actions, will be addressed separately by the Department as part of the remedial program for the Brandt Airflex Superfund site (Site No. 152183).

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

A Remedial Investigation (RI) has been conducted. The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The field activities and findings of the investigation are described in the RI Report.

The following general activities are conducted during an RI:

- Research of historical information,
- Geophysical survey to determine the lateral extent of wastes,
- Test pits, soil borings, and monitoring well installations,
- Sampling of waste, surface and subsurface soils, groundwater, and soil vapor,
- Sampling of surface water and sediment,
- Ecological and Human Health Exposure Assessments.

The analytical data collected on this site includes data for:

- groundwater
- soil

6.1.1: Standards, Criteria, and Guidance (SCGs)

The remedy must conform to promulgated standards and criteria that are directly applicable or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, Criteria and Guidance are hereafter called SCGs.

To determine whether the contaminants identified in various media are present at levels of concern, the data from the RI were compared to media-specific SCGs. The Department has developed SCGs for groundwater, surface water, sediments, and soil. The NYSDOH has developed SCGs for drinking water and soil vapor intrusion. The tables found in Exhibit A list the applicable SCGs in the footnotes. For a full listing of all SCGs see: http://www.dec.ny.gov/regulations/61794.html

6.1.2: RI Results

The data have identified contaminants of concern. A "contaminant of concern" is a hazardous waste that is sufficiently present in frequency and concentration in the environment to require evaluation for remedial action. Not all contaminants identified on the property are contaminants of concern. The nature and extent of contamination and environmental media requiring action are summarized in Exhibit A. Additionally, the RI Report contains a full discussion of the data. The contaminant(s) of concern identified at this site is/are:

POLYCHLORINATED BIPHENYLS (PCB)
LEAD
CHROMIUM
CADMIUM
MERCURY
BENZO(A)PYRENE
BENZO(A)ANTHRACENE
BENZO(B)FLUORANTHENE
BENZO(B)FLUORANTHENE
DIBENZ[A,H]ANTHRACENE

As illustrated in Exhibit A, the contaminant(s) of concern exceed the applicable SCGs for:

- soil
- groundwater

6.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before issuance of the Record of Decision.

There were no IRMs performed at this site during the RI.

6.3: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts may include existing and potential future exposure pathways to fish and wildlife receptors, wetlands, groundwater resources, and surface water.

Based upon the resources and pathways identified and the toxicity of the contaminants of ecological concern at this site, a Fish and Wildlife Resources Impact Analysis (FWRIA) was deemed not necessary for the site.

Nature and Extent of Contamination:
Soil and groundwater samples were collected during the State-funded Remedial Investigation (RI) conducted from June-August 2014. Samples were analyzed for volatile organic compounds (VOC), semi-volatile organic compounds (SVOC), metals, polychlorinated biphenyls (PCB) and pesticides.

Groundwater: Four monitoring wells were installed in 2014 and sampled along with two previously existing wells. Groundwater was not found to be impacted by site-related contamination. NYSDEC TOGS 1.1.1 groundwater standards were marginally exceeded for one VOC in one well- tetrachloroethene (PCE) detected at 6 parts per billion (ppb) while the groundwater standard is 5 ppb. Several metals including iron, manganese and sodium also exceeded groundwater standards, however, the levels were consistent with regional conditions commonly found on Long Island and are not considered to be site related contamination. Reported concentrations for SVOCs, PCBs, or pesticides did not exceed groundwater standards.

Based on off-site investigations performed hydraulically upgradient to the site, the suspected source of VOC groundwater contamination is from the Brandt Airflex Superfund site (Site No. 152183). Further actions, if necessary, regarding this contamination will be done under the Brandt Airflex Superfund site remedial program.

Soil: Unrestricted use soil cleanup objectives (UUSCOs) were exceeded at a majority of the seventy-six sample locations across the 13-acre site for one or more of the following: polychlorinated biphenyls (PCBs); metals- lead, chromium, cadmium, mercury, silver, copper and zinc; and seven SVOCs including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene and indeno(1,2,3-cd)pyrene. One VOC, acetone marginally exceeded UUSCO in two deep subsurface samples.

Surface soils and/or shallow subsurface soils (1 foot below ground), exceed UUSCOs for SVOC, metals or PCB at 15 of 30 sample locations. SVOCs are the most widely distributed site contaminant. They were detected in all 40 surface and shallow subsurface soil samples analyzed, exceeding UUSCO at 10 of 20 locations.

Commercial use SCOs (CUSCOs) were exceeded for four SVOCs: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and dibenzo(a,h)anthracene. The exceedances occurred in surface, shallow subsurface and deep soils at up to 11 locations. Total PCB concentrations exceeded CUSCOs at 4 locations at depths ranging from 12-32 feet bgs. PCB concentrations are below the acceptable presumptive remedy guidelines set forth in CP-51 (Commissioner Policy 51/ Soil Cleanup Guidance), for non-residential use sites, where a soil cleanup level for PCBs of 1 ppm in surface soils and 10 ppm in subsurface soils has been established. Reported concentrations for VOCs, metals and pesticides did not exceed CUSCOs.

Soil contamination is confined to the site and was not found to be impacting groundwater.

Approximately 25,000 cubic yards of petroleum contaminated soil (PCS) has been stockpiled on the site since approximately 1999. In August 2003, the Department issued a beneficial use determination (BUD) approving the on-site use of the PCS as parking lot subgrade material for an anticipated commercial redevelopment of the site. The development never materialized and the BUD and subsequent BUD extensions have since expired. Sampling in 2014 documented that the BUD material contains the four aforementioned SVOCs at levels exceeding CUSCOs, and benzo(a)pyrene exceeding Industrial use SCOs (IUSCOs).

Solid waste, in the form of hundreds of waste automobile tires and signs of illegal dumping-construction debris, wood, insulation, numerous hot tubs, etc., was noted on-site during the investigation. Large piles of broken concrete and iron rebar were also observed on-site.

6.4: Summary of Human Exposure Pathways

This human exposure assessment identifies ways in which people may be exposed to site-related contaminants. Chemicals can enter the body through three major pathways (breathing, touching or swallowing). This is referred to as *exposure.*

The site is completely fenced, which restricts public access. However, people who enter the site could contact contaminants in the soil by walking on the site, digging or otherwise disturbing the soil. Contaminated groundwater at the site is not used for drinking or other purposes and the site is served by a public water supply that obtains water from a different source not affected by this contamination. Volatile organic compounds in the groundwater and/or soil may move into the soil vapor (air spaces within the soil), which in turn may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Because the site is vacant, the inhalation of site-related contaminants due to soil vapor intrusion does not represent a current concern.

6.5: Summary of the Remediation Objectives

The objectives for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. The goal for the remedial program is to restore the site to pre-disposal conditions to the extent feasible. At a minimum, the remedy shall eliminate or mitigate all significant threats to public health and the environment presented by the contamination identified at the site through the proper application of scientific and engineering principles.

The remedial action objectives for this site are:

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.

SECTION 7: SUMMARY OF THE PROPOSED REMEDY

To be selected, the remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. The remedy must also attain the remedial action objectives identified for the site, which are presented in Section 6.5. Potential remedial alternatives for the Site were identified, screened and evaluated in the FS report.

A summary of the remedial alternatives that were considered for this site is presented in Exhibit B. Cost information is presented in the form of present worth, which represents the amount of money invested in the current year that would be sufficient to cover all present and future costs associated with the alternative. This enables the costs of remedial alternatives to be compared on a common basis. As a convention, a time frame of 30 years is used to evaluate present worth costs for alternatives with an indefinite duration. This does not imply that operation, maintenance, or monitoring would cease after 30 years if remediation goals are not achieved. A summary of the Remedial Alternatives Costs is included as Exhibit C.

The basis for the Department's proposed remedy is set forth at Exhibit D.

The proposed remedy is referred to as the Cover System with Site Management remedy.

The estimated present worth cost to implement the remedy is $1,100,000. The cost to construct the remedy is estimated to be $1,000,000 and the estimated average annual cost is $7,000.

The elements of the proposed remedy, as shown in Figure 6, are as follows:

1. Remedial Design
A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows;

• Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;

• Reducing direct and indirect greenhouse gases and other emissions;

• Increasing energy efficiency and minimizing use of non-renewable energy;

• Conserving and efficiently managing resources and materials;

• Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;

• Maximizing habitat value and creating habitat when possible;

• Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and

• Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2. Cover System
A site cover will be required to allow for commercial use of the site. The cover will consist either of the structures such as buildings, pavement and sidewalks comprising the site development or a soil cover in areas where the upper one foot of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where the soil cover is required it will be a minimum of one foot of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for commercial use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site must meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

3. Institutional Control
Imposition of an institutional control in the form of an environmental easement for the controlled property that:

• requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);

• allows the use and development of the controlled property for commercial and industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws;

• restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH; and

• requires compliance with the Department approved Site Management Plan.

4. Site Management Plan
A Site Management Plan is required, which includes the following:

a. an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: the environmental easement discussed in item 3 above.

Engineering Controls: the cover system discussed in item 2 above.

This plan includes, but may not be limited to:

• an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;

• descriptions of the provisions of the environmental easement including any land use, and groundwater use restrictions;

• provisions for the management and inspection of the identified engineering controls;

• maintaining site access controls and Department notification;

• the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls; and

• a soil management plan identifying areas of the site where digging is restricted and establishing protocols for the safe management and disposal of contaminated soil.

Exhibit A

Nature and Extent of Contamination

This section describes the findings of the Remedial Investigation for all environmental media that were evaluated. As described in Section 6.1, samples were collected from various environmental media to characterize the nature and extent of contamination.

For each medium for which contamination was identified, a table summarizes the findings of the investigation. The tables present the range of contamination found at the site in the media and compares the data with the applicable SCGs for the site. The contaminants are arranged into four categories; volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides/polychlorinated biphenyls (PCBs), and inorganics (metals and cyanide). For comparison purposes, the SCGs are provided for each medium that allows for unrestricted use. For soil, if applicable, the Restricted Use SCGs identified in Section 4 and Section 6.1.1 are also presented.

Based on the Remedial Investigation (RI) conducted from June 2014 through August 2014, the primary environmental issues identified at the site are soil contamination from waste disposal into the former recharge basin and contaminated soil deposition from the demolition of the Fairchild Main Plant Site (MPS).

Groundwater

The groundwater sampling program consisted of the installation of four temporary monitoring wells and the utilization of two previously installed monitoring wells for a total of six sampling wells. The wells were screened at various depths between 19 feet and 50 feet below ground surface to gauge groundwater quality from the water table through the known depth of the former recharge basin. Monitoring well MW-4 was placed in the vicinity of where a 1992-93 remedial investigation reported elevated levels of total VOCs in groundwater at up to 786 ppb. Reported detections of VOC in MW-4 were all below SCGs, with total VOCs at less than 3 ppb.

Groundwater quality standards were slightly exceeded in one well for one VOC. Table 1 lists the lone VOC found to exceed SCG. Figure 2 shows the site map with monitoring well locations.

Table 1 - Groundwater

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
VOCs			
Tetrachloroethene (PCE)	ND - 6	5	1/6

a - ppb: parts per billion, which is equivalent to micrograms per liter, ug/L, in water.
b- SCG: Standard Criteria or Guidance - Ambient Water Quality Standards and Guidance Values (TOGs 1.1.1), 6 NYCRR Part 703, Surface water and Groundwater Quality Standards, and Part 5 of the New York State Sanitary Code (10 NYCRR Part 5).

No site-related groundwater contamination of concern was identified during the RI. Therefore, no remedial alternatives need to be evaluated for groundwater.

Soil

Surface and shallow subsurface soil samples were collected at 30 locations during the RI, to assess general soil contamination across the site. Surface soil samples were collected from a depth of 0-2 inches, to assess the potential for direct human exposure, while shallow subsurface soil samples were collected from a depth of 0-1 foot below ground, to evaluate the top foot of soil for eventual commercial development of the site. Deeper soil samples were collected at various depths down to 32 feet below ground to evaluate contamination impacts to groundwater. A site map with soil sample locations is shown on Figure 3.

In addition to the general sampling, focused soil sampling was conducted in three areas of concern (AOC), depicted on Figure 3. The PCB AOC is an area within the site where contaminated bottom sediments were disturbed and surfaced during the 1997-98 filling of the recharge basin ponds, resulting in an upwelling of PCB and metals contamination to the surface and shallow subsurface soils. The 2014 RI focused forty three soil borings in this area, collecting 213 samples from five depth intervals. Sample locations and results for the PCB AOC are detailed in Figure 4.

The chromium deposition AOC is an area along the western site boundary where chromium-contaminated soils from the former Fairchild Main Plant Site were deposited during the MPS demolition and remediation. Samples were collected from twelve locations.

The BUD AOC is a 25,000 cubic-yard pile of petroleum-contaminated soil that was stockpiled on-site in anticipation of its on-site use as parking lot sub-base material for a previous development project which never materialized. Samples were collected from the center and bottom of the pile at three locations.

Sample results indicate that soil contamination is widespread across the 13 acre site with the majority of the seventy six sample locations exceeding unrestricted use soil cleanup objectives (UUSCOs) for one or more of the following: PCBs ranging from non-detect (ND) to 5.4 parts per million (ND-5.4 ppm); metals- lead (ND-752 ppm), total chromium (ND-205 ppm), cadmium (ND-3.6 ppm), mercury (ND-0.48 ppm), silver (ND-15.7 ppm), copper (ND-58.7 ppm) and zinc (ND-229 ppm); and seven SVOCs- benzo(a)anthracene (ND-8.5 ppm), benzo(a)pyrene (ND-7.9 ppm), benzo(b)fluoranthene (ND-11 ppm), benzo(k)fluoranthene (ND-3.9 ppm), chrysene (ND-8.1 ppm), dibenzo(a,h)anthracene (ND-0.93 ppm) and indeno(1,2,3-cd)pyrene (ND-2.9 ppm). One VOC, acetone, marginally exceeded UUSCO in two deep subsurface samples.

Surface soils and/or shallow subsurface soils (1 foot below ground), exceed UUSCOs for SVOC, metals or PCB at 15 of 30 sample locations. SVOC are the most widely distributed site contaminant. They were detected in all 40 surface and shallow subsurface soil samples analyzed, exceeding UUSCO at 10 of 20 locations.

Commercial use SCOs (CUSCOs) were exceeded for four SVOCs: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and dibenzo(a,h)anthracene. The exceedances occurred in surface, shallow subsurface and deep soils at up to 11 locations. Total PCB concentrations exceeded CUSCOs at 4 locations in the PCB AOC at depths ranging from 12-32 feet BGS. PCB concentrations are below the acceptable presumptive remedy guidelines set forth in CP-51 (Commissioner Policy 51/ Soil Cleanup Guidance), for non-residential use sites, where a soil cleanup level for PCBs of 1 ppm in surface soils and 10 ppm in subsurface soils has been established. Reported concentrations for VOCs, metals and pesticides did not exceed CUSCOs.

Industrial Use SCOs (IUSCOs) were exceeded for one SVOC: benzo(a)pyrene, at ten locations. The exceedences occurred in surface, shallow subsurface and deep samples, down to 32 feet below ground. The IUSCO and CUSCO values for benzo(a)pyrene are nearly identical- 1.1 ppm vs. 1 ppm, respectively.

Soil contamination was not found to be impacting groundwater. The RI findings are consistent with previous investigations and, the areas of concern (AOC) resulting from basin filling operations and post-filling activities (1997-99) were found to have not substantially exacerbated the risk of human exposure to contamination, as previously believed.

Table 2 lists the range of concentrations for all soil contaminants exceeding SCGs. Figure 3 shows sample locations where surface and/or shallow subsurface soils exceed UUSCOs. Figure 4 shows the locations were soil contamination exceeds Commercial Use SCOs.

Table 2- Soil **152004**

Screening Criteria in use: 375 SOIL - COMMERCIAL USE, 375 SOIL - PROTECTION OF GROUNDWATER, 375 SOIL - UNRESTRICTED USE

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted Use SCG[b] (ppm)	Frequency Exceeding Unrestricted Use SCG	Restricted Use SCG[c] (ppm)	Frequency Exceeding Restricted Use SCG
Metals PART 375					
Chromium, Total	3.70-80.6	30	8/66	19	14/66
Copper	0-58.7	50	3/66	270	0/66
Lead	0.750-752	63	11/66	450	1/66
Mercury	0-0.700	0.18	5/66	0.73	0/66
Silver	0-2.00	2	1/66	8.3	0/66
Zinc	8.10-229	109	9/66	2480	0/66
Pesticides/PCBs PART 375					
PCB-1248 (Aroclor 1248)	0-5.40	0.1	26/214	1	3/214
PCB-1254 (Aroclor 1254)	0-0.790	0.1	5/214	1	0/214
PCB-1260 (Aroclor 1260)	0-1.00	0.1	21/214	1	2/214
Polychlorinated Biphenyl (PCBs)	0-5.40	0.1	50/214	1	5/214
SVOC PART 375					
Benzo(A)Anthracene	0-8.50	1	13/46	1	13/46
Benzo(A)Pyrene	0-7.90	1	14/46	1	14/46
Benzo(B)Fluoranthene	0-11.0	1	18/46	1.7	12/46
Benzo(K)Fluoranthene	0-3.90	0.8	11/46	1.7	4/46
Chrysene	0-8.10	1	14/46	1	14/46
Dibenz(A,H)Anthracene	0-0.930	0.33	9/46	0.56	5/46
Indeno(1,2,3-C,D)Pyrene	0-3.30	0.5	19/46	5.6	0/46
PCB-1262 (Aroclor 1262)	0-0.200	0.1	1/214	1	0/214
VOC PART 375					
Acetone	0-0.0590	0.05	2/46	0.05	1/46

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
b - SCG: Part 375-6.8(a), Unrestricted Soil Cleanup Objectives.
c - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Public Health for Commercial Use, unless otherwise noted.

The solid waste issues observed on-site will be rectified by the property owner during the course of site redevelopment and are not addressed by the remedy selection process. Dependent upon future construction plans, the elevation of final grade may require the removal of soil from the site. Being a Class 2 site, no soils, BUD material, C&D material or solid waste presently on the site may be disposed of off-site without prior characterization. No soils, BUD material, C&D material or solid waste presently on the site may be moved onto adjacent, non-site parcels to achieve desired grading elevations prior to characterization and approval of the Department.

The BUD material contains four SVOCs at levels exceeding CUSCOs, and benzo(a)pyrene exceeding IUSCOs. The material will require re-evaluation for suitability and another BUD permit before it can be used on-site, or it must be removed and disposed of off-site at a permitted landfill.

The primary soil contaminants of concern are SVOCs and metals from operations of the former Fairchild Main Plant site, and the subsequent disposal of soil and debris from the site demolition in 1997-98. Lead, chromium, mercury, copper, PCB and SVOC were detected in surface and/or shallow subsurface soils at levels above unrestricted use SCOs.

Based on the findings of the Remedial Investigation, the past disposal of hazardous waste has resulted in the contamination of soil. The site contaminants identified in soil which are considered to be the primary contaminants of concern, to be addressed by the remedy selection process are benzo(a)pyrene, dibenzo(a)pyrene, lead, chromium, mercury and copper.

Exhibit B

Description of Remedial Alternatives

The following alternatives were considered based on the remedial action objectives (see Section 6.5) to address the contaminated media identified at the site as described in Exhibit A.

Alternative 1: No Action

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. This alternative leaves the site in its present condition and does not provide any additional protection to public health and the environment.

Alternative 2: Restoration to Pre-Disposal or Unrestricted Conditions

This alternative achieves all of the SCGs discussed in Section 6.1.1 and Exhibit A and soil meets the Unrestricted Use Soil Cleanup Objectives listed in Part 375-6.8 (a). This alternative would include: excavation and off-site disposal of all waste and soil contamination above the unrestricted soil cleanup objectives. The remedy will not rely on institutional or engineering controls to prevent future exposure. There is no Site Management, no restrictions, and no periodic review. This remedy will have no annual cost, only the capital cost.

Contamination exceeding Unrestricted Use Soil Cleanup Objectives is documented in surface soils and subsurface soils down to 32 feet below ground. It is estimated that approximately 671,000 cubic yards of soil would be excavated to achieve unrestricted use of the 13 acre site. This alternative will require removal of contaminated soils from below the water table and extensive shoring of the excavation during soil removal. An equal quantity of clean soil is required to restore the site to present grade.

Capital Cost:.....$250,000,000

Alternative 3: Cover System with Site Management

This alternative would include, a cover system to allow for commercial use of the site. The cover will consist either of the structures such as buildings, pavement and sidewalks comprising future site development or a soil cover in areas where the upper one foot of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where the soil cover is required it will be a minimum of one foot of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for commercial use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d). An institutional control in the form of an environmental easement (EE) is required to restrict use of the controlled property for commercial and industrial purposes. A site management plan (SMP) is required which identifies all institutional and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the institutional and/or engineering controls remain in place and effective.

Present Worth: ……..$1,100,000
Capital Cost:.....$1,000,000
Annual Costs:.....$7,000

Exhibit C

Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
No Action	0	0	0
Restoration to Pre-Disposal or Unrestricted Conditions	$250M	$0	$250M
Cover System with Site Management	$1M	$7,000	$1.1M

SUMMARY OF THE PROPOSED REMEDY

The Department is proposing Alternative 3, Cover System with Site Management as the remedy for this site. Alternative 3 would achieve the remediation goals for the site by installation of a cover system to prevent human exposure to soil contamination. The elements of this remedy are described in Section 7. The proposed remedy is depicted in Figure 6.

Basis for Selection

The proposed remedy is based on the results of the RI and the evaluation of alternatives. The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375. A detailed discussion of the evaluation criteria and comparative analysis is included in the FS report.

The first two evaluation criteria are termed "threshold criteria" and must be satisfied in order for an alternative to be considered for selection.

1. Protection of Human Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

The proposed remedy Alternative 3, Cover System with Site Management, would satisfy this criterion by preventing exposure to soil contamination by installation of a cover system. Contaminated soil will be covered by clean soil and/or by the buildings, parking lots and roadways of a future development project. Alternative 1 (No Action) does not provide any additional protection to public health and the environment and will not be evaluated further. Alternative 2, Restoration to Pre-Disposal or Unrestricted Conditions best protects human health and the environment by removing all contamination from the site.

2. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether a remedy will meet environmental laws, regulations, and other standards and criteria. In addition, this criterion includes the consideration of guidance which the Department has determined to be applicable on a case-specific basis.

Alternative 3 complies with SCGs to the extent practicable. It meets restricted use soil cleanup objectives at the surface through construction of a cover system. Alternative 2 best complies with this criterion because it removes all soils and wastes exceeding SCGs and leaves no contamination on the site.

The next six "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on-site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the engineering and/or institutional controls intended to limit the risk, and 3) the reliability of these controls.

Long-term effectiveness is best accomplished through the removal of contamination. As such, Alternative 2 best fulfills this criterion with the full excavation and removal of soil contamination. Alternative 3 leaves contamination on site and instead relies on continued maintenance of the surface cover and future owner/operator compliance with use restrictions and a site management plan in order to remain effective. Alternative 3, therefore, is somewhat less effective at meeting this criterion.

4. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

Alternative 2 best reduces the toxicity, mobility and volume of contamination on the site by removing all contaminated soil. Alternative 3 leaves the soil contamination on site and therefore does nothing to reduce its volume or toxicity. The soil contaminants- metals, PCBs and SVOCs- are relatively immobile and not impacting the groundwater. Subsurface soil contamination is not likely to migrate off-site. Through a cover system, Alternative 2 will control the mobility and toxicity of surface contamination via wind-blown dust and from direct human contact.

5. Short-term Impacts and Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

Alternative 2 will have enormous short-term impacts to the local community. Removal of approximately 670,000 cubic yards of contaminated soil is expected to take two to three years and result in thousands of trips of loaded dump trucks on local roads. Construction noise, dust and traffic are all expected nuisances which can be controlled. Sourcing 670,000 cubic yards of clean fill will be difficult and costly.

Alternative 3 will have much smaller impacts to the community as the soil requirements for a full site soil cover, estimated at 21,000 cubic yards, are significantly less. Moreover, the cover system is expected to be incorporated as part of a planned commercial/retail development of the site. If the planned retail development were to occur, much of the cover system will be comprised of commercial buildings, asphalt parking lots and roadways, significantly reducing the amount of imported clean soil. The impacts of the cover system requirement will be absorbed into the overall retail construction. Alternative 3 is significantly more effective at preparing the site for commercial development.

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction of the remedy and the ability to monitor its effectiveness. For administrative feasibility, the availability of the necessary personnel and materials is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, institutional controls, and so forth.

Alternative 2 contemplates the removal of soil from the 13 acre site down to a depth of 32 feet. This is likely not possible. Technical difficulties in implementing this alternative arise from the depth of the excavation. Extensive shoring and sheeting will need to be installed in order to get to a depth of 32 feet. Time is also a factor to consider since the removal and importation of 670,000 cubic yards of material could take over 2-3 years.

Alternative 3 is much more readily implemented. Constructing the soil cover poses no major technical difficulties other than containing potential dust emissions during construction. A cover system integrated into a planned commercial development project further enhances the implementability of Alternative 3.

7. Cost-Effectiveness. Capital costs and annual operation, maintenance, and monitoring costs are estimated for each alternative and compared on a present worth basis. Although cost-effectiveness is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the other criteria, it can be used as the basis for the final decision.

The full excavation of the site is the most effective way of removing site contamination, but due to the extreme costs associated with Alternative 2, it is not at all cost effective. Alternative 3 is much more cost effective while still satisfying the site specific RAOs.

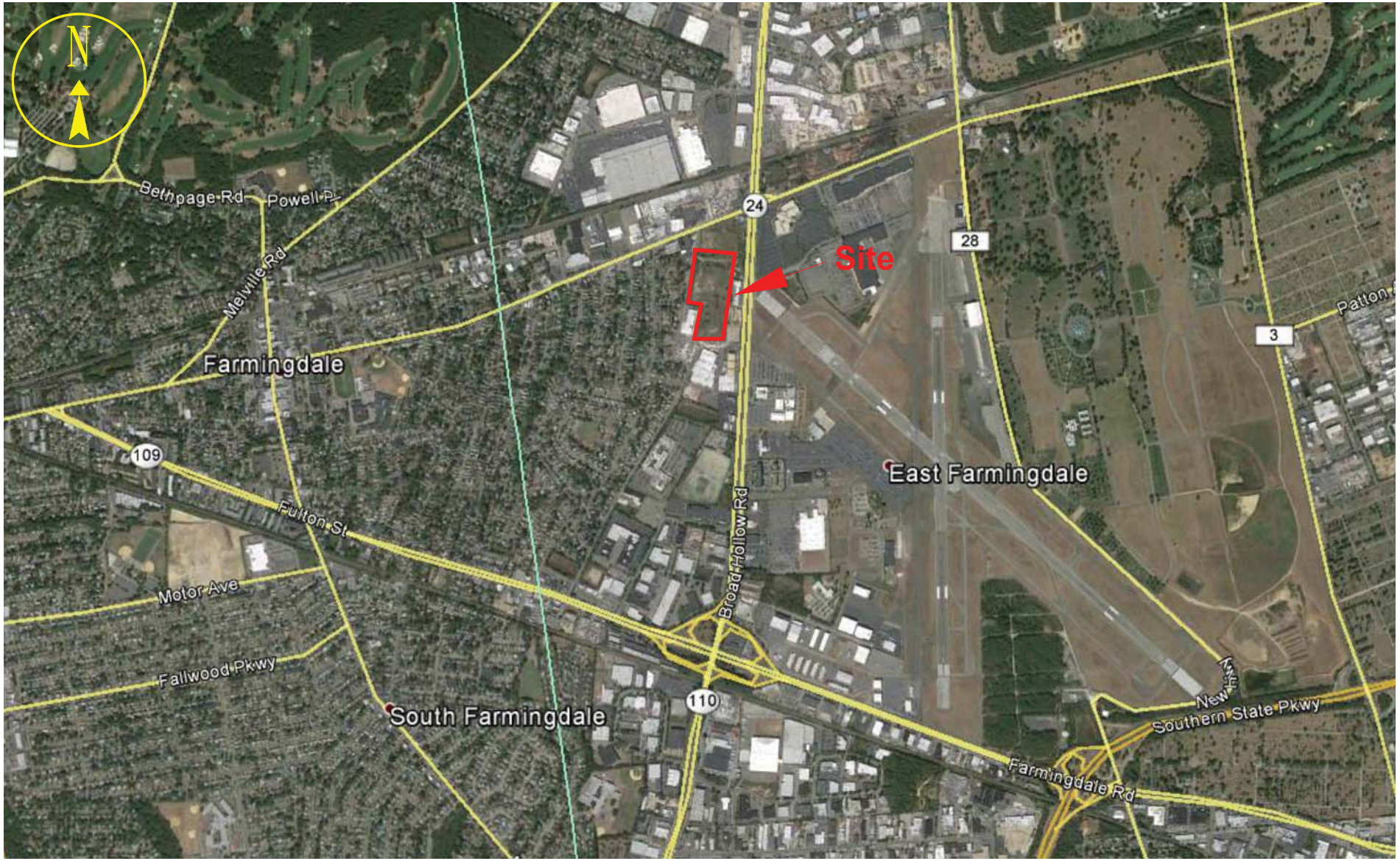
8. Land Use. When cleanup to pre-disposal conditions is determined to be infeasible, the Department may consider the current, intended, and reasonable anticipated future land use of the site and its surroundings in the selection of the soil remedy.

Since it is anticipated that this property will be developed and used for commercial purposes, Alternative 3 best fulfills this criterion. The encapsulation of the contaminated soil is easily achievable with a soil cover system or installation of buildings, parking lots and roadways. Due to the immobility of the site contamination, there is no concern for the migration of contamination, provided the surface cover is maintained with a Site Management Plan and an Environmental Easement is put in place restricting future excavation or development.

The final criterion, Community Acceptance, is considered a "modifying criterion" and is taken into account after evaluating those above. It is evaluated after public comments on the Proposed Remedial Action Plan have been received.

9. Community Acceptance. Concerns of the community regarding the investigation, the evaluation of alternatives, and the PRAP are evaluated. A responsiveness summary will be prepared that describes public comments received and the manner in which the Department will address the concerns raised. If the selected remedy differs significantly from the proposed remedy, notices to the public will be issued describing the differences and reasons for the changes.

Alternative 3 is being proposed because, as described above, it satisfies the threshold criteria and provides the best balance of the balancing criterion.



Modified from 2014 Europa Technologies, Google

Not to Scale

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

Figure 1
Site Location Map

Fairchild Republic Aircraft; Old Sump
Broad Hollow Road
East Farmingdale, NY
Site No. 152004



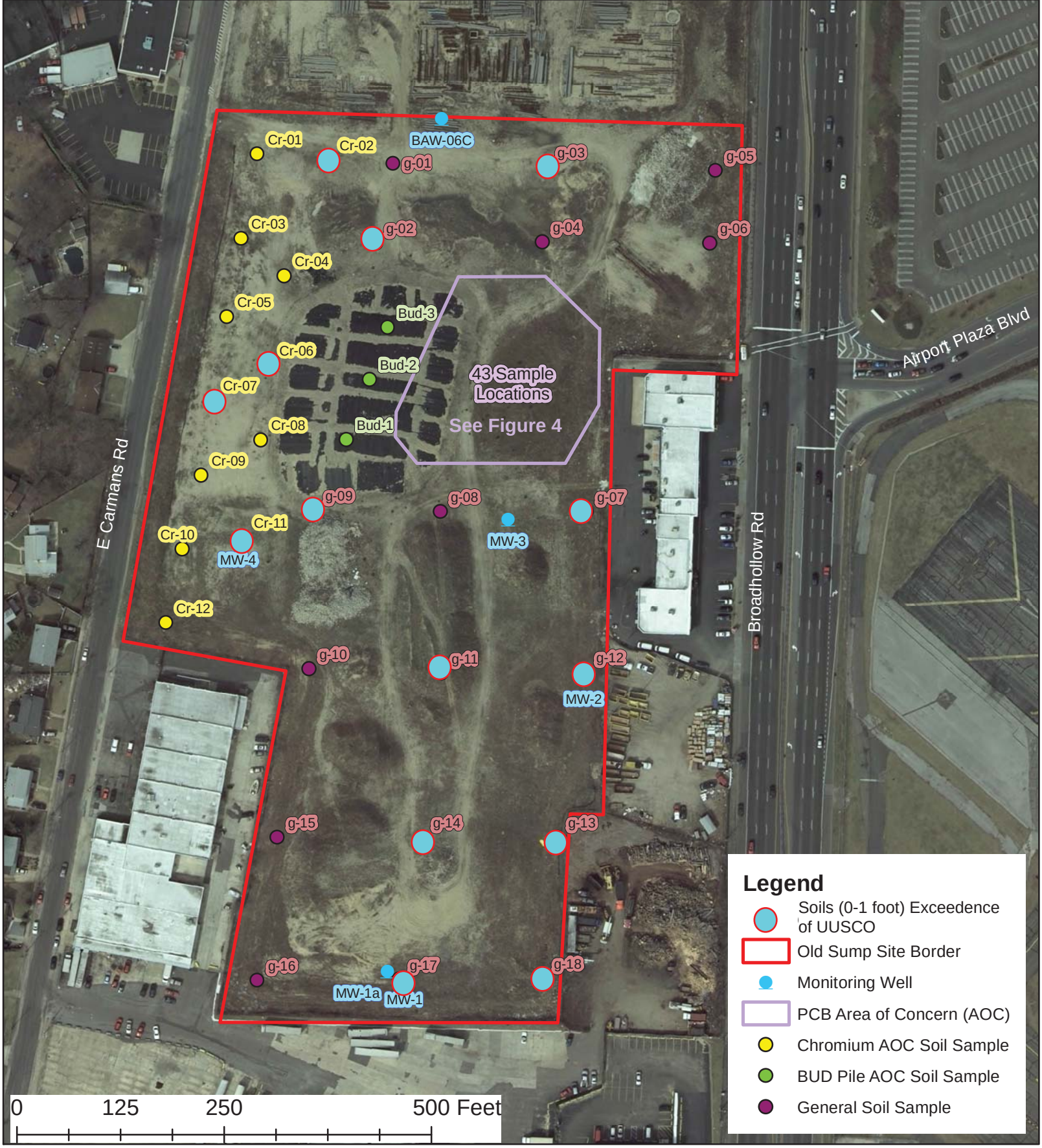
0 175
SCALE IN FEET

Legend
MW-1 - Well ID Labels
- Surveyed Well Locations

225 Atlantic Avenue
Patchogue, New York 11772
Tel (631) 447-6400
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Figure 2
Site Map

Fairchild Republic Aircraft; Old Sump
Broad Hollow Road
East Farmingdale, NY
Site No.152004



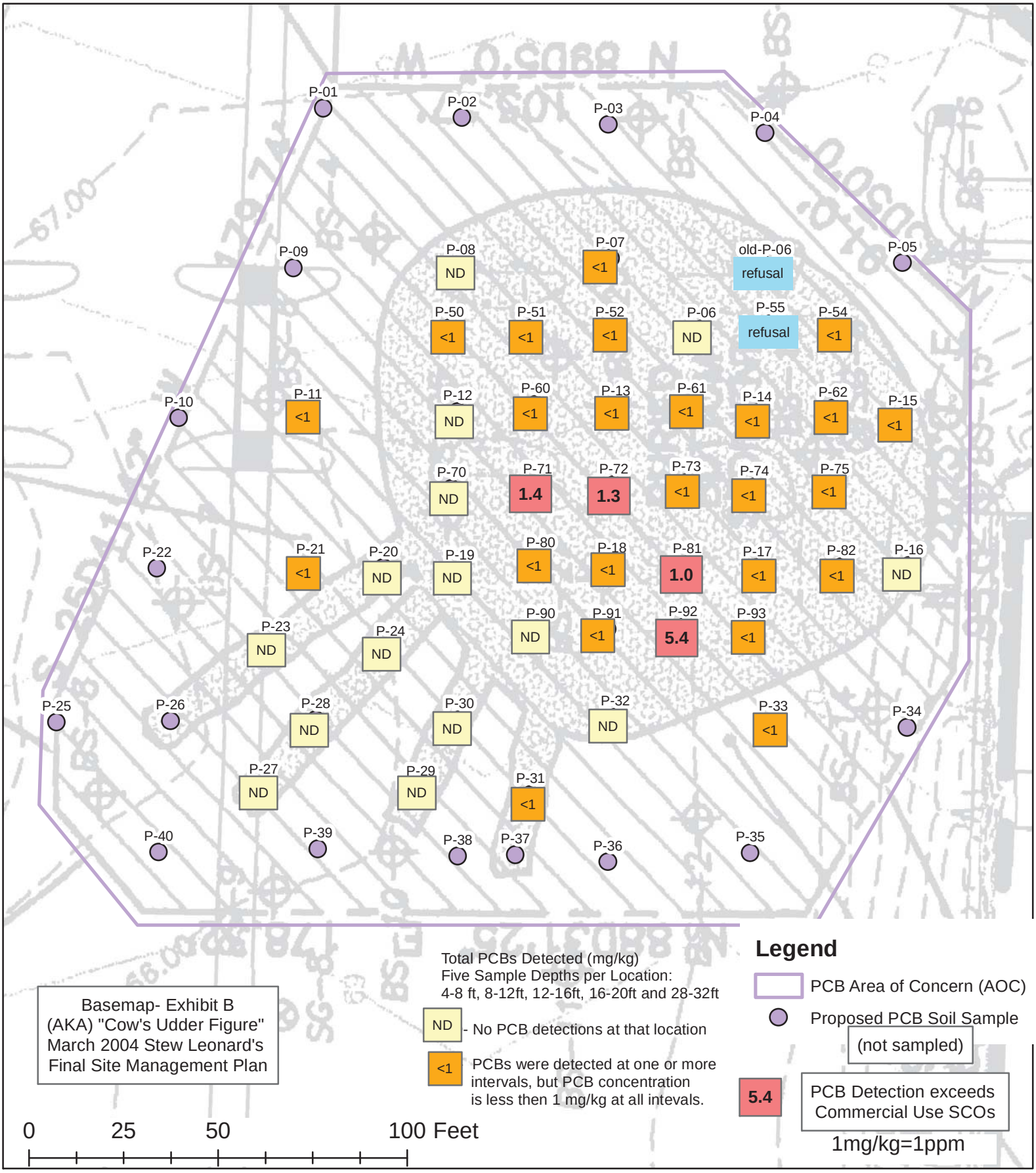
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Fairchild Old Sump Site (class 2) Site No. 152004
Broad Hollow Rd (Rt 110) E. Farmingdale, NY 11530
Town of Babylon, Suffolk County, New York

Remedial Investigation
Surface and Shallow Subsurface Soil Exceedences of
6 NYCRR 375-6.8 Unrestricted Use Soil Cleanup Objectives (UUSCO)
June-July 2014

Figure 3

Created by: RKC
2/5/15

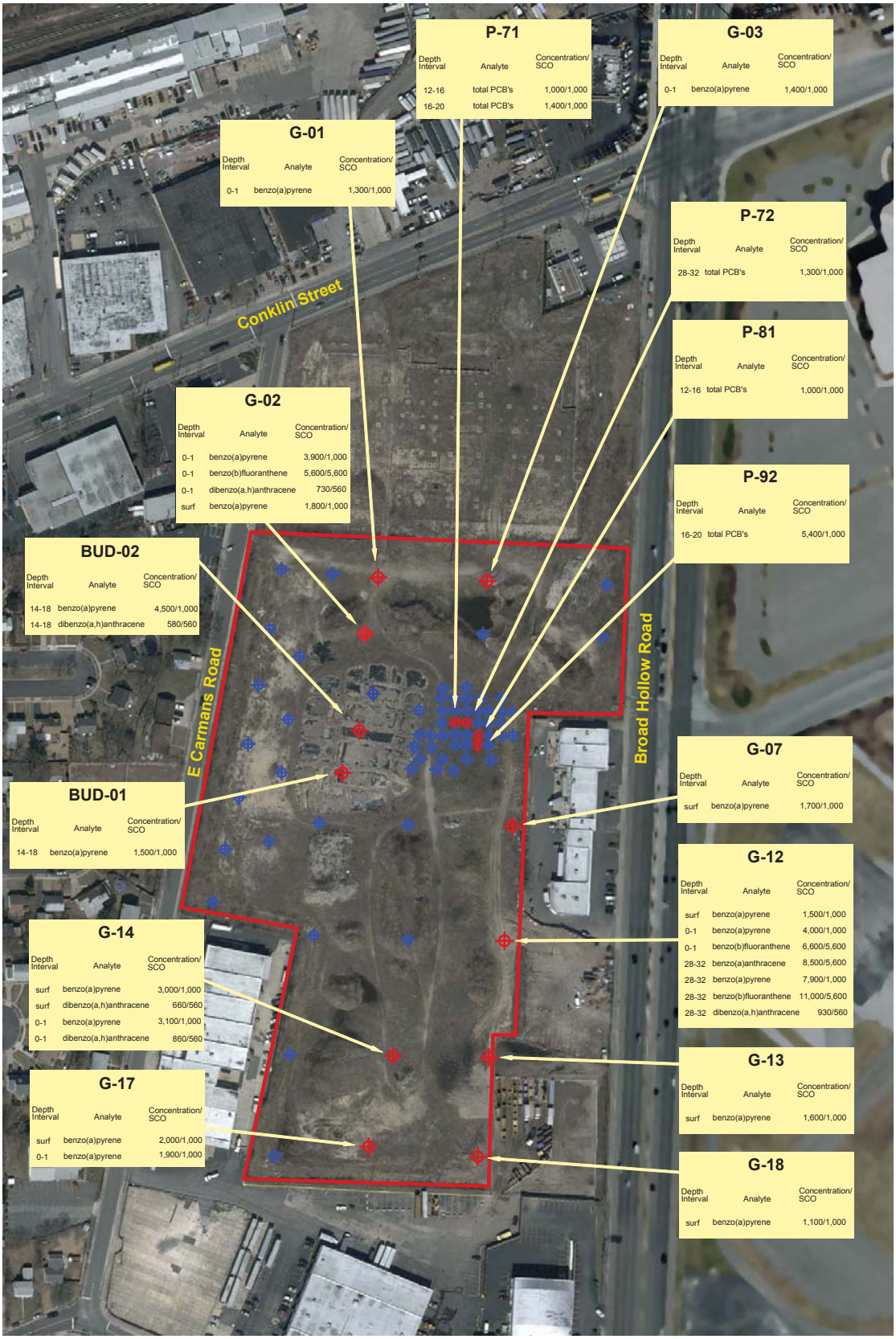


Fairchild Old Sump Site (class 2) Site No. 152004
Broad Hollow Rd (Rt 110) E. Farmingdale, NY 11530
Town of Babylon, Suffolk County, New York

Remedial Investigation
Sample Results
PCB Area of Concern
June/July 2014

Figure 4

Created by: RKC
10/2/14



- Soil Sampling Location w/ Commercial SCO Exceedance
- Soil Sampling Location

All concentrations reported in ug/Kg
Depth intervals provided in feet below grade surface
All analyses by Test America, Inc.

0 175
SCALE IN FEET

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS
225 Atlantic Avenue
Patchogue, New York 11772
Tel (631) 447-6400
Fax (631) 447-6497
Email Info@Enviro-Asmnt.com
www.Enviro-Asmnt.com

Figure 5

Commercial SCO Exceedances

June-July 2014 Remedial Investigation

6 NYCRR 375-6.8 Commercial Use Soil Cleanup Objectives

Fairchild Republic Aircraft; Old Sump
Broad Hollow Road
East Farmingdale, NY
Site No.152004



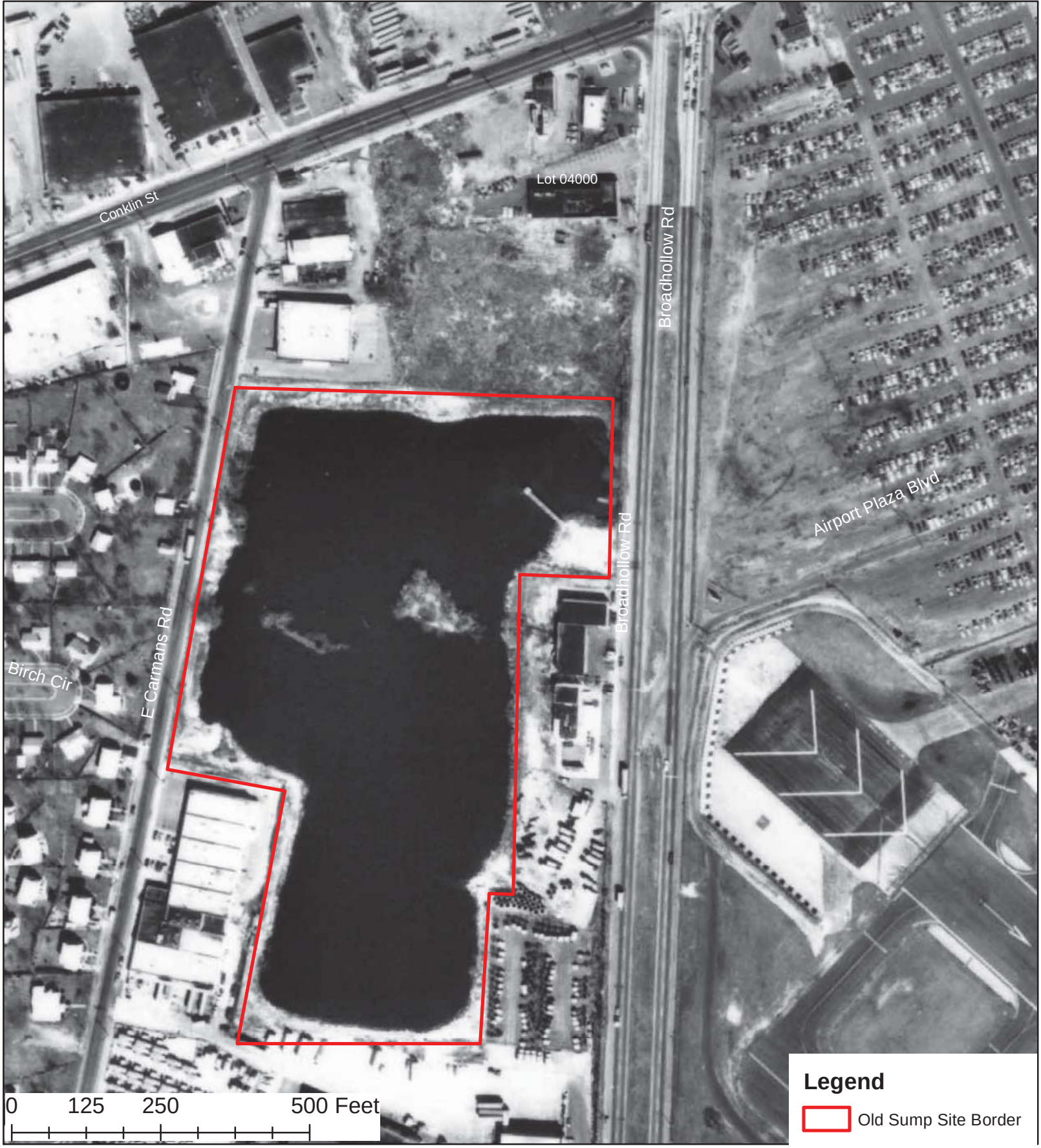
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Fairchild Old Sump Site (class 2) Site No. 152004
Broad Hollow Rd (Rt 110) E. Farmingdale, NY 11530
Town of Babylon, Suffolk County, New York

Remedial Investigation
Approximate Area for Commercial Cover System
June/July 2014

Created by: RKC
2/5/15

Figure 6



N

Fairchild Old Sump Site (class 2) Site No. 152004
Broad Hollow Rd (Rt 110) E. Farmingdale, NY 11530
Town of Babylon, Suffolk County, New York

Remedial Investigation
Historical Aerial Photo
1976

Figure 7

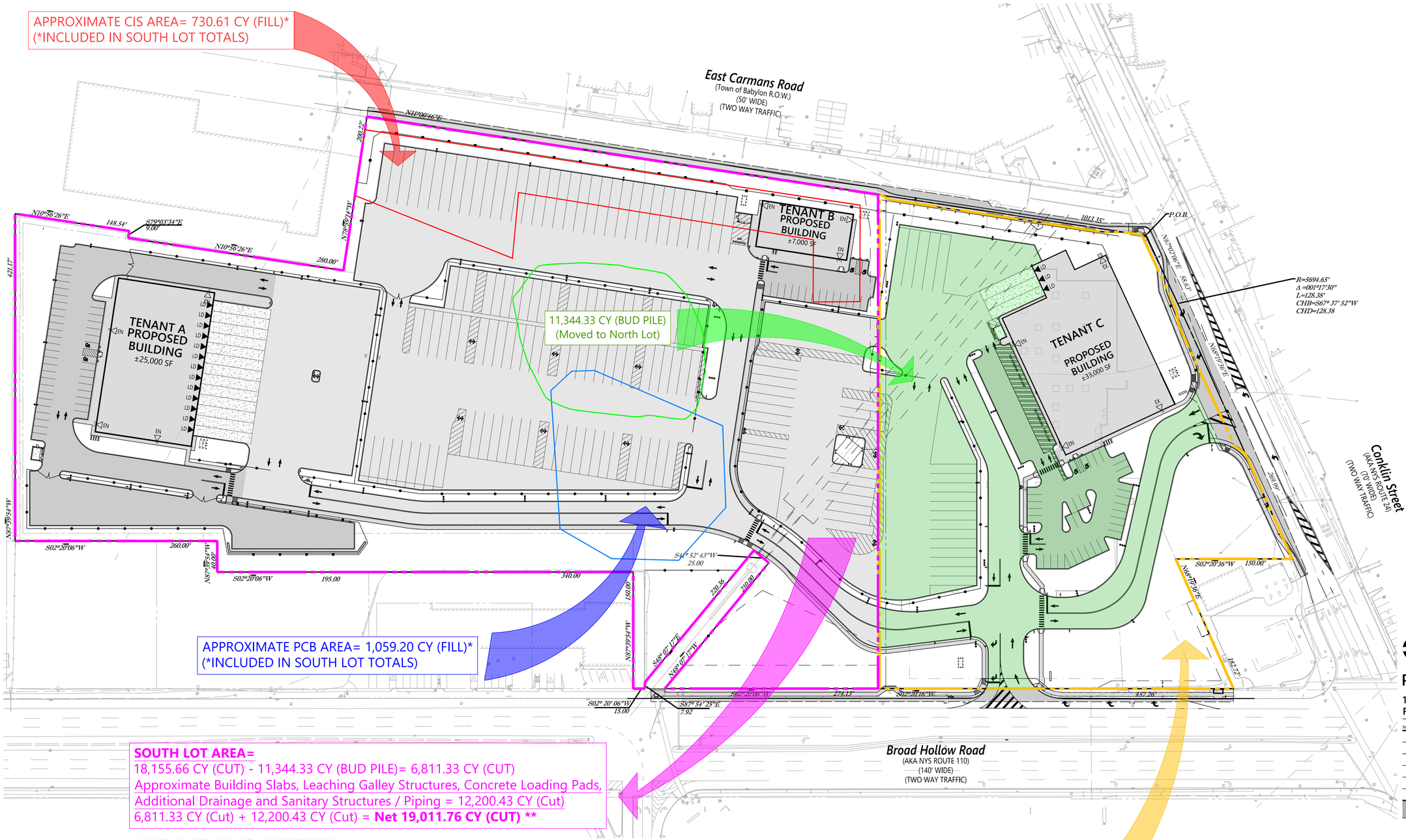
Created by: RKC
5/01/14

APPENDIX B

Proposed Redevelopment Plan

\\vhb.com\gbl\proj\Hauppauge\20760.02 Acadia 1330 Broadhollow\cad\Consultants\Outgoing\20250530_to Roux\20760.02-CF-1.dwg

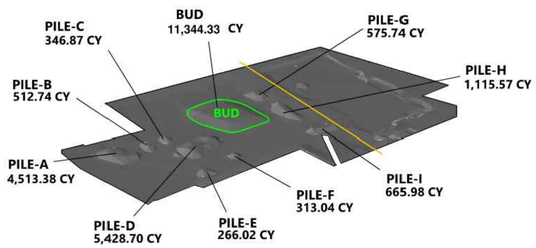
APPROXIMATE CIS AREA= 730.61 CY (FILL)*
(*INCLUDED IN SOUTH LOT TOTALS)



APPROXIMATE PCB AREA= 1,059.20 CY (FILL)*
(*INCLUDED IN SOUTH LOT TOTALS)

SOUTH LOT AREA=
18,155.66 CY (CUT) - 11,344.33 CY (BUD PILE)= 6,811.33 CY (CUT)
Approximate Building Slabs, Leaching Galley Structures, Concrete Loading Pads, Additional Drainage and Sanitary Structures / Piping = 12,200.43 CY (Cut)
6,811.33 CY (Cut) + 12,200.43 CY (Cut) = **Net 19,011.76 CY (CUT) ****

EXISTING PILES REMOVAL



BUD Pile=11,344.33 cy

Additional piles on South Side=13,738.04 cy
**(included in South Lot cut number)

NORTH LOT AREA=
18,108.07 CY (Fill) - 11,344.33 CY (BUD pile) = 6,763.74 CY (Fill)
Approximate Building Slabs, Leaching Galley Structures, Concrete Loading Pads, Additional Drainage and Sanitary Structures / Piping = 5,634.75 CY (Cut)
6,763.74 CY (Fill) - 5,634.75 CY (Cut) = **Net 1,128.99 CY (Fill)**

AREA CALCULATIONS:
830,617 SF (OVERALL AFTER DEDICATION)

IMPERVIOUS:

81,381 SF	(STANDARD DUTY PAVEMENT)
402,099 SF	(HEAVY DUTY PAVEMENT)
16,200 SF	(CONC. LOADING PADS)
65,000 SF	(BUILDINGS)
27,334 SF	(MISC. CONCRETE CURB & SIDEWALKS)

PERVIOUS:

238,603 SF	(LANDSCAPING)

vhb.com
vhb
Engineering, Surveying, Landscape Architecture and Geology, PC
100 Motor Parkway
Suite 350
Hauppauge, NY 11788
631.787.3400

0 30 60 120Feet

Proposed Industrial Uses

1330 Broadhollow Road
Farmingdale, NY 11735

No.	Revision	Date	Appvd.

CS | Checked by: CR

Date: June 2, 2025

Not Approved for Construction

Cut/Fill Analysis

Drawing Number
CF-1

Sheet 1 of 2

Project Number
20760.02

IT IS A VIOLATION OF SECTION 7209 OF ARTICLE 145 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON TO ALTER ANY DOCUMENT THAT BEARS THE SEAL OF A PROFESSIONAL ENGINEER, UNLESS THE PERSON IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER

Saved Monday, June 2, 2025 11:28:13 AM CSULLIVAN Plotted Monday, June 2, 2025 11:30:56 AM Christopher Sullivan

Site Plans

Issued for	Site Plan Approval
Date Issued	February 10, 2023
Latest Issue	November 12, 2024

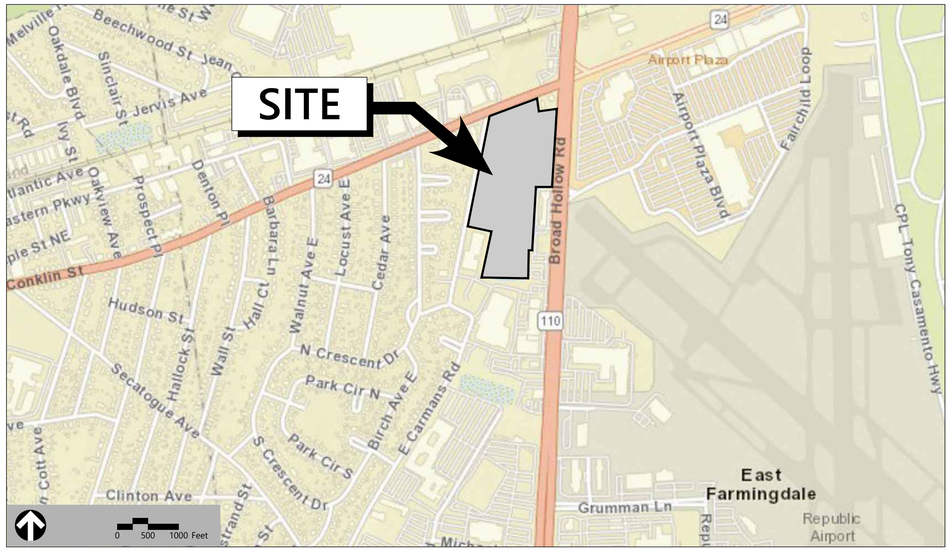
Proposed Industrial Uses

1330 Broadhollow Road
Farmingdale, NY 11735

Applicant

Acadia Republic Farmingdale LLC
411 Theodore Fremd Ave
Suite 300
Rye, NY 10580

Suffolk County Tax Map#:
100-49-2-1, 4, 5, 6, 7, 8, 10, 11, & 14



Sheet Index

No.	Drawing Title	Latest Issue
C1.01	Legend and General Notes	November 12, 2024
C2.01	Overall Site Plan	November 12, 2024
C2.02	Partial Layout and Materials Plan (South)	November 12, 2024
C2.03	Partial Layout and Materials Plan (North)	November 12, 2024
C3.01	Overall Grading and Drainage Plan	November 12, 2024
C3.02	Partial Grading and Drainage Plan (South)	November 12, 2024
C3.03	Partial Grading and Drainage Plan (North)	November 12, 2024
C4.01	Overall Utility Plan and Boring Logs	November 12, 2024
C4.02	Partial Utility Plan (South)	November 12, 2024
C4.03	Partial Utility Plan (North)	November 12, 2024
C5.01	Erosion and Sediment Control Plan	November 12, 2024
C6.01	Overall Lighting Plan, Notes and Details	November 12, 2024
C6.02	Partial Photometric Plan (South)	November 12, 2024
C6.03	Partial Photometric Plan (North)	November 12, 2024
C7.01	Site Details 1	November 12, 2024
C7.02	Site Details 2	November 12, 2024
C7.03	Site Details 3	November 12, 2024
C7.04	Site Details 4	November 12, 2024
L1.01	Partial Planting Plan (South)	November 12, 2024
L1.02	Partial Planting Plan (North)	November 12, 2024
L2.01	Planting Notes and Details	November 12, 2024

Reference Drawings

No.	Drawing Title	Latest Issue
1 of 2	Boundary and Topographic Survey	May 1, 2024
2 of 2	Boundary and Topographic Survey	May 1, 2024
CP.01	Circulation Plan - WB-67 Truck	August 9, 2024
CP.02	Circulation Plan - Fire Truck Apparatus	November 12, 2024
CP.03	Circulation Plan - Refuse Truck	August 9, 2024
CP.04	Storage Area Plan	November 12, 2024

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Engineering, Surveying, Landscape Architecture and Geology, PC
100 Motor Parkway
Suite 350
Hauppauge, NY 11788
631.787.3400

Survey
Control Point Associates, Inc.
35 Technology Drive
Warren, NJ 07059
908.668.0099

Geotechnical
Environmental Assessment & Remediations
225 Atlantic Avenue
Patchogue, NY 11772
631.447.6400

Architectural
CREATE Architecture Planning & Design
45 W 34th Steet, Penthouse
NewYork, NY 10001
212.297.0880

Site Management Plan
Remedial Engineering, P.C.
209 Shafter Street
Islandia, NY 11749
631.232.2600
and
Roux Associates, Inc.
209 Shafter Street
Islandia, NY 11749
631.232.2600

TOWN OF BABYLON APPROVAL STAMP SCHEDULE

BUILDING DEPT.	PLANNING BOARD APPROVAL	DEPARTMENTAL APPROVAL
ZONING _____ CONFORMS _____ VARIANCE _____ CONST. COST _____ DATE _____ SIGNATURE SEE GENERAL NOTE FOR SPECIFIC INFORMATION PERTAINING TO A VARIANCE IF REQUIRED & APPROVED.	RESOLUTION N⁰ _____ DATE _____ SIGNATURE	JOB N⁰ APPLICANT DATE HIGHWAY DEPT. DATE TOWN ENGINEERING DIVISION DATE PLANNING DIVISION DATE

VHB Project: 20760.02
Issued for: Site Plan Approval

\\VHB.COM\GBL\PROJ\HAUPPAUGE\20760.02 ACADIA 1330 BROADHOLLOW\CAD\LD\PLANSET\20760.02-CV 12 November 2024

*Proposed Legend

Prop.	
	PROPERTY LINE
	PROJECT LIMIT LINE
	RIGHT-OF-WAY/PROPERTY LINE
	EASEMENT
	BUILDING SETBACK
	PARKING SETBACK
10+00	BASELINE
	CONSTRUCTION LAYOUT
	ZONING LINE
	TOWN LINE
	LIMIT OF DISTURBANCE
	WETLAND LINE WITH FLAG
	FLOODPLAIN
	GRAVEL ROAD
EOP	EDGE OF PAVEMENT
BB	BITUMINOUS BERM
BBC	BELGIUM BLOCK CURB
MBBC	MOUNTED BELGIUM BLOCK CURB
CC	CONCRETE CURB
	SAWCUT
	BUILDING
	BUILDING OVERHANG
EN	BUILDING ENTRANCE
LD	LOADING DOCK
	BOLLARD
	DUMPSTER ENCLOSURE
	SIGN
	DOUBLE SIGN
	STEEL GUARDRAIL
	WOOD GUARDRAIL
	PATH
	TREE LINE
	WIRE FENCE
	FENCE
	STOCKADE FENCE
	STONE WALL
	RETAINING WALL
	STREAM / POND / WATER COURSE
	DETENTION BASIN
	HAY BALES
	SILT FENCE
	SILT SOCK / STRAW WATTLE
4	MINOR CONTOUR
20	MAJOR CONTOUR
PP	CAR PARKING COUNT
8	TOTAL CAR PARKING COUNT
33	TRUCK AND TRAILER PARKING COUNT FOR 13.5 x 75' SPACES
161	STORAGE TRAILER PARKING COUNT FOR 12' x 60' SPACES
161	TOTAL STORAGE TRAILER PARKING COUNT FOR 12' x 60' SPACES
7	COUNT FOR 13.5 x 75' LOADING SPACES
DYL	DOUBLE YELLOW LINE
STOP	STOP LINE
	CROSSWALK
	ACCESSIBLE CURB RAMP
	ACCESSIBLE PARKING
VAN	VAN-ACCESSIBLE PARKING
	CONCRETE
	ASPHALT PAVEMENT
	CONCRETE SIDEWALK
	CONSTRUCTION ENTRANCE
	PAVERS / PERMEABLE PAVERS
Matchline	MATCHLINE

Prop.	
27.35 TC	TOP OF CURB ELEVATION
26.85 BC	BOTTOM OF CURB ELEVATION
132.75	SPOT ELEVATION
45.0 TW 38.5 BW	TOP & BOTTOM OF WALL ELEVATION
	BORING LOCATION
	TEST PIT LOCATION
MW	MONITORING WELL
	FLOW ARROW
UD	UNDERDRAIN
	DRAIN
RD	ROOF DRAIN
12"S	SEWER
FM	FORCE MAIN
OHW	OVERHEAD WIRE
6"W	WATER
4"FP	FIRE PROTECTION
G	GAS
E	ELECTRIC
STM	STEAM
T	TELEPHONE
FA	FIRE ALARM
CATV	CABLE TV
	CATCH BASIN
	AREA DRAIN
	DOUBLE CATCH BASIN
	GUTTER INLET
	DRAIN MANHOLE
	TRENCH DRAIN
	PLUG OR CAP
CO	CLEANOUT
	FLARED END SECTION
	HEADWALL
	DRYWELL
	DRYWELL W/ INLET COVER
	DRYWELL W/ MANHOLE COVER
	DIFFUSION WELL W/ INLET COVER
	CONCRETE LEACHING GALLEY
	CONCRETE LEACHING GALLEY WITH SCOUR PROTECTION
	CONCRETE LEACHING GALLEY (DOUBLE STACK)
	CONCRETE LEACHING GALLEY W/ INLET COVER
	CONCRETE LEACHING GALLEY W/ MANHOLE COVER
	SANITARY MANHOLE
CO	SANITARY CLEANOUT
LP	SANITARY LEACHING POOL
EXP	EXPANSION LEACHING POOL
ST/GT	SANITARY SEPTIC TANK/GREASE TRAP
CS	CURB STOP & BOX
WV	WATER VALVE & BOX
TSV	TAPPING SLEEVE, VALVE & BOX
	SIAMESE CONNECTION
HYD	FIRE HYDRANT
WM	WATER METER
PIV	POST INDICATOR VALVE
W	WATER WELL
	THRUST BLOCKS
GG	GAS GATE
GM	GAS METER
EMH	ELECTRIC MANHOLE
EM	ELECTRIC METER
	LIGHT POLE
TMH	TELEPHONE MANHOLE
T	TRANSFORMER PAD
	UTILITY POLE
	GUY POLE
	GUY WIRE & ANCHOR
HH	HAND HOLE
PB	PULL BOX

Abbreviations

General

ABAN	ABANDON
ACR	ACCESSIBLE CURB RAMP
APPROX	APPROXIMATE
BIT	BITUMINOUS
BS	BOTTOM OF SLOPE
BWLL	BROKEN WHITE LANE LINE
CONC	CONCRETE
DYCL	DOUBLE YELLOW CENTER LINE
EL	ELEVATION
ELEV	ELEVATION
EXIST	EXISTING
FDN	FOUNDATION
FFE	FIRST FLOOR ELEVATION
LA	LANDSCAPE AREA
LOD	LIMIT OF DISTURBANCE
MAX	MAXIMUM
MIN	MINIMUM
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
PERF	PERFORATED
PROP	PROPOSED
REM	REMOVE
RET	RETAIN
R&D	REMOVE AND DISPOSE
R&R	REMOVE AND RESET
SWEL	SOLID WHITE EDGE LINE
SWLL	SOLID WHITE LANE LINE
TS	TOP OF SLOPE
TYP	TYPICAL

Utility

CB	CATCH BASIN
CMP	CORRUGATED METAL PIPE
CO	CLEANOUT
CPP	CORRUGATED POLYETHYLENE PIPE
DCB	DOUBLE CATCH BASIN
DMH	DRAIN MANHOLE
CIP	CAST IRON PIPE
COND	CONDUIT
DIP	DUCTILE IRON PIPE
FES	FLARED END SECTION
FM	FORCE MAIN
F&G	FRAME AND GRATE
F&C	FRAME AND COVER
GI	GUTTER INLET
GT	GREASE TRAP
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HH	HANDHOLE
HW	HEADWALL
HYD	HYDRANT
INV	INVERT ELEVATION
|=	INVERT ELEVATION
LCS	LEVEL CONTROL STRUCTURE
LP	LIGHT POLE
MES	METAL END SECTION
PWW	PAVED WATER WAY
PVC	POLYVINYLCHLORIDE PIPE
PIV	POST INDICATOR VALVE
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
R=	RIM ELEVATION
SMH	SEWER MANHOLE
ST	SEPTIC TANK
TSV	TAPPING SLEEVE, VALVE AND BOX
UD	UNDER DRAIN
UG	UNDERGROUND
UP	UTILITY POLE

*Note

SEE SURVEY DOCUMENTS BY CONTROL POINT ASSOCIATES, INC FOR EXISTING LEGEND LABELS.

Notes

General

1. CONTRACTOR SHALL NOTIFY NEW YORK 811 (DIAL 811) AT LEAST 48 HOURS BEFORE EXCAVATING.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SECURITY AND JOB SAFETY. CONSTRUCTION ACTIVITIES SHALL BE IN ACCORDANCE WITH OSHA STANDARDS AND LOCAL REQUIREMENTS.
3. ACCESSIBLE ROUTES, PARKING SPACES, RAMPS, SIDEWALKS AND WALKWAYS SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE FEDERAL AMERICANS WITH DISABILITIES ACT AND WITH STATE AND LOCAL LAWS AND REGULATIONS (WHICHEVER ARE MORE STRINGENT).
4. AREAS DISTURBED DURING CONSTRUCTION AND NOT RESTORED WITH IMPERVIOUS SURFACES (BUILDINGS, PAVEMENTS, WALKS, ETC.) SHALL RECEIVE 6 INCHES TOPSOIL AND SEED UNLESS OTHERWISE NOTED ON THE LANDSCAPE PLANS.
5. WITHIN THE LIMITS OF THE BUILDING FOOTPRINT, THE SITE CONTRACTOR SHALL PERFORM EARTHWORK OPERATIONS REQUIRED UP TO SUBGRADE ELEVATIONS.
6. WORK WITHIN THE LOCAL RIGHTS-OF-WAY SHALL CONFORM TO LOCAL MUNICIPAL STANDARDS. WORK WITHIN STATE RIGHTS-OF-WAY SHALL CONFORM TO THE LATEST EDITION OF THE STATE HIGHWAY DEPARTMENTS STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES.
7. UPON AWARD OF CONTRACT, CONTRACTOR SHALL MAKE NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN NECESSARY PERMITS, PAY FEES, AND POST BONDS ASSOCIATED WITH THE WORK INDICATED ON THE DRAWINGS, IN THE SPECIFICATIONS, AND IN THE CONTRACT DOCUMENTS. DO NOT CLOSE OR OBSTRUCT ROADWAYS, SIDEWALKS, AND FIRE HYDRANTS, WITHOUT APPROPRIATE PERMITS.
8. TRAFFIC SIGNAGE AND PAVEMENT MARKINGS SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES & NYS SUPPLEMENT.
9. AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
10. IN THE EVENT THAT SUSPECTED CONTAMINATED SOIL, GROUNDWATER, AND OTHER MEDIA ARE ENCOUNTERED DURING EXCAVATION AND CONSTRUCTION ACTIVITIES BASED ON VISUAL, OLFACTORY, OR OTHER EVIDENCE, THE CONTRACTOR SHALL STOP WORK IN THE VICINITY OF THE SUSPECT MATERIAL TO AVOID FURTHER SPREADING OF THE MATERIAL, AND SHALL NOTIFY THE OWNER IMMEDIATELY SO THAT THE APPROPRIATE TESTING AND SUBSEQUENT ACTION CAN BE TAKEN.
11. CONTRACTOR SHALL PREVENT DUST, SEDIMENT, AND DEBRIS FROM EXITING THE SITE AND SHALL BE RESPONSIBLE FOR CLEANUP, REPAIRS AND CORRECTIVE ACTION IF SUCH OCCURS.
12. DAMAGE RESULTING FROM CONSTRUCTION LOADS SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO OWNER.
13. CONTRACTOR SHALL CONTROL STORMWATER RUNOFF DURING CONSTRUCTION TO PREVENT ADVERSE IMPACTS TO OFF SITE AREAS, AND SHALL BE RESPONSIBLE TO REPAIR RESULTING DAMAGES, IF ANY, AT NO COST TO OWNER.
14. THE CONTRACTOR IS ADVISED THAT A COMPLETE STORM WATER POLLUTION PREVENTION PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE REQUIRED LATEST SPDES PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITY, WHICH INCLUDES REQUIREMENTS FOR THE CONTRACTOR TO COMPLETE CERTAIN CERTIFICATIONS, SCHEDULES AND OTHER DOCUMENTATION, WHICH MUST BE MAINTAINED ON SITE THROUGHOUT CONSTRUCTION. THE CONTRACTOR IS REQUIRED TO FAMILIARIZE HIMSELF WITH ALL ASPECTS OF THE SWPPP AND COORDINATE HIS/HER WORK WITH THE REQUIREMENTS, INCLUDING THE REGULARLY SCHEDULED INSPECTIONS.

Utilities

6. THE LOCATIONS, SIZES, AND TYPES OF EXISTING UTILITIES ARE SHOWN AS AN APPROXIMATE REPRESENTATION ONLY. THE OWNER OR IT'S REPRESENTATIVE(S) HAVE NOT INDEPENDENTLY VERIFIED THIS INFORMATION AS SHOWN ON THE PLANS. THE UTILITY INFORMATION SHOWN DOES NOT GUARANTEE THE ACTUAL EXISTENCE, SERVICEABILITY, OR OTHER DATA CONCERNING THE UTILITIES, NOR DOES IT GUARANTEE AGAINST THE POSSIBILITY THAT ADDITIONAL UTILITIES MAY BE PRESENT THAT ARE NOT SHOWN ON THE PLANS. PRIOR TO ORDERING MATERIALS AND BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL VERIFY AND DETERMINE THE EXACT LOCATIONS, SIZES, AND ELEVATIONS OF THE POINTS OF CONNECTIONS TO EXISTING UTILITIES AND, SHALL CONFIRM THAT THERE ARE NO INTERFERENCES WITH EXISTING UTILITIES AND THE PROPOSED UTILITY ROUTES, INCLUDING ROUTES WITHIN THE PUBLIC RIGHTS OF WAY.
7. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, OR EXISTING CONDITIONS DIFFER FROM THOSE SHOWN SUCH THAT THE WORK CANNOT BE COMPLETED AS INTENDED, THE LOCATION, ELEVATION, AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED IN WRITING TO THE OWNER'S REPRESENTATIVE FOR THE RESOLUTION OF THE CONFLICT AND CONTRACTOR'S FAILURE TO NOTIFY PRIOR TO PERFORMING ADDITIONAL WORK RELEASES OWNER FROM OBLIGATIONS FOR ADDITIONAL PAYMENTS WHICH OTHERWISE MAY BE WARRANTED TO RESOLVE THE CONFLICT.
8. SET CATCH BASIN RIMS, AND INVERTS OF SEWERS, DRAINS, AND DITCHES IN ACCORDANCE WITH ELEVATIONS ON THE GRADING AND UTILITY PLANS.
9. RIM ELEVATIONS FOR DRAIN AND SEWER MANHOLES, WATER VALVE COVERS, GAS GATES, ELECTRIC AND TELEPHONE PULL BOXES, AND MANHOLES, AND OTHER SUCH ITEMS, ARE APPROXIMATE AND SHALL BE SET/RESET AS FOLLOWS:
   A. PAVEMENTS AND CONCRETE SURFACES: FLUSH
   B. ALL SURFACES ALONG ACCESSIBLE ROUTES: FLUSH
   C. LANDSCAPE, TOPSOIL AND SEED, AND OTHER EARTH SURFACE AREAS: ONE INCH ABOVE SURROUNDING AREA AND TAPER EARTH TO THE RIM ELEVATION.
5. THE LOCATION, SIZE, DEPTH, AND SPECIFICATIONS FOR CONSTRUCTION OF PROPOSED PRIVATE UTILITY SERVICES SHALL BE INSTALLED ACCORDING TO THE REQUIREMENTS PROVIDED BY, AND APPROVED BY, THE RESPECTIVE UTILITY COMPANY (GAS, TELEPHONE, ELECTRIC, FIRE ALARM, ETC.). FINAL DESIGN LOADS AND LOCATIONS TO BE COORDINATED WITH OWNER AND ARCHITECT.
6. CONTRACTOR SHALL MAKE ARRANGEMENTS FOR AND SHALL BE RESPONSIBLE FOR PAYING FEES FOR POLE RELOCATION AND FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE, FIRE ALARM, AND ANY OTHER PRIVATE UTILITIES, WHETHER WORK IS PERFORMED BY CONTRACTOR OR BY THE UTILITIES COMPANY.
7. UTILITY PIPE MATERIALS SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED ON THE PLAN:
   A. WATER PIPES SHALL BE DUCTILE IRON PIPE.
   B. SANITARY SEWER PIPES SHALL BE POLYVINYL CHLORIDE (PVC) SEWER PIPE
   C. STORM DRAINAGE PIPES SHALL BE HIGH DENSITY POLYETHYLENE (HDPE) PIPE.
8. CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR AND SHALL FURNISH EXCAVATION, INSTALLATION, AND BACKFILL OF ELECTRICAL FURNISHED SITEWORK RELATED ITEMS SUCH AS PULL BOXES, CONDUITS, DUCT BANKS, LIGHT POLE BASES, AND CONCRETE PADS. SITE CONTRACTOR SHALL FURNISH CONCRETE ENCASEMENT OF DUCT BANKS IF REQUIRED BY THE UTILITY COMPANY AND AS INDICATED ON THE DRAWINGS.
9. CONTRACTOR SHALL EXCAVATE AND BACKFILL TRENCHES FOR GAS IN ACCORDANCE WITH GAS COMPANY'S REQUIREMENTS.
10. ALL DRAINAGE AND SANITARY STRUCTURE INTERIOR DIAMETERS (4' MIN.) SHALL BE DETERMINED BY THE MANUFACTURER BASED ON THE PIPE CONFIGURATIONS SHOWN ON THESE PLANS AND LOCAL MUNICIPAL STANDARDS. FOR MANHOLES THAT ARE 20 FEET IN DEPTH AND GREATER, THE MINIMUM DIAMETER SHALL BE 5 FEET.

Layout and Materials

1. DIMENSIONS ARE FROM THE FACE OF CURB, FACE OF BUILDING, FACE OF WALL, AND CENTER LINE OF PAVEMENT MARKINGS, UNLESS OTHERWISE NOTED.
2. CURB RADII ARE FIVE FEET UNLESS OTHERWISE NOTED.
3. CURBING SHALL BE CONCRETE CURB WITHIN THE SITE UNLESS OTHERWISE INDICATED ON THE PLANS.
4. SEE ARCHITECTURAL DRAWINGS FOR EXACT BUILDING DIMENSIONS AND DETAILS CONTIGUOUS TO THE BUILDING, INCLUDING SIDEWALKS, RAMPS, BUILDING ENTRANCES, STAIRWAYS, UTILITY PENETRATIONS, CONCRETE DOOR PADS, COMPACTOR PAD, LOADING DOCKS, BOLLARDS, ETC.
5. PROPOSED BOUNDS, GRADES, BENCHMARKS AND ANY EXISTING PROPERTY LINE MONUMENTATION DISTURBED DURING CONSTRUCTION SHALL BE SET OR RESET BY A PROFESSIONAL LICENSED SURVEYOR.
6. PRIOR TO START OF CONSTRUCTION, CONTRACTOR SHALL VERIFY EXISTING PAVEMENT ELEVATIONS AT INTERFACE WITH PROPOSED PAVEMENTS, AND EXISTING GROUND ELEVATIONS ADJACENT TO DRAINAGE OUTLETS TO ASSURE PROPER TRANSITIONS BETWEEN EXISTING AND PROPOSED FACILITIES.
7. SYMBOLS AND LEGENDS OF PROJECT FEATURES ARE GRAPHIC REPRESENTATIONS AND ARE NOT NECESSARILY SCALED TO THEIR ACTUAL DIMENSIONS OR LOCATIONS ON THE DRAWINGS. THE CONTRACTOR SHALL REFER TO THE DETAIL SHEET DIMENSIONS, MANUFACTURERS' LITERATURE, SHOP DRAWINGS AND FIELD MEASUREMENTS OF SUPPLIED PRODUCTS FOR LAYOUT OF THE PROJECT FEATURES.
8. CONTRACTOR SHALL NOT RELY SOLELY ON ELECTRONIC VERSIONS OF PLANS, SPECIFICATIONS, AND DATA FILES THAT ARE OBTAINED FROM THE DESIGNERS, BUT SHALL VERIFY LOCATION OF PROJECT FEATURES IN ACCORDANCE WITH THE PAPER COPIES OF THE PLANS AND SPECIFICATIONS THAT ARE SUPPLIED AS PART OF THE CONTRACT DOCUMENTS.

Demolition

1. CONTRACTOR SHALL REMOVE AND DISPOSE OF EXISTING MANMADE SURFACE FEATURES WITHIN THE LIMIT OF WORK INCLUDING BUILDINGS, STRUCTURES, PAVEMENTS, SLABS, CURBING, FENCES, UTILITY POLES, SIGNS, ETC. UNLESS INDICATED OTHERWISE ON THE DRAWINGS. REMOVE AND DISPOSE OF EXISTING UTILITIES, FOUNDATIONS AND UNSUITABLE MATERIAL BENEATH AND FOR A DISTANCE OF 10 FEET BEYOND THE PROPOSED BUILDING FOOTPRINT INCLUDING EXTERIOR COLUMNS.
2. EXISTING UTILITIES SHALL BE TERMINATED, UNLESS OTHERWISE NOTED, IN CONFORMANCE WITH LOCAL, STATE AND INDIVIDUAL UTILITY COMPANY STANDARD SPECIFICATIONS AND DETAILS. THE CONTRACTOR SHALL COORDINATE UTILITY SERVICE DISCONNECTS WITH THE UTILITY REPRESENTATIVES.
3. CONTRACTOR SHALL DISPOSE OF DEMOLITION DEBRIS IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS, ORDINANCES AND STATUTES.

Erosion Control

1. PRIOR TO STARTING ANY OTHER WORK ON THE SITE, THE CONTRACTOR SHALL NOTIFY APPROPRIATE AGENCIES AND SHALL INSTALL EROSION CONTROL MEASURES AS SHOWN ON THE PLANS AND AS IDENTIFIED IN FEDERAL, STATE, AND LOCAL APPROVAL DOCUMENTS PERTAINING TO THIS PROJECT.
2. CONTRACTOR SHALL INSPECT AND MAINTAIN EROSION CONTROL MEASURES, AND REMOVE SEDIMENT THEREFROM ON A WEEKLY BASIS AND WITHIN TWELVE HOURS AFTER EACH STORM EVENT AND DISPOSE OF SEDIMENTS IN AN UPLAND AREA SUCH THAT THEY DO NOT ENCUMBER OTHER DRAINAGE STRUCTURES AND PROTECTED AREAS.
3. CONTRACTOR SHALL BE FULLY RESPONSIBLE TO CONTROL CONSTRUCTION SUCH THAT SEDIMENTATION SHALL NOT AFFECT REGULATORY PROTECTED AREAS, WHETHER SUCH SEDIMENTATION IS CAUSED BY WATER, WIND, OR DIRECT DEPOSIT.
4. CONTRACTOR SHALL PERFORM CONSTRUCTION SEQUENCING SUCH THAT EARTH MATERIALS ARE EXPOSED FOR A MINIMUM OF TIME BEFORE THEY ARE COVERED, SEEDED, OR OTHERWISE STABILIZED TO PREVENT EROSION.
5. UPON COMPLETION OF CONSTRUCTION AND ESTABLISHMENT OF PERMANENT GROUND COVER, CONTRACTOR SHALL REMOVE AND DISPOSE OF EROSION CONTROL MEASURES AND CLEAN SEDIMENT AND DEBRIS FROM ENTIRE DRAINAGE AND SEWER SYSTEMS.

Existing Conditions Information

1. BASE PLAN: THE PROPERTY LINES SHOWN WERE DETERMINED BY AN ACTUAL FIELD SURVEY CONDUCTED BY CONTROL POINT ASSOCIATES, INC. THE TOPOGRAPHY AND PHYSICAL FEATURES ARE BASED ON AN ACTUAL FIELD SURVEY PERFORMED ON THE GROUND BY CONTROL POINT ASSOCIATES, INC., DURING OCTOBER 2012.
2. TOPOGRAPHY: ELEVATIONS ARE BASED ON NAVD 88.
3. GEOTECHNICAL DATA INCLUDING BORING LOCATIONS AND ELEVATIONS WERE OBTAINED FROM ENVIRONMENTAL ASSESSMENT & REMEDIATIONS.

Document Use

1. THESE PLANS AND CORRESPONDING CADD DOCUMENTS ARE INSTRUMENTS OF PROFESSIONAL SERVICE, AND SHALL NOT BE USED, IN WHOLE OR IN PART, FOR ANY PURPOSE OTHER THAN FOR WHICH IT WAS CREATED WITHOUT THE EXPRESSED, WRITTEN CONSENT OF VHB. ANY UNAUTHORIZED USE, REUSE, MODIFICATION OR ALTERATION, INCLUDING AUTOMATED CONVERSION OF THIS DOCUMENT SHALL BE AT THE USER'S SOLE RISK WITHOUT LIABILITY OR LEGAL EXPOSURE TO VHB.
2. CONTRACTOR SHALL NOT RELY SOLELY ON ELECTRONIC VERSIONS OF PLANS, SPECIFICATIONS, AND DATA FILES THAT ARE OBTAINED FROM THE DESIGNERS, BUT SHALL VERIFY LOCATION OF PROJECT FEATURES IN ACCORDANCE WITH THE PAPER COPIES OF THE PLANS AND SPECIFICATIONS THAT ARE SUPPLIED AS PART OF THE CONTRACT DOCUMENTS.
3. SYMBOLS AND LEGENDS OF PROJECT FEATURES ARE GRAPHIC REPRESENTATIONS AND ARE NOT NECESSARILY SCALED TO THEIR ACTUAL DIMENSIONS OR LOCATIONS ON THE DRAWINGS. THE CONTRACTOR SHALL REFER TO THE DETAIL SHEET DIMENSIONS, MANUFACTURERS' LITERATURE, SHOP DRAWINGS AND FIELD MEASUREMENTS OF SUPPLIED PRODUCTS FOR LAYOUT OF THE PROJECT FEATURES.

Town Of Babylon Notes

1. METES AND BOUNDS ARE FROM A SURVEY PREPARED BY CONTROL POINT ASSOCIATES, INC. ON OCTOBER 2012.
2. TOWN OF BABYLON ENGINEERING DIVISION SHALL BE NOTIFIED 24 HOURS PRIOR TO COMMENCEMENT OF PAVING OR CONCRETE WORK AND PRIOR TO BACKFILL OF DRAINAGE STRUCTURES.
3. GENERAL CONTRACTOR SHALL CONTACT TOWN OF BABYLON STORMWATER MANAGEMENT OFFICE AT (631) 957-7408 PRIOR TO THE COMMENCEMENT OF ANY LAND CLEARING OR GRADING.
4. ALL ENGINEERING WORK TO BE PERFORMED TO LATEST PLANNING BOARD SPECIFICATIONS AND REQUIREMENTS.
5. ALL UTILITIES SHALL BE BURIED UNDERGROUND, PER PLANNING BOARD SPECIFICATIONS.
6. ALL LANDSCAPED AREAS SHALL HAVE UNDERGROUND SPRINKLER SYSTEMS WITH AUTOMATIC MOISTURE SENSORS AS PER PLANNING BOARD REQUIREMENTS. SPRINKLER HEADS SHALL BE DIRECTED TOWARDS INTERIOR OF SITE.
7. ALL DRAINAGE STRUCTURES AND PIPE SHALL BE CLEANED OF SILT AND DEBRIS AFTER CONSTRUCTION IS COMPLETE.
8. ALL CONCRETE MATERIALS SHALL BE MINIMUM 4000 P.S.I.
9. WITHIN 3 FEET OF GROUNDWATER, IN POOR SOIL, OR OTHER UNFAVORABLE FIELD CONDITIONS, A FOOTING MAY BE REQUIRED ON LEACHING BASINS AS ORDERED BY T.O.B. ENGINEERING.
10. SILT FENCE, INLET PROTECTION, STABILIZED CONSTRUCTION ENTRANCES, AND ON-SITE PORTABLE TOILETS ARE REQUIRED ON ALL CONSTRUCTION SITES PURSUANT TO TOWN OF BABYLON CHAPTER 189 STORMWATER AND EROSION CONTROL REGULATIONS.
11. ALL ADJACENT ROADWAYS MUST BE SWEPT CLEAN OF CONSTRUCTION SEDIMENT AT THE END OF EACH DAY.
12. ALL DRAINAGE STRUCTURES TO BE ABANDONED SHALL MEET THE APPROVAL OF T.O.B. ENGINEERING INSPECTOR. SHALL ANY STRUCTURES BE ABANDONED WITHIN PROPOSED BUILDING FOOTPRINT, COMPACTION CERTIFICATION WILL BE REQUIRED, AND ABANDONMENT MUST MEET THE APPROVAL OF T.O.B. BUILDING INSPECTOR.
13. ALL ELEVATIONS BASED ON USGS DATUM.
14. ALL CONCRETE USED FOR OFFSITE CONSTRUCTION SHALL BE MINIMUM 4000 PSI AFTER 28 DAYS.
15. THE DEVELOPER MUST NOTIFY HIGHWAY ENGINEERING DEPARTMENT 24 HOURS IN ADVANCE OF THE COMMENCEMENT OF ANY OFFSITE DRAINAGE, CURB SIDEWALK, DRIVEWAY APRON OR PAVING WORK.
16. EXISTING CURBS, SIDEWALKS, AND DRIVEWAY APRONS ARE TO BE REMOVED AND REPLACED FROM EXPANSION JOINT TO EXPANSION JOINT TO ITS FULL DEPTH FOR INSTALLATION AND/OR REMOVAL OF CURB CUTS AND FOR THE REPLACEMENT OF DAMAGES WHETHER INCURRED PRIOR TO OR DURING CONSTRUCTION.
17. DRAINAGE ON THE SITE SHALL BE PROPERLY MAINTAINED.

TOWN OF BABYLON APPROVAL STAMP SCHEDULE

BUILDING DEPT.	PLANNING BOARD APPROVAL	DEPARTMENTAL APPROVAL
ZONING _____		_____
CONFORMS _____		JOB № APPLICANT DATE
VARIANCE _____		_____
CONST. COST _____	RESOLUTION № _____	HIGHWAY DEPT. DATE
DATE _____	DATE _____	_____
SIGNATURE	SIGNATURE	TOWN ENGINEERING DIVISION DATE
SEE GENERAL NOTE FOR SPECIFIC INFORMATION PERTAINING TO A VARIANCE IF REQUIRED & APPROVED.		_____
		PLANNING DIVISION DATE

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Proposed Industrial Uses

1330 Broadhollow Road
Farmingdale, NY 11735

No.	Revision	Date	Appvd.
1	Revised Layout Per Town Comments	8/10/23	KPW
2	Revised Layout Per Town Comments	1/31/24	KPW
3	Reduced Parking Per FAA Comments	4/25/24	KPW
4	Revised Tenant Outdoor Storage Areas	7/1/24	KPW
5	Updated Set Per with FAA Layout / Town and Fire Marshal Comments	8/9/24	KPW
1	Updated Set Per Town Comments Dated September 19, 2024	11/12/24	KPW

Designed by CS | Checked by KPW

Issued for: **Site Plan Approval** | Date: **February 10, 2023**

Not Approved for Construction

Drawing Title
Legend and General Notes

Drawing Number
C1.01

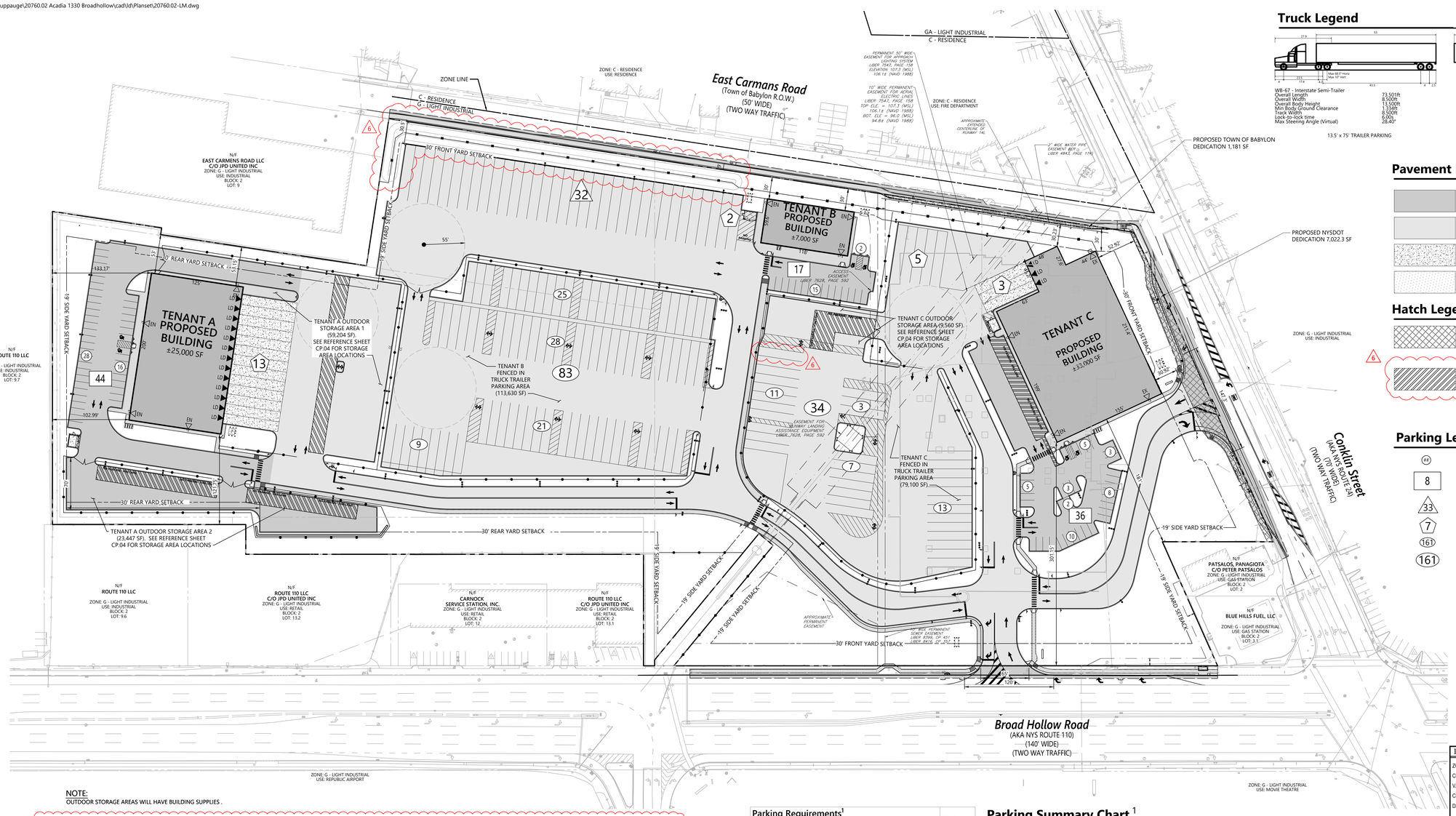
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Project Number
20760.02

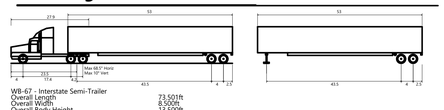
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Truck Legend



Pavement Legend

- PROPOSED LIGHT DUTY ASPHALT PAVEMENT
- PROPOSED HEAVY DUTY ASPHALT PAVEMENT
- PROPOSED HEAVY DUTY CONCRETE PAVEMENT
- PROPOSED CONCRETE SIDEWALK

Hatch Legend

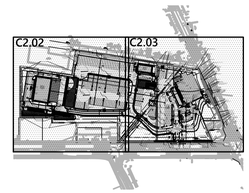
- PROPOSED DEDICATION AREAS
- PROPOSED FIRE LANE STRIPING

Parking Legend

- (##) COUNT FOR STANDARD 9'x19' PARKING STALLS
- 8 — TOTAL COUNT FOR STANDARD 9'x19' PARKING STALLS
- 33 — COUNT FOR 13.5x75' TRAILER PARKING
- 7 — TOTAL COUNT FOR 13.5X75' LOADING STALLS
- (161) — COUNT FOR 12'x60' TRUCK STORAGE COUNT
- 161 — TOTAL 12'x60' TRUCK STORAGE COUNT

Key

1" = 600'



Key

Not To Scale

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NOTE:
OUTDOOR STORAGE AREAS WILL HAVE BUILDING SUPPLIES .

Covenants and Restrictions:

Covenants and Restrictions:

1. No exterior-mounted steel security gates or shutters permitted. Only interior-mounted mesh type security gates permitted.
2. Height of any stacked or stored materials are not to exceed 8' in height.
3. The applicant/owner agrees to policing the entire site for all non-contained or "free blowing" trade waste debris, which shall be removed from the subject property at 8am and 5pm daily.
4. By virtue of this site plan approval, SCTM #'s 0100-169-03-037, 0100-169-03-052, 0100-169-03-051, 0100-169-03-050, 0100-169-03-049, 0100-169-03-048, & 0100-169-03-047, are effectively merged. No parcel shall operate independent of the other parcels, since they only function conjointly as one contiguous site.
5. All delivery vehicles servicing this location must be contained on-site so as to not impede pedestrian or vehicular traffic off-site.
6. All site lighting to be contained on site and must conform to dark-sky lighting regulations.
7. No outdoor speakers or paging systems.
8. The owner/developer is responsible for maintaining all site development improvements including, but not limited to, the following: fire and smoke detection system, automatic fire sprinkler system, building, drainage, curbs, sidewalks, fencing, asphalt, landscaping, etc.
9. Owner/applicant shall comply with all NYS regulations for handicapped accessibility including, but not limited to, handicapped ramps and handicapped parking spaces.
10. All noise generating equipment on-site including, but not limited to, heating ventilation and air conditioning (HVAC), chillers, refrigeration units, and compressors shall operate in conformance with Chapter 156 Town of Babylon Noise Code. In the event that any such equipment exceeds Chapter 156 standards immediate steps shall be taken to mitigate those noise levels.
11. All buildings, structures, signs, fences, and landscaping shall be maintained in accordance with all applicable codes and ordinances of the Town of Babylon, and violations thereof may be prosecuted and enforced in the same manner as provided therein.
12. No further development of the site without Planning Board approval.
13. No truck idling is permitted at any time.
14. All refuse shall be contained within the perimeter and height of the refuse enclosure as approved by the site plan.
15. Maintenance access shall be in accordance with Section 189-9 of the Code of the Town of Babylon. The Town of Babylon shall be provided with access to the stormwater infrastructure at reasonable times for periodic inspection by the Town of Babylon and its officers to ensure that the infrastructure is maintained in proper working condition to meet design standards and any other provisions established by Chapter 189. This agreement shall be binding on all subsequent landowners.
16. Maintenance after construction shall be in accordance Section 189-9 of the Code of the Town of Babylon. Stormwater management practices installed in accordance with Chapter 189 shall be operated and maintained to ensure that the goals of Chapter 189 are fully achieved. Proper operation and maintenance includes, at minimum, the following:
    a. A preventive/corrective maintenance program for all critical facilities and systems of treatment and control (or related appurtenances) which are installed or used by the owner or operator to achieve the goals of Chapter 189. A written record of stormwater management system maintenance activities shall be established and maintained on site and be available for review by the Town of Babylon upon request.
    b. Written procedures for operation and maintenance and training new maintenance personnel shall be prepared and maintained on site and will be available for review by the Town of Babylon upon request.
    c. Discharges from SMPs shall not exceed design criteria or contribute to water quality standard violations in accordance with §189-8B of the Code of the Town of Babylon.
17. Upon completion of construction, any stormwater control structures impacted during construction shall be cleaned by the owner or operator. Routine maintenance of stormwater infrastructure on the site will include the following:
    a. Monitoring of drainage inlets (catch basins) will be completed routinely, particularly after larger storm events and must be kept free from obstruction by leaves, trash, and other debris.
    b. Drainage grates must be kept free from obstruction by leaves, trash, and other debris.
    c. Drainage structures shall be inspected annually to determine if sediment removal is necessary to ensure that the drainage structures are properly functioning and that they permit adequate conveyance throughout the system. If applicable, the manufacturer's specifications for maintenance procedures and frequency must be strictly followed.
    d. The drainage structures must be routinely monitored for the removal of surface sediment and trash.
    e. Street sweeping of the parking areas shall be conduct at least four times annually to remove sediment that may impact the drainage infrastructure and additionally, as necessary due to storm events.
    f. The grounds and parking area shall be inspected for litter monthly and any litter shall be removed as necessary.
18. Any site signage proposed must be located so as to not adversely impact site plan functionality and is subject to further review by the Town of Babylon Planning Department. Upon filing proposed sign package with sign inspector, applicant shall simultaneously submit a copy to the Planning Department for review of location and suitability of proposed signage. Should proposed signage conflict with approved site plan, the Commissioner of the Planning Department reserves the right to require the applicant to file for a site plan modification.
19. The entire building is to have a fully automatic fire sprinkler system installed pursuant to NFPA 13 and Section 213-235 of the Town Zoning Code and as required by the Fire Marshal.
20. The Town of Babylon is not responsible for any damage to the curbs or light poles on site in connection with solid waste pick up.
21. There shall be no truck repair operations on site including but not limited to the changing of fluids.

Additional Conditions and Covenants and Restrictions may be requested upon further review.

Nunzio Russo, Planner

Parking Requirements[1] (Overall Site):						Totals
OVERALL SITE AREA (Ac)	19.26 Acres	x	5 Spaces Per Acre	=	96.30 SPACES	97 SPACES

[1] PARKING SUMMARY PROVIDED FOR FAA REQUIREMENTS.

Parking Summary Chart [1]

Description	Size Required	Size Provided	Tenant A Required	Tenant A Provided	Tenant B Required	Tenant B Provided	Tenant C Required	Tenant C Provided	Total Required	Total Provided
STANDARD SPACES	NOTE 4	9 x 19'	34	42	45	15	45	34	124	91
STANDARD ACCESSIBLE SPACES [2]	8' x 19'	8' x 19'	2	2	2	2	2	2	6	6
TRUCK SPACES [3]	N/A	13.5' x 75'	0	0	0	32	0	0	0	32 [3]
TRUCK TRAILER STORAGE SPACES [3]	N/A	12' x 60'	0	0	0	83	0	24	0	107 [3]
TOTAL SPACES			36	44	47	17	47	36	130	97 [1]

[1] AN ADDITIONAL 132 PARKING SPACES WOULD BE REQUIRED FOR SITE IF STORAGE AREAS SQUARE FOOTAGE COUNTED TOWARDS CALCULATIONS (SEE CHART BELOW). (VARIANCE WOULD BE REQUIRED)

[2] PER ADA/STATE/LOCAL REQUIREMENTS (6) ACCESSIBLE SPACES SHALL BE REQUIRED WHEN 151-200 TOTAL STALLS ARE PROVIDED.

[3] NOT INCLUDED IN TOTAL PARKING SPACE COUNT.

[4] DETERMINED BY PLANNING BOARD (§213-289)

* PARKING SUMMARY PROVIDED PER MAXIMUM PARKING PERMITTED BY FAA REQUIREMENTS.

Parking Requirements (Tenant Buildings):

TENANT A (WAREHOUSES, TRUCK DEPOTS, (§213-286 P.)	25,000 SF	x	1 SPACES	/	700	= 36 SPACES
TENANT B (SALES OFFICE (§213-286 J.)	7,000 SF	x	1 SPACES	/	150	= 47 SPACES
TENANT C (WAREHOUSES, TRUCK DEPOTS, (§213-286 P.)	33,000 SF	x	1 SPACES	/	700	= 47 SPACES
					TOTAL PARKING REQUIRED	= 130 SPACES

Parking Requirements (Storage Areas):

TENANT A (STORAGE YARDS) (§213-286 P.)	82,651 SF	x	1 SPACES	/	700	= 118 SPACES
TENANT B (STORAGE YARDS) (§213-286 P.)	0 SF	x	1 SPACES	/	700	= 0 SPACES
TENANT C (STORAGE YARDS) (§213-286 P.)	9,560 SF	x	1 SPACES	/	700	= 14 SPACES
					TOTAL PARKING REQUIRED	= 132 SPACES

Loading Summary Chart [1]

Description	Size Required	Size Provided	Tenant A Required	Tenant A Provided	Tenant B Required	Tenant B Provided	Tenant C Required	Tenant C Provided	Total Required	Total Provided
TRUCK LOADING SPACES	NOTE 2	13.5' x 75'	6	13	2	2	8	8	16	23
TOTAL SPACES			6	13	2	2	8	8	16	23

[1] AN ADDITIONAL 19 LOADING SPACES WOULD BE REQUIRED FOR SITE IF STORAGE AREAS SQUARE FOOTAGE COUNTED TOWARDS CALCULATIONS. (VARIANCE WOULD BE REQUIRED)

[2] DETERMINED BY PLANNING BOARD (§213-289)

Loading Requirements:

TENANT A (WAREHOUSES, TRUCK DEPOTS, STORAGE YARDS) (§213-286 P.)	22,500 SF	x	1 SPACES	/	5,000	= 4.5 SPACES	+ 1 SPACE FOR FIRST 2,500 SF	=	5.5 SPACES (6 SPACES)
TENANT B SALES OFFICE (§213-286 J.)	4,500 SF	x	1 SPACES	/	5,000	= 0.9 SPACES	+ 1 SPACE FOR FIRST 2,500 SF	=	1.9 SPACES (2 SPACES)
TENANT C (WAREHOUSES, TRUCK DEPOTS, STORAGE YARDS) (§213-286 P.)	30,500 SF	x	1 SPACES	/	5,000	= 6.1 SPACES	+ 1 SPACE FOR FIRST 2,500 SF	=	7.1 SPACES (8 SPACES)
							TOTAL PARKING REQUIRED	=	16 SPACES

Parking Summary Chart [1]

Description	Size Required	Size Provided	Saces Required	Saces Provided
STANDARD SPACES	NOTE 2	9 x 19'	93	91
STANDARD ACCESSIBLE SPACES [1]	8' x 19'	8' x 19'	4	6
TOTAL SPACES			97	97

[1] PER ADA/STATE/LOCAL REQUIREMENTS (4) ACCESSIBLE SPACES SHALL BE REQUIRED WHEN 76-100 TOTAL STALLS ARE PROVIDED.

[2] DETERMINED BY PLANNING BOARD.

Site Data Table

Item	Area (SF)	Percent %
BUILDING	65,000 SF	7.75%
PAVEMENT	534,171 SF	63.64%
LANDSCAPING	240,150 SF	28.61%
TOTAL	839,321 SF	100%

Zoning Summary Chart

Zoning District(S): G & GA (Industrial District) [1]

Overlay District(S):

Use: Industrial Uses, Vehicle Parking and Storage

Zoning Regulation Requirements	Required (G)	Required (GA)	Provided
MAXIMUM BUILDING HEIGHT (§213-167-§213-182)	35 Feet	35 Feet	20 Feet
MINIMUM LOT AREA (§ 213-168-§213-183)	15,000 SF (0.344 Ac)	40,000 SF (0.918 Ac)	EXISTING 839,321 SF (19.26 Ac) PROPOSED 831,117.7 SF (19.07 Ac) (EXCLUDING DEDICATIONS)
MINIMUM FRONTAGE (§ 213-168-§213-183)	50 Feet	100 Feet	2,216.74 Feet
MINIMUM FRONT YARD SETBACK (PRIMARY) (§ 213-172)	10 Feet	N/A	30 Feet
MIN. FRONT YARD SETBACK (SECONDARY) (§ 213-172-§213-184)	10 Feet	30 Feet	30.92 Feet
MINIMUM SIDE YARD SETBACK (§ 213-172-§213-187)	19 Feet	19 Feet	102.99 Feet
MINIMUM REAR YARD SETBACK (§ 213-173-§213-188)	10 Feet	30 Feet	53 Feet
MINIMUM LANDSCAPING (§213-191)	N/A	39,901.3 SF [2]	240,150 SF
MAXIMUM BUILDING COVERAGE (§ 213-174-§213-189)	40% [3]	45 %	18.73% [3]
OUTSIDE STORAGE (§ 213-175)	SEE NOTE [4]	SEE NOTE [4]	YES *
MAXIMUM NUMBER OF BUILDINGS (§213-176-§213-192)	1	1	3 *

* VARIANCE REQUIRED

[1] THE APPLICABILITY OF EITHER ZONE WILL BE DETERMINED BY THE DESIGN.

[2] MINIMUM LANDSCAPE SHALL BE 1,800 SF FOR THE FIRST 100 FT OF STREET FRONTAGE. PLUS 18 SF FOR EACH ADDITIONAL FOOT OF STREET FRONTAGE. 1,800 SF + (2,116.74 LF x 18 SF) = 39,901.3 SF

[3] REQUIREMENTS FOR DISTRICT G STATE THAT OUTDOOR STORAGE AREA (TRUCK TRAILER STORAGE) SHALL COUNT TOWARDS THE BUILDING COVERAGE OF THE SITE. WHILE REQUIREMENTS FOR DISTRICT GA DO NOT EXPLICITLY ADDRESS THIS ISSUE, A SIMILAR CALCULATION MAY BE REQUIRED. ADDITIONAL COORDINATION WITH THE TOWN IS RECOMMENDED.
PROPOSED MAXIMUM BUILDING COVERAGE BREAKDOWN:
65,000 SF (BUILDINGS) \ 839,321 SF = 07.75%
92,211 SF (FENCED STORAGE AREAS) \ 839,321 SF = 10.98%
TOTAL = 18.73%

[4] PERMITTED ONLY IN THE REAR YARD IN CONJUNCTION WITH THE USE OF A MAIN BUILDING. SHALL BE COMPLETELY ENCLOSED BY A CHAIN LINK FENCE AT LEAST 6 FEET HIGH. SAID STORAGE SHALL NOT OCCUPY PARKING AREA.

TOWN OF BABYLON APPROVAL STAMP SCHEDULE

BUILDING DEPT.	PLANNING BOARD APPROVAL	DEPARTMENTAL APPROVAL
ZONING		
CONFORMS	RESOLUTION NO.	JOB NO. APPLICANT DATE
VARIANCE		HIGHWAY DEPT. DATE
CONST. COST	DATE	TOWN ENGINEERING DIVISION DATE
DATE	SIGNATURE	PLANNING DIVISION DATE
SIGNATURE		
SEE GENERAL NOTE FOR SPECIFIC INFORMATION PERTAINING TO A VARIANCE IF REQUIRED & APPROVED.		

Proposed Industrial Uses

1330 Broadhollow Road
Farmingdale, NY 11735

No.	Revision	Date	Appvd.
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Designed by CS — Checked by KPW

Issued for — Date

Site Plan Approval — February 10, 2023

Not Approved for Construction

Drawing Title: Overall Site Plan

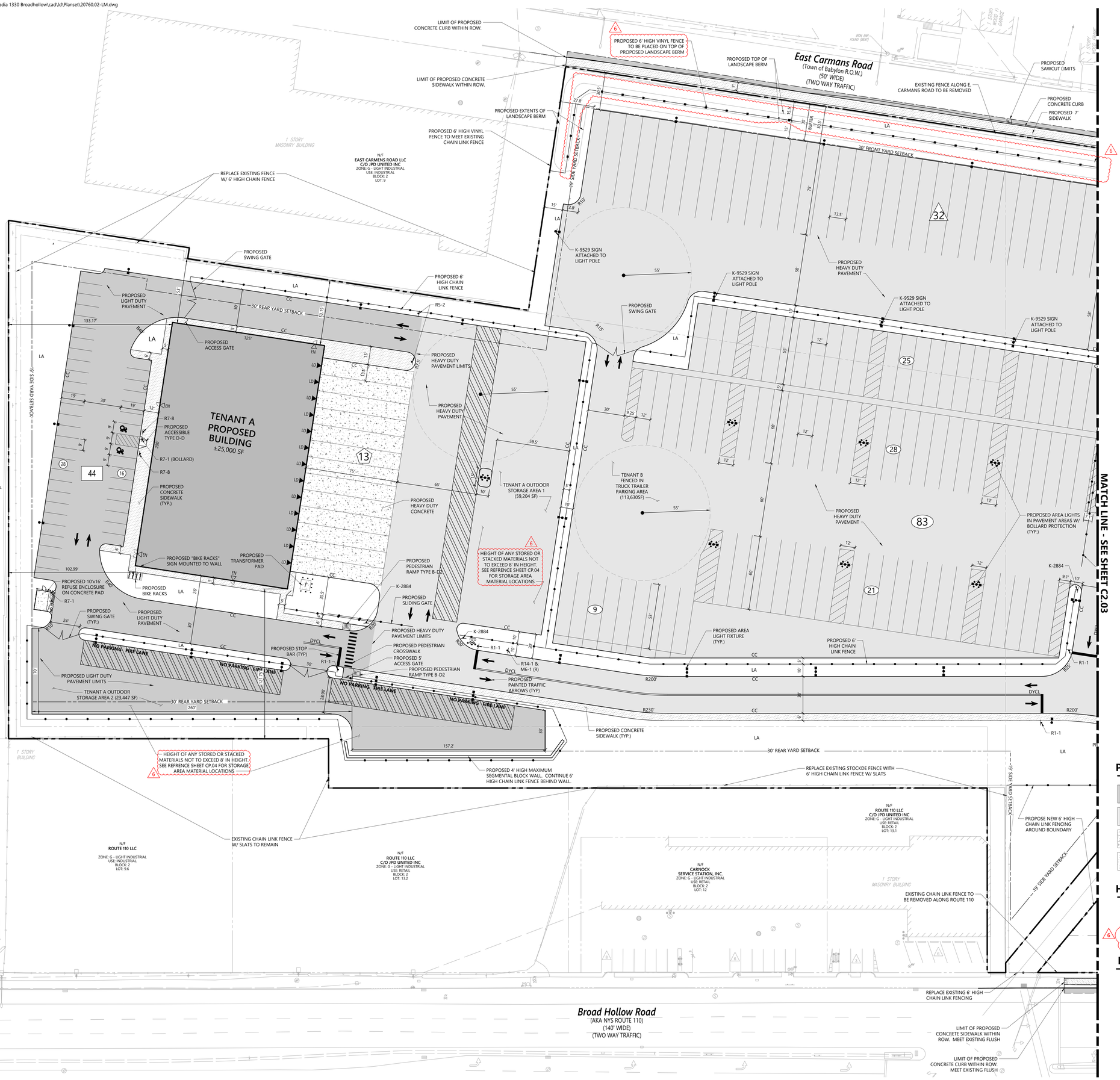
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Sheet 2 of 21

Project Number: 20760.02

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Sign Summary

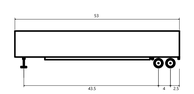
M.U.T.C.D. Number	Specification Width	Specification Height	Desc.
R1-1	30"	30"	
R3-2	24"	24"	
R7-1	12"	18"	NO PARKING ANY TIME
R7-8	12"	18"	RESERVED PARKING
W11-2	30"	30"	
W16-7P	24"	12"	
R14-1	24"	18"	TRUCK ROUTE
M6-1 (R)	21"	15"	
M6-1 (L)	21"	15"	
M6-3	21"	15"	
R5-2	30"	30"	
K-2884	12"	18"	TRUCK TRAFFIC ONLY
K-9529	12"	18"	NO EGING TURN ENGINE OFF
CUSTOM	12"	18"	BIKE RACKS

Truck Legend



WB-67 - Interstate Semi-Trailer
Overall Length 73.501ft
Overall Width 8.500ft
Overall Body Height 13.500ft
Min Body Ground Clearance 1.334ft
Track Width 8.500ft
Lock-to-lock time 6.00s
Max Steering Angle (Virtual) 28.40°

13.5' x 75' TRAILER PARKING



12' x 60' TRAILER STORAGE.

TOWN OF BABYLON APPROVAL STAMP SCHEDULE

BUILDING DEPT.	PLANNING BOARD APPROVAL	DEPARTMENTAL APPROVAL
ZONING		JOB NO APPLICANT DATE
CONFORMS	RESOLUTION NO.	
VARIANCE	DATE	HIGHWAY DEPT. DATE
CONST. COST		
DATE	SIGNATURE	TOWN ENGINEERING DIVISION DATE
SIGNATURE		
SEE GENERAL NOTE FOR SPECIFIC INFOR-MATION PERTAINING TO A VARIANCE IF REQUIRED & APPROVED.		PLANNING DIVISION DATE

Pavement Legend

- PROPOSED LIGHT DUTY ASPHALT PAVEMENT
- PROPOSED HEAVY DUTY ASPHALT PAVEMENT
- PROPOSED HEAVY DUTY CONCRETE PAVEMENT
- PROPOSED CONCRETE SIDEWALK

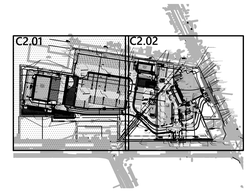
Hatch Legend

- PROPOSED DEDICATION AREAS
- PROPOSED FIRE LANE STRIPING

Parking Legend

- (#) COUNT FOR STANDARD 9'x19' PARKING STALLS
- 8 TOTAL COUNT FOR STANDARD 9'x19' PARKING STALLS
- 33 COUNT FOR 13.5x75' TRAILER PARKING
- 7 TOTAL COUNT FOR 13.5X75' LOADING STALLS
- (161) COUNT FOR 12'x60' TRUCK STORAGE COUNT
- 161 TOTAL 12'x60' TRUCK STORAGE COUNT

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Hauppauge, NY 11788
631.787.3400



Key

Not To Scale

Proposed Industrial Uses

1330 Broadhollow Road
Farmingdale, NY 11735

No.	Revision	Date	Appvd.
1	Revised Layout Per Town Comments	8/10/23	KPW
2	Revised Layout Per Town Comments	1/31/24	KPW
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Designed by CS — Checked by KPW

Issued for: Site Plan Approval — Date: February 10, 2023

Not Approved for Construction

Drawing Title: Partial Layout and Materials Plan (South)

Drawing Number: C2.02

Sheet 3 of 21

Project Number: 20760.02

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Saved Tuesday, November 12, 2024 11:47:16 AM CSULLIVAN Plotted Tuesday, November 12, 2024 11:51:30 AM Christopher Sullivan

Truck Legend



WB-67 - Interstate Semi-Trailer

Overall Length	73.501ft
Overall Width	8.500ft
Overall Body Height	13.500ft
Min Body Ground Clearance	1.334ft
Track Width	8.500ft
Lock-to-lock time	6.00s
Max Steering Angle (Virtual)	28.40°

13.5' x 75' TRAILER PARKING



12' x 60' TRAILER STORAGE.

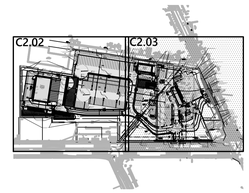
Sign Summary

M.U.T.C.D. Number	Specification Width	Height	Desc.
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R3-2	24"	24"	
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R14-1	24"	18"	TRUCK ROUTE
M6-1 (L)	21"	15"	
M6-3	21"	15"	
R5-2	24"	24"	
K-2884	12"	18"	TRUCK TRAFFIC ONLY
K-9529	12"	18"	NO IDLING TURN ENGINE OFF
CUSTOM	12"	18"	BIKE RACKS

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Key

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Parking Legend

(##)	COUNT FOR STANDARD 9'x19' PARKING STALLS
8	TOTAL COUNT FOR STANDARD 9'x19' PARKING STALLS
33	COUNT FOR 13.5'x75' TRAILER PARKING
7	TOTAL COUNT FOR 13.5'X75' LOADING STALLS
(161)	COUNT FOR 12'x60' TRUCK STORAGE COUNT
161	TOTAL 12'x60' TRUCK STORAGE COUNT

Pavement Legend

- PROPOSED LIGHT DUTY ASPHALT PAVEMENT
- PROPOSED HEAVY DUTY ASPHALT PAVEMENT
- PROPOSED HEAVY DUTY CONCRETE PAVEMENT
- PROPOSED CONCRETE SIDEWALK

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Issued for

Site Plan Approval — February 10, 2023

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Drawing Title

Partial Layout and Materials Plan (North)

Drawing Number

C2.03

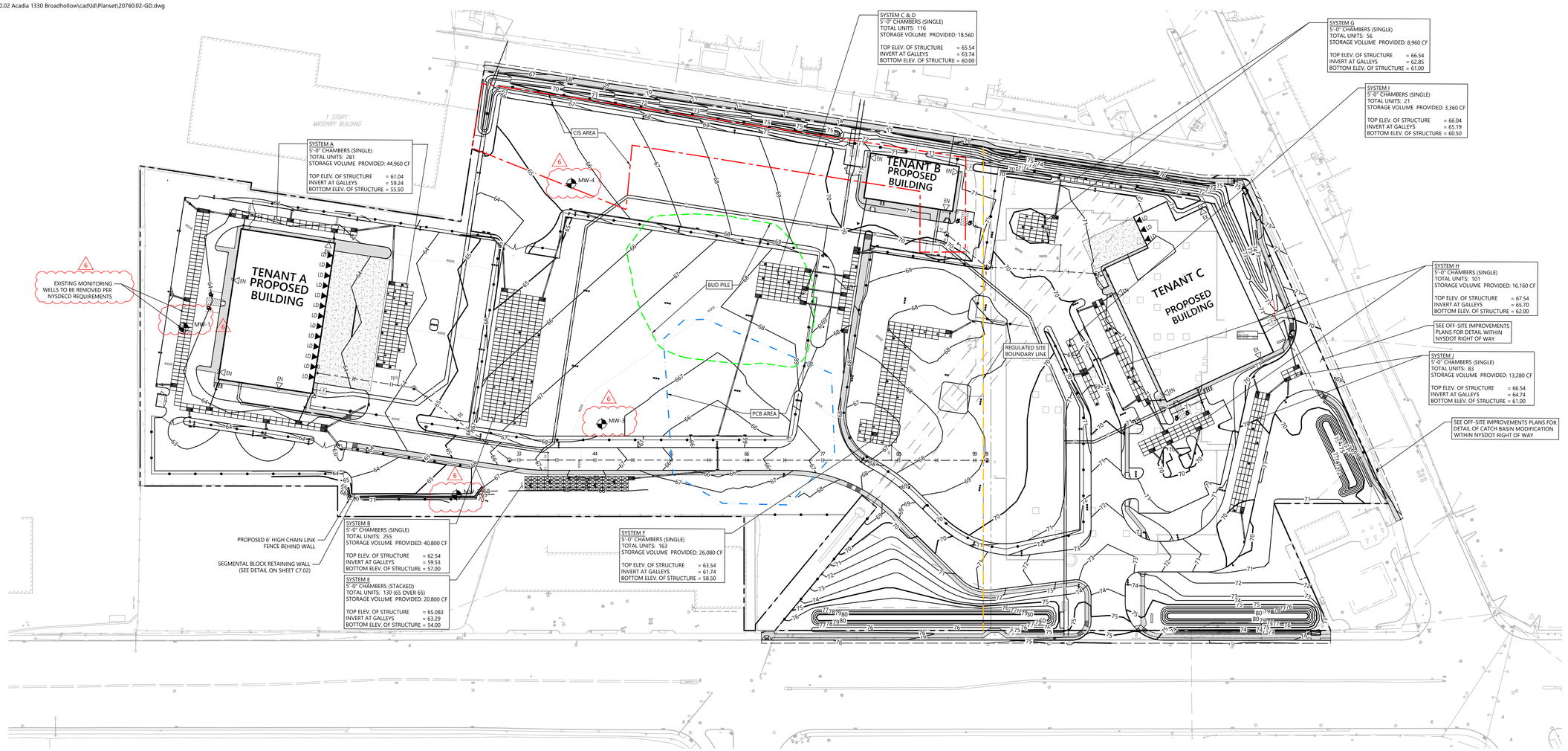
Sheet 4 of 21

Project Number 20760.02

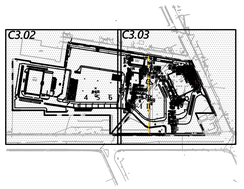
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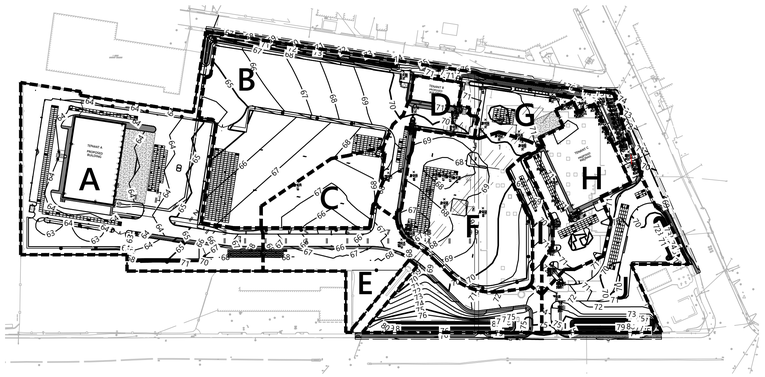


Key

Not To Scale

Overall Grading and Drainage Plan

1" = 60'



Tributary Map

Not To Scale

Grading & Drainage Notes

General Notes

1. THE CONTRACTOR SHALL MEET ALL LINES AND GRADES DEPICTED ON THIS PLAN OR AS DIRECTED BY THE ENGINEER.
2. GRADES IN ALONG ADA WALKWAYS SHALL NOT EXCEED 5% IN THE DIRECTION OF TRAVEL AND 2% CROSS SLOPE.
3. ALL ADA ACCESS AISLES AND PARKING SPACES SHALL BE AT THE SAME LEVEL, WITH MAXIMUM SLOPES NOT GREATER THAN 2% IN ANY DIRECTION.
4. CONTRACTOR SHALL PROVIDE A SMOOTH TRANSITION BETWEEN THE ADA ACCESS AISLES/PARKING SPACES AND THE EXISTING PAVEMENT AT THE WORK LIMITS.
5. EXISTING SANITARY SYSTEM AND DRAINAGE STRUCTURES SHALL BE REMOVED AND DISPOSED OF IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS.
6. GRADES IN LANDSCAPED AREAS SHALL NOT EXCEED A SLOPE OF 3H:1V UNLESS OTHERWISE NOTED ON THE PLANS.
7. IN AREAS OF FILL OR BACKFILL, THE CONTRACTOR SHALL PLACE SUITABLE FILL MATERIAL AS DETERMINED BY THE ENGINEER IN 6-INCH LIFTS. EACH LIFT SHALL BE COMPACTED TO 95 PERCENT OF THE STANDARD PROCTOR DENSITY. NATIVE SOIL MAY BE USED AS BACKFILL IF IT IS DEEMED SUITABLE BY THE ENGINEER.
8. DRIVEWAYS TO BE PITCHED TOWARDS THE ROAD AND SHALL BE 1% - 5% SLOPE.
9. GRADES TO PITCH AWAY FROM BUILDING FOUNDATIONS.
10. CONTRACTOR RESPONSIBLE TO PROVIDE POSITIVE DRAINAGE FLOW OVER THE SITE. BIRD BATHS AND PONDING AREAS (OTHER THAN AS DESIGNED) ARE NOT PERMITTED.

Special Site Grading Notes

General Notes

1. NO SOILS MAY BE MOVED FROM SOUTH OF REGULATED SITE BOUNDARY TO NORTH SIDE OF REGULATED SITE BOUNDARY.
2. ALL EXCAVATED SOIL FROM CIS AREA MUST REMAIN WITHIN CIS AREA OR BE REMOVED FROM THE SITE.
3. STOCKPILED SOIL IN BUD AREA MAY BE USED ANYWHERE ON THE SITE.
4. ALL EXCAVATED SOIL FROM PCB AREA MUST REMAIN WITHIN PCB AREA OR BE REMOVED FROM THE SITE.
5. REFER TO APPROVED SOIL MANAGEMENT PLAN BY ROUX ASSOCIATES FOR FURTHER DETAIL.

Drainage Calculation Summary

Local Drainage Design Criteria

1. STORAGE VOLUME BASED ON A 2-INCH RAINFALL.
2. RUNOFF COEFFICIENTS FOR:
   PAVEMENT, CONCRETE, OTHER IMPERVIOUS AREAS = 1.0
   ROOF =1.0
   LANDSCAPED, GRASSED, NATURAL, OTHER PERVIOUS AREAS = 0.3
3. PRECAST LEACHING GALLEY CAPACITY = 160 CF/EA, (5.0' EFFECTIVE DEPTH)
4. ALL PIPING TO BE 15" DIAMETER HDPE UNLESS OTHERWISE SHOWN. DRAINAGE PIPE TO BE AS FOLLOWS
   - CPP. SIZE AS NOTED ON PLANS
   - ROOF DRAIN HEADERS: 6" DR-18 PVC MIN. SLOPE 1%
5. PER THE GEOTECHNICAL REPORT PREPARED BY ENVIRONMENTAL ASSESSMENT & REMEDIATIONS. GROUNDWATER WAS ENCOUNTERED BETWEEN 14-18 FEET BELOW GRADE, ESTIMATED GROUNDWATER ELEVATION 50.
6. ADDITIONAL ROOF DRAIN HEADERS MAY BE NEEDED PENDING FINAL ARCHITECTURAL DESIGN.

Tributary Area 'A'	Contributing Area (SF)		Runoff C		Rainfall (FT)		Volume (CF)
ROOF AREA	25,000	X	1.0	X	0.167	=	4,175
PAVEMENT	116,245	X	1.0	X	0.167	=	19,412.92
LANDSCAPE	60,368	X	0.30	X	0.167	=	3,024.44
					REQUIRED STORAGE VOLUME	=	26,612.35

PROVIDED STORAGE VOLUME DESIGN: USE (281) PRECAST LINEAR LEACHING CHAMBERS.

LEACHING CHAMBERS: (281) CHAMBERS x 5.0 FT EFFECTIVE DEPTH x 32 CF/VF = 44,960 CF *

44,960 CF (TOTAL) > 26,1612.35 CF (REQUIRED)

* REQUIRED TO MEET SWPPP REQUIREMENTS

Tributary Area 'B'	Contributing Area (SF)		Runoff C		Rainfall (FT)		Volume (CF)
ROOF AREA	0	X	1.0	X	0.167	=	0
PAVEMENT	138,837	X	1.0	X	0.167	=	23,185.78
LANDSCAPE	21,878	X	0.30	X	0.167	=	1,096.09
					REQUIRED STORAGE VOLUME	=	24,281.87

PROVIDED STORAGE VOLUME DESIGN: USE (255) PRECAST LINEAR LEACHING CHAMBERS.

LEACHING CHAMBERS: (255) CHAMBERS x 5.0 FT EFFECTIVE DEPTH x 32 CF/VF = 40,800 CF *

40,800 CF (TOTAL) > 25,258.83 CF (REQUIRED)

* REQUIRED TO MEET SWPPP REQUIREMENTS

Tributary Area 'C & D'	Contributing Area (SF)		Runoff C		Rainfall (FT)		Volume (CF)
ROOF AREA	7,000	X	1.0	X	0.167	=	1,169
PAVEMENT	61,180	X	1.0	X	0.167	=	10,217.06
LANDSCAPE	4,036	X	0.30	X	0.167	=	202.2
					REQUIRED STORAGE VOLUME	=	11,588.26

PROVIDED STORAGE VOLUME DESIGN: USE (116) PRECAST LINEAR LEACHING CHAMBERS.

LEACHING CHAMBERS: (116) CHAMBERS x 5.0 FT EFFECTIVE DEPTH x 32 CF/VF = 18,560 CF *

18,560 CF (TOTAL) > 11,588.26 CF (REQUIRED)

* REQUIRED TO MEET SWPPP REQUIREMENTS

Tributary Area 'E'	Contributing Area (SF)		Runoff C		Rainfall (FT)		Volume (CF)
ROOF AREA	0	X	1.0	X	0.167	=	0
PAVEMENT	34,554	X	1.0	X	0.167	=	5,770.52
LANDSCAPE	65,706	X	0.30	X	0.167	=	3,291.87
					REQUIRED STORAGE VOLUME	=	9,062.39

PROVIDED STORAGE VOLUME DESIGN: USE (130) PRECAST LINEAR LEACHING CHAMBERS. (STACKED - 2 HIGH)

TOP LEACHING CHAMBERS: (65) CHAMBERS x 5.0 FT EFFECTIVE DEPTH x 32 CF/VF = 10,400 CF *
BOTT. LEACHING CHAMBERS: (65) CHAMBERS x 5.0 FT EFFECTIVE DEPTH x 32 CF/VF = 10,400 CF *

20,800 CF (TOTAL) > 9,062.39 CF (REQUIRED)

* REQUIRED TO MEET SWPPP REQUIREMENTS

Tributary Area 'F'	Contributing Area (SF)		Runoff C		Rainfall (FT)		Volume (CF)
ROOF AREA	0	X	1.0	X	0.167	=	0
PAVEMENT	94,212	X	1.0	X	0.167	=	15,733.4
LANDSCAPE	8,358	X	0.30	X	0.167	=	418.74
					REQUIRED STORAGE VOLUME	=	16,152.14

PROVIDED STORAGE VOLUME DESIGN: USE (163) PRECAST LINEAR LEACHING CHAMBERS.

LEACHING CHAMBERS: (163) CHAMBERS x 5.0 FT EFFECTIVE DEPTH x 32 CF/VF = 26,080 CF *

26,080 CF (TOTAL) > 16,152.14 CF (REQUIRED)

* REQUIRED TO MEET SWPPP REQUIREMENTS

Tributary Area 'G'	Contributing Area (SF)		Runoff C		Rainfall (FT)		Volume (CF)
ROOF AREA	0	X	1.0	X	0.167	=	0
PAVEMENT	20,095	X	1.0	X	0.167	=	3,355.86
LANDSCAPE	22,728	X	0.30	X	0.167	=	1,138.67
					REQUIRED STORAGE VOLUME	=	4,494.54

PROVIDED STORAGE VOLUME DESIGN: USE (56) PRECAST LINEAR LEACHING CHAMBERS.

LEACHING CHAMBERS: (56) CHAMBERS x 5.0 FT EFFECTIVE DEPTH x 32 CF/VF = 8,960 CF *

8,960 CF (TOTAL) > 4,494.54 CF (REQUIRED)

* REQUIRED TO MEET SWPPP REQUIREMENTS

Tributary Area 'H'	Contributing Area (SF)		Runoff C		Rainfall (FT)		Volume (CF)
ROOF AREA	33,000	X	1.0	X	0.167	=	5,511
PAVEMENT	27,350	X	1.0	X	0.167	=	4,567.45
LANDSCAPE	3,575	X	0.30	X	0.167	=	179.11
					REQUIRED STORAGE VOLUME	=	10,257.56

PROVIDED STORAGE VOLUME DESIGN: USE (101) PRECAST LINEAR LEACHING CHAMBERS.

LEACHING CHAMBERS: (101) CHAMBERS x 5.0 FT EFFECTIVE DEPTH x 32 CF/VF = 16,160 CF *

16,160 CF (TOTAL) > 10,257.56 CF (REQUIRED)

* REQUIRED TO MEET SWPPP REQUIREMENTS

Tributary Area 'I'	Contributing Area (SF)		Runoff C		Rainfall (FT)		Volume (CF)
ROOF AREA	0	X	1.0	X	0.167	=	0
PAVEMENT	10,829	X	1.0	X	0.167	=	1,808.44
LANDSCAPE	3,157	X	0.30	X	0.167	=	158.17
					REQUIRED STORAGE VOLUME	=	1,966.61

PROVIDED STORAGE VOLUME DESIGN: USE (21) PRECAST LINEAR LEACHING CHAMBERS.

LEACHING CHAMBERS: (21) CHAMBERS x 5.0 FT EFFECTIVE DEPTH x 32 CF/VF = 3,360 CF *

3,360 CF (TOTAL) > 1,966.61 CF (REQUIRED)

* REQUIRED TO MEET SWPPP REQUIREMENTS

Tributary Area 'J'	Contributing Area (SF)		Runoff C		Rainfall (FT)		Volume (CF)
ROOF AREA	0	X	1.0	X	0.167	=	0
PAVEMENT	22,704	X	1.0	X	0.167	=	3,791.57
LANDSCAPE	50,530	X	0.30	X	0.167	=	2,531.55
					REQUIRED STORAGE VOLUME	=	6,323.12

PROVIDED STORAGE VOLUME DESIGN: USE (83) PRECAST LINEAR LEACHING CHAMBERS.

LEACHING CHAMBERS: (83) CHAMBERS x 5.0 FT EFFECTIVE DEPTH x 32 CF/VF = 13,280 CF *

13,280 CF (TOTAL) > 6,323.12 CF (REQUIRED)

* REQUIRED TO MEET SWPPP REQUIREMENTS

TOWN OF BABYLON APPROVAL STAMP SCHEDULE

BUILDING DEPT.	PLANNING BOARD APPROVAL	DEPARTMENTAL APPROVAL
ZONING		JOB № APPLICANT DATE
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CONST. COST		
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0 30 60 120Feet

Proposed Industrial Uses

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Drawing Title: Overall Grading and Drainage Plan

Drawing Number: C3.01

Sheet 5 of 21

Project Number: 20760.02

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PROPOSED 6' HIGH VINYL FENCE TO BE PLACED ON TOP OF PROPOSED LANDSCAPE BERM

1 STORY MASONRY BUILDING

TENANT A
PROPOSED BUILDING

CIS AREA

PCB AREA

BUD PILE

SYSTEM A
5'-0" CHAMBERS (SINGLE)
TOTAL UNITS: 281
STORAGE VOLUME PROVIDED: 44,960 CF

TOP ELEV. OF STRUCTURE = 61.04
INVERT AT GALLEYS = 59.24
BOTTOM ELEV. OF STRUCTURE = 55.50

SYSTEM B
5'-0" CHAMBERS (SINGLE)
TOTAL UNITS: 255
STORAGE VOLUME PROVIDED: 40,800 CF

TOP ELEV. OF STRUCTURE = 62.54
INVERT AT GALLEYS = 59.53
BOTTOM ELEV. OF STRUCTURE = 57.00

SYSTEM C & D
5'-0" CHAMBERS (SINGLE)
TOTAL UNITS: 116
STORAGE VOLUME PROVIDED: 18,560 CF

TOP ELEV. OF STRUCTURE = 65.54
INVERT AT GALLEYS = 63.74
BOTTOM ELEV. OF STRUCTURE = 60.00

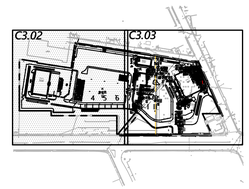
SYSTEM E
5'-0" CHAMBERS (STACKED)
TOTAL UNITS: 130 (65 OVER 65)
STORAGE VOLUME PROVIDED: 20,800 CF

TOP ELEV. OF STRUCTURE = 65.083
INVERT AT GALLEYS = 63.29
BOTTOM ELEV. OF STRUCTURE = 54.00

PROPOSED 6' HIGH CHAIN LINK FENCE BEHIND FENCE

SEGMENTAL BLOCK RETAINING WALL (SEE DETAIL ON SHEET C7.02)

MATCH LINE - SEE SHEET C3.03



Key

Not To Scale

TOWN OF BABYLON APPROVAL STAMP SCHEDULE

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SYSTEM C & D
5'-0" CHAMBERS (SINGLE)
TOTAL UNITS: 116
STORAGE VOLUME PROVIDED: 18,560
TOP ELEV. OF STRUCTURE = 65.54
INVERT AT GALLEYS = 63.74
BOTTOM ELEV. OF STRUCTURE = 60.00

PROPOSED 6' HIGH VINYL FENCE TO BE PLACED ON TOP OF PROPOSED LANDSCAPE BERM

SYSTEM G
5'-0" CHAMBERS (SINGLE)
TOTAL UNITS: 56
STORAGE VOLUME PROVIDED: 8,960 CF
TOP ELEV. OF STRUCTURE = 66.54
INVERT AT GALLEYS = 62.85
BOTTOM ELEV. OF STRUCTURE = 61.00

SYSTEM I
5'-0" CHAMBERS (SINGLE)
TOTAL UNITS: 21
STORAGE VOLUME PROVIDED: 3,360 CF
TOP ELEV. OF STRUCTURE = 66.04
INVERT AT GALLEYS = 65.19
BOTTOM ELEV. OF STRUCTURE = 60.50

SYSTEM H
5'-0" CHAMBERS (SINGLE)
TOTAL UNITS: 101
STORAGE VOLUME PROVIDED: 16,160 CF
TOP ELEV. OF STRUCTURE = 67.54
INVERT AT GALLEYS = 65.70
BOTTOM ELEV. OF STRUCTURE = 62.00

SYSTEM J
5'-0" CHAMBERS (SINGLE)
TOTAL UNITS: 83
STORAGE VOLUME PROVIDED: 13,280 CF
TOP ELEV. OF STRUCTURE = 66.54
INVERT AT GALLEYS = 64.74
BOTTOM ELEV. OF STRUCTURE = 61.00

SYSTEM F
5'-0" CHAMBERS (SINGLE)
TOTAL UNITS: 163
STORAGE VOLUME PROVIDED: 26,080 CF
TOP ELEV. OF STRUCTURE = 63.54
INVERT AT GALLEYS = 61.74
BOTTOM ELEV. OF STRUCTURE = 58.50

TENANT B PROPOSED BUILDING

TENANT C PROPOSED BUILDING

CIS AREA

PCB AREA

BUD PILE

EXISTING 10' WIDE SEWER EASEMENT

SEE OFF-SITE IMPROVEMENTS PLANS FOR DETAIL WITHIN NYSDOT RIGHT OF WAY

SEE OFF-SITE IMPROVEMENTS PLANS FOR DETAIL OF CATCH BASIN MODIFICATION WITHIN NYSDOT RIGHT OF WAY

MATCH LINE - SEE SHEET C3.02

TOWN OF BABYLON APPROVAL STAMP SCHEDULE

BUILDING DEPT.	PLANNING BOARD APPROVAL	DEPARTMENTAL APPROVAL
ZONING		JOB № APPLICANT DATE
CONFORMS	RESOLUTION №	HIGHWAY DEPT. DATE
VARIANCE	DATE	TOWN ENGINEERING DIVISION DATE
CONST. COST	SIGNATURE	PLANNING DIVISION DATE
DATE		
SIGNATURE		
SEE GENERAL NOTE FOR SPECIFIC INFORMATION PERTAINING TO A VARIANCE IF REQUIRED & APPROVED.		

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631.787.3400

C3.02 C3.03

Key

Not To Scale

Proposed Industrial Uses

1330 Broadhollow Road
Farmingdale, NY 11735

No.	Revision	Date	Appvd.
1	Revised Layout Per Town Comments	8/10/23	KPW
2	Revised Layout Per Town Comments	1/31/24	KPW
3	Reduced Parking Per FAA Comments	4/25/24	KPW
4	Revised Tenant Outdoor Storage Areas	7/1/24	KPW
5	Updated Set Per with FAA Layout / Town and Fire Marshal Comments	8/9/24	KPW
6	Updated Set Per Town Comments Dated September 19, 2024	11/12/24	KPW

Designed by CS — Checked by KPW

Issued for: **Site Plan Approval** — Date: **February 10, 2023**

Not Approved for Construction

Drawing Title
Partial Grading and Drainage Plan

Drawing Number
C3.03

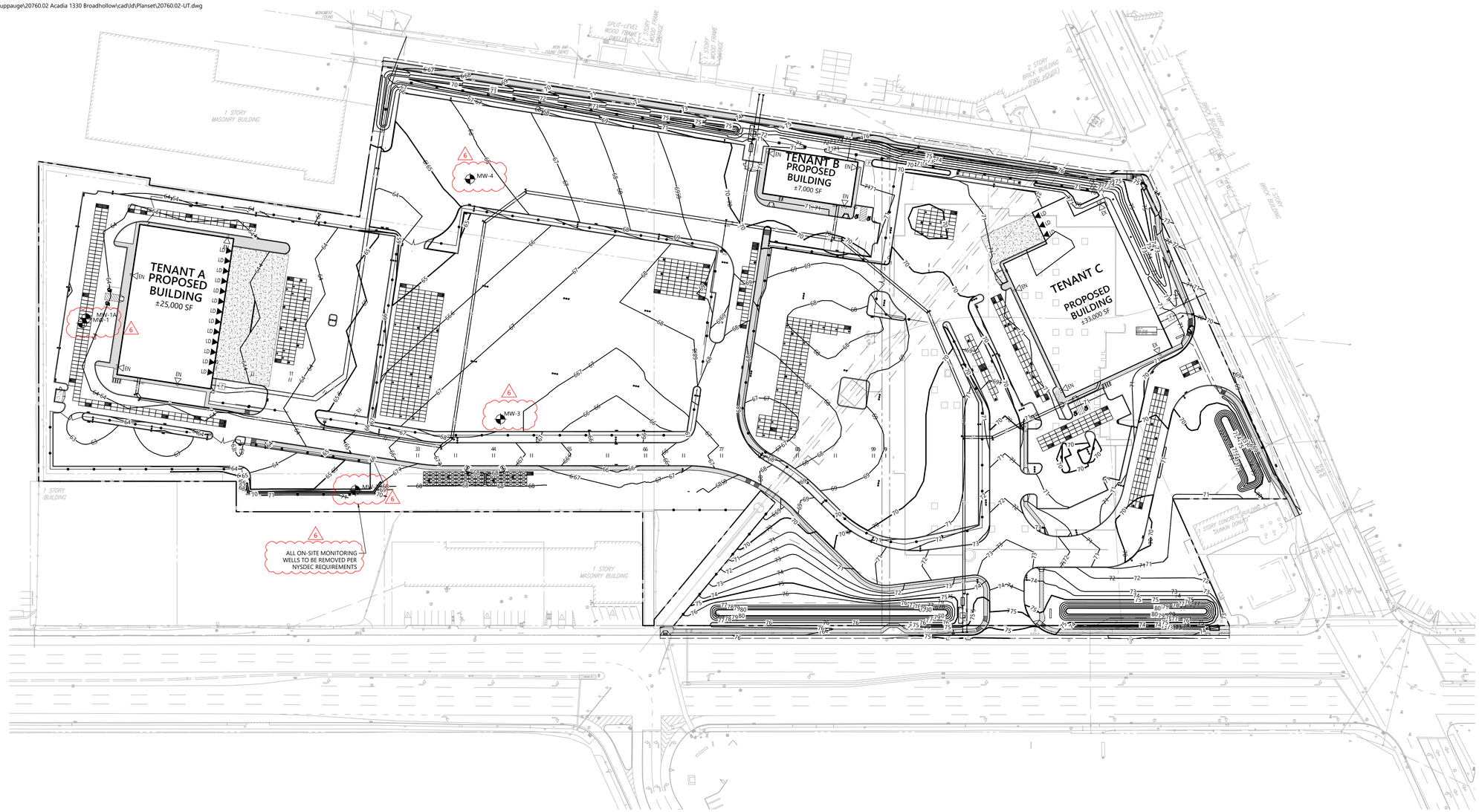
Sheet 7 of 21

Project Number
20760.02

IT IS A VIOLATION OF SECTION 7209 OF ARTICLE 145 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON TO ALTER ANY DOCUMENT THAT BEARS THE SEAL OF A PROFESSIONAL ENGINEER, UNLESS THE PERSON IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER

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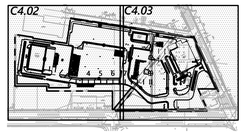
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Key

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TOWN OF BABYLON APPROVAL STAMP SCHEDULE

BUILDING DEPT.	PLANNING BOARD APPROVAL	DEPARTMENTAL APPROVAL
ZONING _____		JOB № APPLICANT DATE
CONFORMS _____		
VARIANCE _____	RESOLUTION №: _____	HIGHWAY DEPT. DATE
CONST. COST _____		
DATE _____	DATE _____	TOWN ENGINEERING DIVISION DATE
SIGNATURE		
SEE GENERAL NOTE FOR SPECIFIC INFORMATION PERTAINING TO A VARIANCE IF REQUIRED & APPROVED.	SIGNATURE	PLANNING DIVISION DATE

0 30 60 120Feet

Proposed Industrial Uses

1330 Broadhollow Road
Farmingdale, NY 11735

No.	Revision	Date	Appvd.
1	Revised Layout Per Town Comments	8/10/23	KPW
2	Revised Layout Per Town Comments	1/31/24	KPW
3	Reduced Parking Per FAA Comments	4/25/24	KPW
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Designed by CS — Checked by KPW

Issued for: Site Plan Approval — Date: February 10, 2023

Not Approved for Construction

Drawing Title: Overall Utility Plan and Boring Logs

Drawing Number: C4.01

Sheet 8 of 21

Project Number: 20760.02

IT IS A VIOLATION OF SECTION 7209 OF ARTICLE 145 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON TO ALTER ANY DOCUMENT THAT BEARS THE SEAL OF A PROFESSIONAL ENGINEER, UNLESS THE PERSON IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER

General Utility Notes:

1. LOCATION OF UNDERGROUND UTILITIES ARE APPROXIMATE LOCATIONS AND SIZES ARE BASED ON PRIOR UTILITY MARK-OUTS, ABOVE GROUND STRUCTURES THAT WERE VISIBLE & ACCESSIBLE IN THE FIELD, AND THE MAPS AS LISTED IN THE REFERENCES AVAILABLE AT THE TIME OF THE SURVEY. AVAILABLE AS-BUILT PLANS AND UTILITY MARK-OUT DOES NOT ENSURE MAPPING OF ALL UNDERGROUND UTILITIES AND STRUCTURES. BEFORE ANY EXCAVATION IS TO BEGIN, ALL UNDERGROUND UTILITIES SHOULD BE VERIFIED AS TO THEIR LOCATION, SIZE AND TYPE BY THE PROPER UTILITY COMPANIES. CONTRACTOR SHALL FOLLOW DIG-SAFE PROCEDURES AND CALL 811 AT LEAST 48 HOURS PRIOR TO EXCAVATION.
2. A MARK-OUT OF ALL ON-SITE UTILITIES IS TO BE COMPLETED PRIOR TO CONSTRUCTION.
3. CONTRACTOR TO PROTECT ALL EXISTING UTILITIES IN AND AROUND PROJECT AREA
4. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, OR EXISTING CONDITIONS DIFFER FROM THOSE SHOWN SUCH THAT THE WORK CANNOT BE COMPLETED AS INTENDED, THE LOCATION, ELEVATION, AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED IN WRITING TO THE OWNER'S REPRESENTATIVE FOR THE RESOLUTION OF THE CONFLICT AND CONTRACTOR'S FAILURE TO NOTIFY PRIOR TO PERFORMING ADDITIONAL WORK RELEASES OWNER FROM OBLIGATIONS FOR ADDITIONAL PAYMENTS WHICH OTHERWISE MAY BE WARRANTED TO RESOLVE THE CONFLICT.
5. SET CATCH BASIN RIMS, AND INVERTS OF SEWERS, DRAINS, AND DITCHES IN ACCORDANCE WITH ELEVATIONS ON THE GRADING AND UTILITY PLANS.
6. RIM ELEVATIONS FOR DRAIN AND SEWER MANHOLES, WATER VALVE COVERS, GAS GATES, ELECTRIC AND TELEPHONE PULL BOXES, AND MANHOLES, AND OTHER SUCH ITEMS, ARE APPROXIMATE AND SHALL BE SET/RESET AS FOLLOWS:
   A. PAVEMENTS AND CONCRETE SURFACES: FLUSH
   B. ALL SURFACES ALONG ACCESSIBLE ROUTES: FLUSH
   C. LANDSCAPE, TOPSOIL AND SEED, AND OTHER EARTH SURFACE AREAS: ONE INCH ABOVE SURROUNDING AREA AND TAPER EARTH TO THE RIM ELEVATION.
9. THE LOCATION, SIZE, DEPTH, AND SPECIFICATIONS FOR CONSTRUCTION OF PROPOSED PRIVATE UTILITY SERVICES SHALL BE INSTALLED ACCORDING TO THE REQUIREMENTS PROVIDED BY, AND APPROVED BY, THE RESPECTIVE UTILITY COMPANY (GAS, TELEPHONE, ELECTRIC, FIRE ALARM, ETC.). FINAL DESIGN LOADS AND LOCATIONS TO BE COORDINATED WITH OWNER AND ARCHITECT.
10. CONTRACTOR SHALL MAKE ARRANGEMENTS FOR AND SHALL BE RESPONSIBLE FOR PAYING FEES FOR POLE RELOCATION AND FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE, FIRE ALARM, AND ANY OTHER PRIVATE UTILITIES, WHETHER WORK IS PERFORMED BY CONTRACTOR OR BY THE UTILITIES COMPANY.
11. CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR AND SHALL FURNISH EXCAVATION, INSTALLATION, AND BACKFILL OF ELECTRICAL FURNISHED SITEWORK RELATED ITEMS SUCH AS PULL BOXES, CONDUITS, DUCT BANKS, LIGHT POLE BASES, AND CONCRETE PADS. SITE CONTRACTOR SHALL FURNISH CONCRETE ENCASEMENT OF DUCT BANKS IF REQUIRED BY THE UTILITY COMPANY AND AS INDICATED ON THE DRAWINGS.
12. CONTRACTOR SHALL BE RESPONSIBLE FOR EXCAVATION, BACKFILL AND COMPACTION OF TRENCHES FOR GAS IN ACCORDANCE WITH NATIONAL GRID REQUIREMENTS AND CONSTRUCTION SPECIFICATION. NATIONAL GRID REQUIRES A 12' L X 10' W X 8' DEEP EXCAVATION AT CONNECTION POINTS OF PROPOSED GAS MAIN. CONTRACTOR TO COORDINATE WITH NATIONAL GRID FOR EXACT LOCATIONS OF EXCAVATION AND TRENCHING.

Site Data & General Notes

1. SCTM: 100 - 49 - 2 - 1, 4, 5, 6, 7, 8, 10, 11 & 14
2. LOT AREA : 839,321 SF (19.26 ACRES) (EXISTING)
   831,117.7 SF (19.07 ACRES) (PROPOSED AFTER DEDICATION)
3. BUILDING AREAS: 25,000 SF (TENANT A)
   7,000 SF (TENANT B)
   33,000 SF (TENANT C)
4. EXISTING USE: VACANT
5. PROPOSED USE: INDUSTRIAL
   NON-MEDICAL OFFICE SPACE

1. BASE SURVEY PREPARED BY CONTROL POINT ASSOCIATES, INC. DATED 05/1/2024.
2. ACCORDING TO SCWA ALL ADJACENT PROPERTIES WITHIN 150' OF THE SUBJECT PARCEL ARE CONNECTED TO PUBLIC WATER.
3. TOPOGRAPHY: ELEVATIONS ARE BASED UPON NAVD 88 DATUM.

Sanitary Calculation Summary

ALLOWABLE SANITARY FLOW

PROPERTY LOCATED IN GROUNDWATER MANAGEMENT ZONE VII

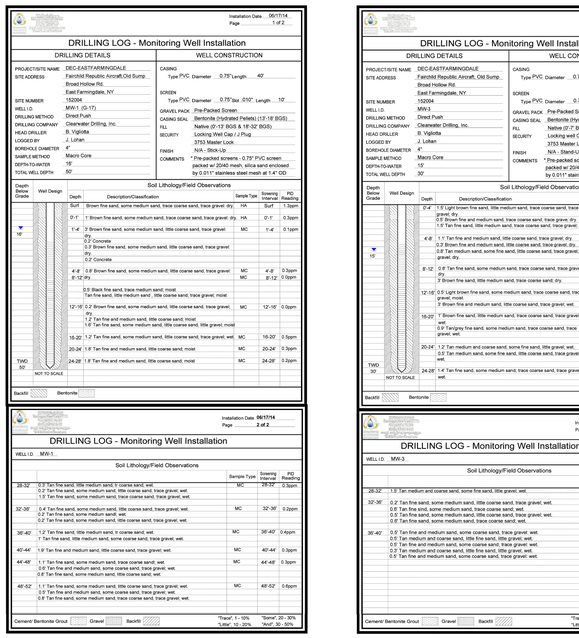
ALLOWABLE DENSITY = 600 GPD/ACRE
SITE AREA = 831,117.7 SF = 19.07 ACRES

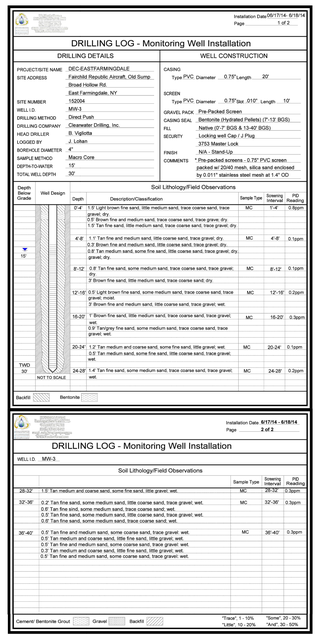
TOTAL ALLOWABLE DENSITY = 600 GPD/AC x 19.07 AC = 11,442 GPD

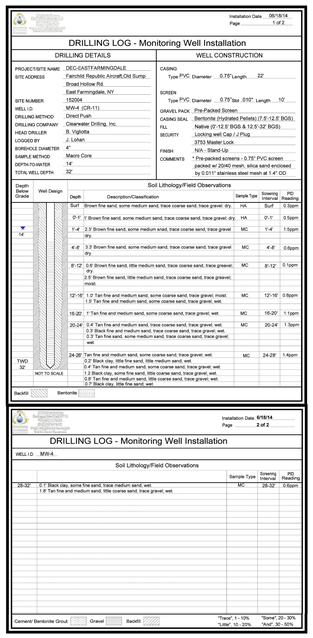
SANITARY DENSITY DESIGN FLOW

PROPOSED DENSITY:
INDUSTRIAL: 25,000 SF x 0.04 GPD/SF = 1,000 GPD
NON-MEDICAL OFFICE: 7,000 SF x 0.06 GPD/SF = 420 GPD
INDUSTRIAL: 33,000 SF x 0.04 GPD/SF = 1,320 GPD

PER SCDPW SEWER MAPS, THE SUBJECT PROPERTY IS LOCATED WITHIN A SCDPW SEWER DISTRICT.


DRILLING LOG - Monitoring Well Installation
DRILLING DETAILS / WELL CONSTRUCTION
PROJECT/SITE NAME: DEC-EAST FARMINGDALE
SITE ADDRESS: Fairchild Republic Aircraft,Old Sump ... Broad Hollow Rd, East Farmingdale, NY
SITE NUMBER: 152004
WELL I.D.: MW-1 (GI-17)
DRILLING METHOD: Direct Push
DRILLING COMPANY: Clearwater Drilling, Inc.
HEAD DRILLER: B. Vigliotta
LOGGED BY: J. Lohen
BOREHOLE DIAMETER: 4"
SAMPLE METHOD: Macro Core
DEPTH-TO-WATER: 18'
TOTAL WELL DEPTH: 50'
CASING: Type PVC Diameter 0.75"Length 40'
SCREEN: Type PVC Diameter 0.75"dia .010", Length 10'
GRAVEL PACK: Pre-Packed Screen
CASING SEAL: Bentonite (Hydrated Pellets) (13'-18' BGS)
FILL: Native (0'-13' BGS & 18'-32' BGS)
SECURITY: Locking Well Cap / J Plug
FINISH: N/A - Stick-Up
COMMENTS: * Pre-packed screens - 0.75" PVC screen packed w/ 20/40 mesh, silica sand enclosed by 0.011" stainless steel mesh at 1.4" OD
Soil Lithology/Field Observations
Depth Below Grade | Well Design | Depth | Description/Classification | Sample Type | Screening Interval | PID Reading
0'-1' Surf Brown fine sand, some medium sand, trace coarse sand, trace gravel; dry. MC 0'-1' 0.3ppm
1'-4' 1' Brown fine sand, some medium sand, little coarse sand, trace gravel; dry. MC 1'-4' 0.1ppm
4'-8' 0.2' Concrete; 0.2' Concrete; 0.9' Brown fine sand, some medium sand, little coarse sand, trace gravel; dry; 0.2' Concrete MC 4'-8' 0.3ppm
8'-12' 4'-8' 0.8' Brown fine sand, some medium sand, little coarse sand, trace gravel; dry; 8'-12' 0.8' Black fine sand, trace medium sand, most. Tan fine sand, little medium sand , little coarse sand, little gravel; moist MC 8'-12' 0.1ppm
12'-16' 12'-16' 0.2' Brown fine sand, some medium sand, little coarse sand, trace gravel; dry; 1.2' Tan fine and medium sand, little coarse sand, most; 1.6' Tan fine sand, some medium sand, little coarse sand, little gravel; moist MC 12'-16' 0.0ppm
16-20' 16-20' 1' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry; 0.9' Tangray fine sand, some medium sand, trace coarse sand, gravel; wet. MC 16-20' 0.3ppm
20-24' 20-24' 1.2' Tan medium and coarse sand, some fine sand, little gravel; wet. 0.5' Tan medium and coarse sand, little fine sand, little gravel; wet. MC 20-24' 0.1ppm
24-28' 24-28' 1.6' Tan fine and medium sand, some coarse sand, trace coarse sand, trace gravel; wet. MC 24-28' 0.2ppm
TWD 30' — NOT TO SCALE
Backfill | Bentonite


DRILLING LOG - Monitoring Well Installation
DRILLING DETAILS / WELL CONSTRUCTION
PROJECT/SITE NAME: DEC-EAST FARMINGDALE
SITE ADDRESS: Fairchild Republic Aircraft,Old Sump ... Broad Hollow Rd, East Farmingdale, NY
SITE NUMBER: 152004
WELL I.D.: MW-3
DRILLING METHOD: Direct Push
DRILLING COMPANY: Clearwater Drilling, Inc.
HEAD DRILLER: B. Vigliotta
LOGGED BY: J. Lohen
BOREHOLE DIAMETER: 4"
SAMPLE METHOD: Macro Core
DEPTH-TO-WATER: 15'
TOTAL WELL DEPTH: 30'
CASING: Type PVC Diameter 0.75"Length 20'
SCREEN: Type PVC Diameter 0.75"dia .010", Length 10'
GRAVEL PACK: Pre-Packed Screen
CASING SEAL: Bentonite (Hydrated Pellets) (7'-13' BGS)
FILL: Native (0'-7' BGS & 13-30' BGS)
SECURITY: Locking well Cap / J Plug; 3753 Master Lock
FINISH: N/A - Stand-Up
COMMENTS: * Pre-packed screens - 0.75" PVC screen packed w/ 20/40 mesh, silica sand enclosed by 0.011" stainless steel mesh at 1.4" OD
Soil Lithology/Field Observations
Depth Below Grade | Well Design | Depth | Description/Classification | Sample Type | Screening Interval | PID Reading
0'-4' 1.5' Light brown fine sand, little medium sand, trace coarse sand, trace gravel; dry; 0.9' Brown fine and medium sand, trace coarse sand, trace gravel; dry; 1.6' Tan fine sand, little medium sand, trace coarse sand, trace gravel; dry MC 1'-4' 0.5ppm
4'-8' 1.1' Tan fine and medium sand, little coarse sand, trace gravel, dry; 0.2' Brown fine and medium sand, little coarse sand, trace gravel; dry; 0.8' Tan medium sand, some fine sand, little coarse sand, trace gravel; dry, gravel; dry MC 4'-8' 0.1ppm
8'-12' 0.8' Tan fine sand, some medium sand, trace coarse sand; dry; 7' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry MC 8'-12' 0.1ppm
12'-16' 0.5' Light brown fine sand, some medium sand, trace coarse sand, trace gravel; most; 1.6' Brown fine and medium sand, some coarse sand, trace gravel; wet. MC 12'-16' 0.2ppm
16-20' 1' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry; 0.9' Tangray fine sand, some medium sand, trace coarse sand, gravel; wet. MC 16-20' 0.3ppm
20-24' 1.2' Tan medium and coarse sand, some fine sand, little gravel; wet. 0.5' Tan medium and coarse sand, little fine sand, little gravel; wet. MC 20-24' 0.1ppm
24-28' 1.4' Tan fine sand, some medium sand, trace coarse sand, trace gravel; wet. MC 24-28' 0.2ppm
TWD 30' — NOT TO SCALE
Backfill | Bentonite


DRILLING LOG - Monitoring Well Installation
DRILLING DETAILS / WELL CONSTRUCTION
PROJECT/SITE NAME: DEC-EAST FARMINGDALE
SITE ADDRESS: Fairchild Republic Aircraft,Old Sump ... Broad Hollow Rd, East Farmingdale, NY
SITE NUMBER: 152004
WELL I.D.: MW-4 (GR-11)
DRILLING METHOD: Direct Push
DRILLING COMPANY: Clearwater Drilling, Inc.
HEAD DRILLER: B. Vigliotta
LOGGED BY: J. Lohen
BOREHOLE DIAMETER: 4"
SAMPLE METHOD: Macro Core
DEPTH-TO-WATER: 14'
TOTAL WELL DEPTH: 32'
CASING: Type PVC Diameter 0.75"Length 22'
SCREEN: Type PVC Diameter 0.75"dia .010", Length 10'
GRAVEL PACK: Pre-Packed Screen
CASING SEAL: Bentonite (Hydrated Pellets) (7.5'-12.5' BGS)
FILL: Native (0'-12.5' BGS & 12.5'-32' BGS)
SECURITY: Locking well Cap / J Plug; 3753 Master Lock
FINISH: N/A - Stand-Up
COMMENTS: * Pre-packed screens - 0.75" PVC screen packed w/ 20/40 mesh, silica sand enclosed by 0.011" stainless steel mesh at 1.4" OD
Soil Lithology/Field Observations
Depth Below Grade | Well Design | Depth | Description/Classification | Sample Type | Screening Interval | PID Reading
0'-1' Surf Brown fine sand, some medium sand, trace coarse sand, trace gravel; dry. MC 0'-1' 0.3ppm
1'-4' 1' Brown fine sand, some medium sand, trace coarse sand, trace gravel; dry. MC 1'-4' 0.5ppm
4'-8' 3.3' Brown fine sand, some medium sand, trace coarse sand, trace gravel; dry. MC 4'-8' 0.6ppm
8'-12' 0.6' Brown fine sand, little medium sand, trace coarse sand, trace gravel; dry; 7' Brown fine sand, little medium sand, trace coarse sand, trace gravel; most. MC 8'-12' 0.1ppm
12'-16' 1.5' Tan fine and medium sand, some coarse sand, trace gravel; most. 1.5' Tan fine and medium sand, some coarse sand, trace gravel; wet. MC 12'-16' 0.6ppm
16-20' 1' Tan fine and medium sand, some coarse sand, trace gravel; wet. MC 16-20' 1.1ppm
20-24' 0.4' Tan fine and medium sand, trace coarse sand, trace gravel; wet. 0.2' Black fine and medium sand, trace coarse sand, trace gravel; wet. 0.3' Tan fine sand, some medium sand, trace coarse sand, trace gravel; wet. MC 20-24' 1.9ppm
24-28' Tan fine and medium sand, some coarse sand, trace gravel; wet. 1.2' Black clay, some fine sand, little coarse sand, trace gravel; wet. 1.2' Black clay, some fine sand, little coarse sand, trace gravel; wet. 0.8' Tan fine and medium sand, little coarse sand, trace gravel; wet. 0.7' Black clay, little fine sand; wet MC 24-28' 1.4ppm
TWD 32' — NOT TO SCALE
Backfill | Bentonite

DRILLING LOG - Monitoring Well Installation
WELL I.D.: MW-1
Soil Lithology/Field Observations
Sample Type | Screening Interval | PID Reading
28-32' 0.3' Tan fine sand, little medium sand, 0 coarse sand, wet. 0.2' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet. 1.5' Tan sand, some medium sand, little coarse sand, trace gravel; wet. MC 28-32' 0.3ppm
32'-36' 0.4' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet. 0.8' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet. 0.2' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet. MC 32'-36' 0.2ppm
36'-40' 1.2' Tan fine sand, some medium sand, tr coarse sand; wet. 1' Tan fine sand, little medium sand, some coarse sand, trace gravel; wet. MC 36'-40' 0.4ppm
40'-44' 1.9' Tan fine and medium sand, little coarse sand, trace gravel; wet. MC 40'-44' 0.3ppm
44'-48' 1.1' Tan fine sand, some medium sand, trace coarse sand, wet. 0.6' Tan fine and medium sand, some coarse sand, trace gravel; wet. 0.6' Tan fine sand, some medium sand, little coarse sand, wet. MC 44'-48' 0.5ppm
48'-52' 1.1' Tan fine sand, some medium sand, trace coarse sand, trace gravel; wet. 0.5' Tan fine and medium sand, some coarse sand, trace gravel; wet. 0.6' Tan fine and medium sand, some coarse sand, trace gravel; wet. MC 48'-52' 0.6ppm
Cement/ Bentonite Grout | Gravel | Backfill
"Trace", 1 - 10% "Little", 10 - 20% "Some", 20 - 30% "And", 30 - 50%

DRILLING LOG - Monitoring Well Installation
WELL I.D.: MW-3
Soil Lithology/Field Observations
Sample Type | Screening Interval | PID Reading
28-32' 1.5' Tan medium and coarse sand, some fine sand, little gravel; wet. MC 28-32' 0.3ppm
32'-36' 0.2' Tan fine sand, some medium sand, little coarse sand, trace gravel; wet. 0.6' Tan fine sand, some medium sand, trace coarse sand, wet. 0.8' Tan fine and medium sand, some coarse sand, trace gravel; wet. 0.4' Tan fine sand, some medium sand, trace coarse sand, wet. MC 32'-36' 0.3ppm
36'-40' 0.5' Tan fine and medium sand, some coarse sand, trace gravel; wet. 0.5' Tan medium and coarse sand, little fine sand, little gravel; wet. 0.5' Tan fine and medium sand, some coarse sand, trace gravel; wet. 0.2' Tan medium and coarse sand, little fine sand, little gravel; wet. 0.8' Tan fine and medium sand, some coarse sand, trace gravel; wet. MC 36'-40' 0.3ppm
Cement/ Bentonite Grout | Gravel | Backfill
"Trace", 1 - 10% "Little", 10 - 20% "Some", 20 - 30% "And", 30 - 50%

DRILLING LOG - Monitoring Well Installation
WELL I.D.: MW-4
Soil Lithology/Field Observations
Sample Type | Screening Interval | PID Reading
28-32' 0.1' Black clay, some fine sand, trace medium sand; wet. 1.8' Tan fine and medium sand, little coarse sand, trace gravel; wet. MC 28-32' 0.6ppm
Cement/ Bentonite Grout | Gravel | Backfill
"Trace", 1 - 10% "Little", 10 - 20% "Some", 20 - 30% "And", 30 - 50%

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PROPOSED ELECTRIC SERVICE CONNECTION TO BE COORDINATED WITH PSEG LONG ISLAND

PROPOSED GAS SERVICE CONNECTION TO BE COORDINATED WITH NATIONAL GRID

1 STORY MASONRY BUILDING

1 STORY WOOD FRAME GARAGE

IRON BAR FOUND (BENT)

TENANT A
PROPOSED BUILDING
±25,000 SF

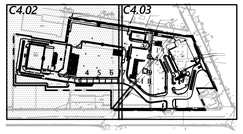
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CB-A2 RIM=63.53 INV=59.40 OUT
CB-A1 RIM=63.14 INV=59.60 OUT INV=59.60 OUT
CB-A4 RIM=62.91 INV=59.40 OUT
CB-A5 RIM=63.17 INV=59.40 OUT
CB-A6 RIM=63.13 INV=59.40 OUT INV=59.40 OUT
CB-A7 RIM=62.55 INV=59.40 CB-A6
CB-A9 RIM=62.25 INV=59.40 OUT
CB-A8 RIM=63.25 INV=59.40 CB-A9 INV=59.40 OUT
CB-A10 RIM=62.85 INV=59.40 OUT
CB-A11 RIM=63.51 INV=59.40 OUT
CO-1 CO RIM=64.75 INV=62.21 OUT INV=62.21 OUT
2 LF 4"PVC S=1.86%
BACKFLOW PREVENTION TO BE LOCATED WITHIN BUILDING
PROPOSED FIRE HYDRANT
SMH-2 SMH RIM=64.28 INV=59.65 CO-1 INV=59.55 OUT
131 LF 4"PVC S=2.03%
CB-B1 RIM=63.50 INV=60.85 OUT
CB-B2 RIM=64.02 INV=60.77 CB-B1 INV=60.77 OUT
CB-B4 RIM=65.43 INV=61.54 CB-B3 INV=61.54 OUT
CB-B5 RIM=64.94 INV=61.40 CB-B4 INV=61.40 OUT
CB-B3 RIM=67.32 INV=63.75 OUT
SMH-3 SMH RIM=66.29 INV=60.79 SMH-2 INV=58.69 OUT
311 LF 4"PVC S=0.50%
CB-C1 RIM=65.67 INV=62.05 OUT
CB-C3 RIM=65.25 INV=61.75 CB-C1 INV=62.05 OUT INV=61.75 OUT
CB-C2 RIM=65.61 INV=61.75 CB-C3
CB-D1 RIM=65.10 INV=61.60 OUT
CB-D2 RIM=65.56 INV=61.35 CB-D1 INV=61.35 OUT
CO-4 CO RIM=65.59 INV=57.13 SMH-3 INV=57.13 OUT

MATCH LINE - SEE SHEET C4.03

1 STORY MASONRY BUILDING

1 STORY BUILDING

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631.787.3400



Key

Not To Scale

TOWN OF BABYLON APPROVAL STAMP SCHEDULE

BUILDING DEPT.	PLANNING BOARD APPROVAL	DEPARTMENTAL APPROVAL
ZONING		JOB NO. APPLICANT DATE
CONFORMS		
VARIANCE	RESOLUTION NO.	HIGHWAY DEPT. DATE
CONST. COST	DATE	
DATE		TOWN ENGINEERING DIVISION DATE
SIGNATURE	SIGNATURE	
SEE GENERAL NOTE FOR SPECIFIC INFORMATION PERTAINING TO A VARIANCE IF REQUIRED & APPROVED.		PLANNING DIVISION DATE

0 15 30 60 Feet

Proposed Industrial Uses

1330 Broadhollow Road
Farmingdale, NY 11735

No.	Revision	Date	Apprvd.
1	Revised Layout Per Town Comments	8/10/23	KPW
2	Revised Layout Per Town Comments	1/31/24	KPW
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6	Updated Set Per Town Comments Dated September 19, 2024	11/12/24	KPW

Designed by CS | Checked by KPW

Issued for
Site Plan Approval
Date
February 10, 2023

Not Approved for Construction

Drawing Title
Partial Utility Plan (South)

Drawing Number
C4.02

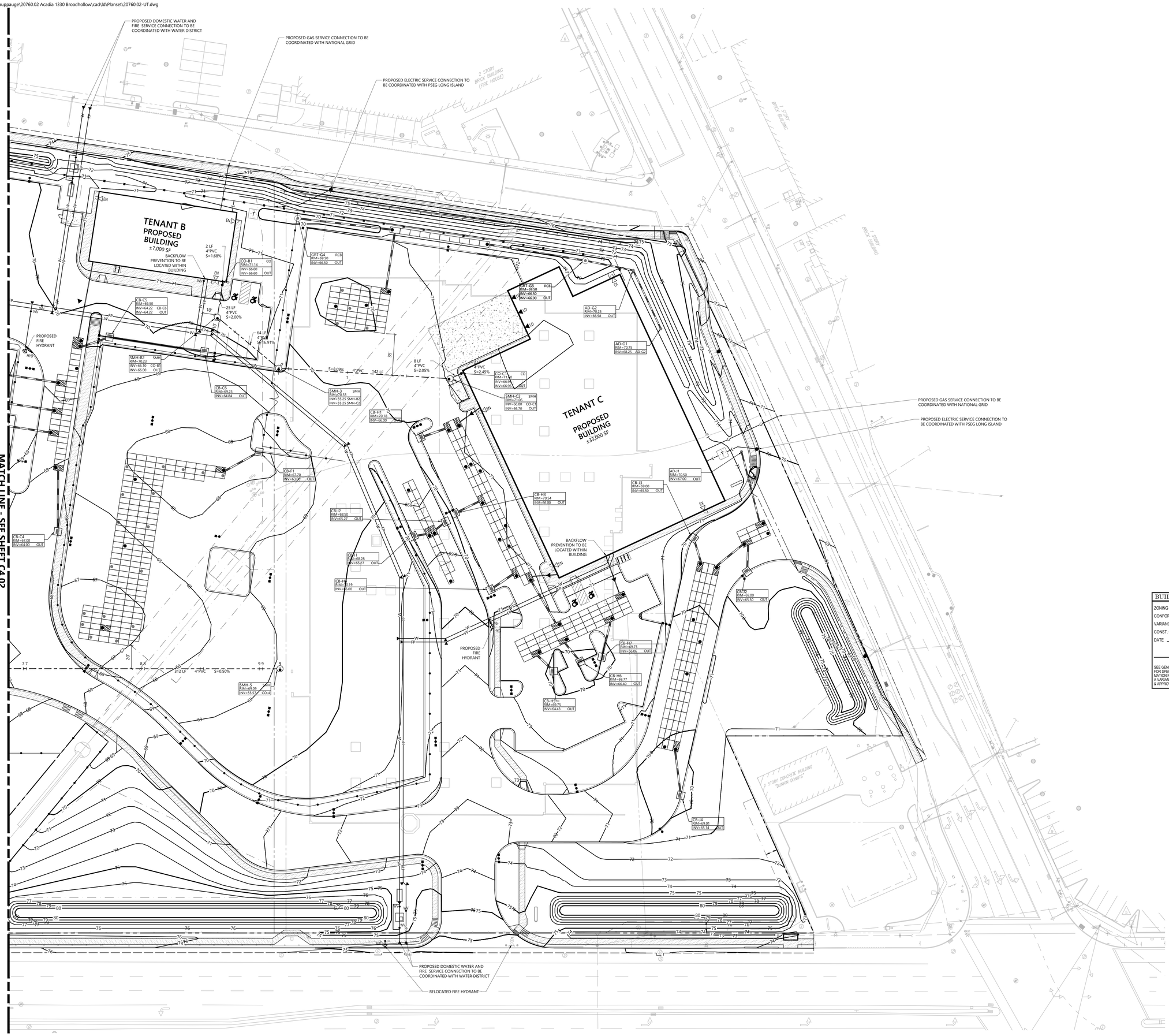
Sheet 9 of 21

IT IS A VIOLATION OF SECTION 7209 OF ARTICLE 145 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON TO ALTER ANY DOCUMENT THAT BEARS THE SEAL OF A PROFESSIONAL ENGINEER, UNLESS THE PERSON IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER

Project Number
20760.02

Saved Monday, November 11, 2024 2:59:50 PM CSULLIVAN Plotted Tuesday, November 12, 2024 11:53:42 AM Christopher Sullivan

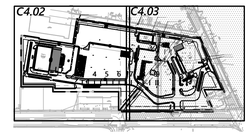
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Hauppauge, NY 11788
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Key

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TOWN OF BABYLON APPROVAL STAMP SCHEDULE

BUILDING DEPT.	PLANNING BOARD APPROVAL	DEPARTMENTAL APPROVAL
ZONING _____		JOB №: APPLICANT DATE
CONFORMS _____		
VARIANCE _____	RESOLUTION №: _____	HIGHWAY DEPT. DATE
CONST. COST _____	DATE _____	
DATE _____		TOWN ENGINEERING DIVISION DATE
SIGNATURE	SIGNATURE	
SEE GENERAL NOTE FOR SPECIFIC INFORMATION PERTAINING TO A VARIANCE IF REQUIRED & APPROVED.		PLANNING DIVISION DATE

0 15 30 60 Feet

Proposed Industrial Uses

1330 Broadhollow Road
Farmingdale, NY 11735

No.	Revision	Date	Appvd.
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Designed by: CS — Checked by: KPW

Issued for: **Site Plan Approval** — Date: **February 10, 2023**

Not Approved for Construction

Drawing Title
Partial Utility Plan (North)

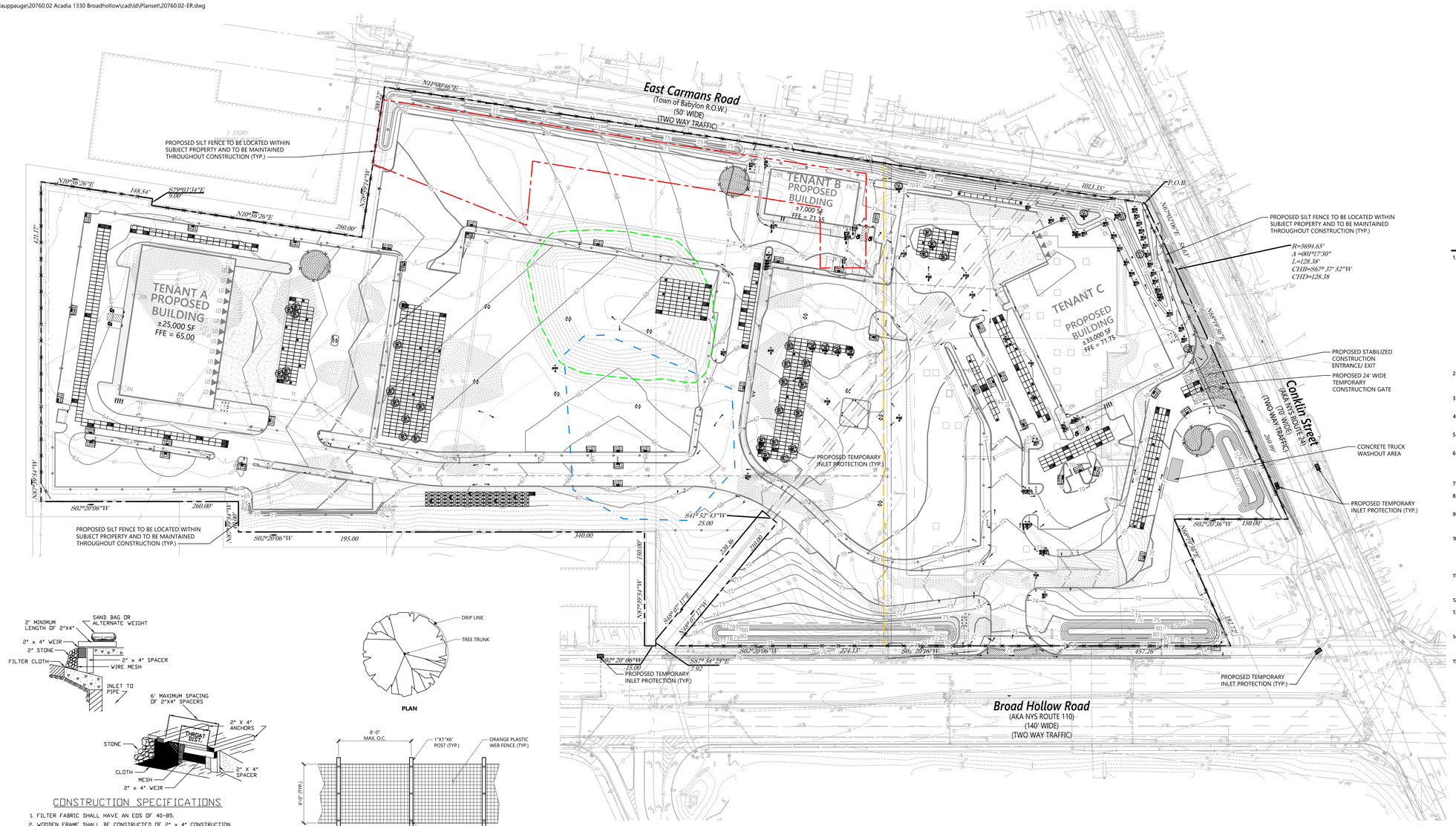
Drawing Number
C4.03

Sheet 10 of 21

Project Number
20760.02

IT IS A VIOLATION OF SECTION 7209 OF ARTICLE 145 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON TO ALTER ANY DOCUMENT THAT BEARS THE SEAL OF A PROFESSIONAL ENGINEER, UNLESS THE PERSON IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER

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Legend

- CONSTRUCTION ENTRANCE/EXIT
- EROSION EEL
- INLET PROTECTION (DANDY BAG OR OTHER)
- DANDY BAG (ROW)
- SILT FENCE
- STOCK PILE
- CONCRETE WASHOUT

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Erosion Control Notes

1. PRIOR TO STARTING DEMOLITION OR OTHER WORK ON THE SITE, CONTRACTOR SHALL NOTIFY THE APPROPRIATE AGENCIES AND INSTALL EROSION CONTROL MEASURES AS SHOWN ON THE PLANS AND AS REQUIRED BY STATE & LOCAL AGENCIES. ACTUAL EROSION CONTROL MEASURES WILL BE DICTATED BY FIELD CONDITIONS AS CONSTRUCTION PROGRESSES. BUT THE FOLLOWING GENERAL CONDITIONS SHALL BE OBSERVED:
   A. EXISTING VEGETATION TO REMAIN SHALL BE PROTECTED AND REMAIN UNDISTURBED
   B. CLEARING AND GRADING SHALL BE SCHEDULED SO AS TO AS TO MINIMIZE THE SIZE OF EXPOSED AREAS AND THE LENGTH OF TIME THAT AREAS ARE EXPOSED.
   C. THE LENGTH AND STEEPNESS OF CLEARED SLOPES SHALL BE MINIMIZED TO REDUCE RUNOFF VELOCITIES.
   D. RUNOFF SHALL BE DIVERTED AWAY FROM CLEARED SLOPES.
   E. SEDIMENT SHALL BE TRAPPED ON THE SITE.

   SPECIFIC METHODS AND MATERIALS EMPLOYED IN THE INSTALLATION AND MAINTENANCE OF EROSION CONTROL MEASURES SHALL CONFORM TO "THE NEW YORK GUIDELINES FOR EROSION AND SEDIMENT CONTROL."
2. SEDIMENT BARRIERS (SILT FENCE OR APPROVED EQUAL) SHALL BE INSTALLED AS REQUIRED ALONG THE LIMITS OF DISTURBANCE FOR THE DURATION OF THE WORK. NO SEDIMENT FROM THE SITE SHALL BE PERMITTED TO WASH ONTO ADJACENT PROPERTIES, WETLANDS OR ROADS.
3. GRADED AND STRIPPED AREAS AND STOCKPILES SHALL BE KEPT STABILIZED THROUGH THE USE OF TEMPORARY SEEDING AS REQUIRED. SEED MIXTURES SHALL BE IN ACCORDANCE WITH SOIL CONSERVATION SERVICE RECOMMENDATIONS.
4. STOCKPILES THAT ARE NOT STABILIZED SHALL BE SURROUNDED BY SILT FENCE , AND INSPECTED AFTER STORMS AND AT THE END OF EACH WORK DAY.
5. DRAINAGE INLETS INSTALLED AS PART OF THE PROJECT SHALL BE PROTECTED FROM SEDIMENT BUILDUP THROUGH THE USE OF SEDIMENT BARRIERS, SEDIMENT TRAPS, DANDY BAGS, ETC., AS REQUIRED.
6. PROPER MAINTENANCE OF EROSION CONTROL MEASURES IS TO BE PERFORMED AS INDICATED BY PERIODIC INSPECTION AND AFTER HEAVY OR PROLONGED STORMS. MAINTENANCE MEASURES INCLUDE, BUT ARE NOT LIMITED TO, CLEANING OF SEDIMENT BASINS AND TRAPS, CLEANING OR REPAIR OF SEDIMENT BARRIERS, CLEANING AND REPAIR OF BERMS AND DIVERSIONS, AND CLEANING AND REPAIR OF INLET PROTECTION.
7. APPROPRIATE MEANS SHALL BE USED TO CONTROL DUST DURING CONSTRUCTION.
8. A STABILIZED CONSTRUCTION ENTRANCE SHALL BE MAINTAINED TO PREVENT SOIL AND LOOSE DEBRIS FROM BEING TRACKED ONTO LOCAL ROADS. THE CONSTRUCTION ENTRANCE SHALL BE MAINTAINED UNTIL THE SITE IS PERMANENTLY STABILIZED.
9. SEDIMENT BARRIERS AND OTHER CONTROL MEASURES SHALL REMAIN IN PLACE UNTIL UPLAND DISTURBED AREAS ARE PERMANENTLY STABILIZED, AFTER PERMANENT STABILIZATION, PAVED AREAS SHALL BE CLEANED AND DRAINAGE SYSTEMS CLEANED AND FLUSHED AS NECESSARY.
10. THIS PROJECT DISTURBS MORE THAN ONE ACRE OF LAND AND FALLS WITHIN THE NYSDEC CONSTRUCTION GENERAL PERMIT PROGRAM AND MS4 JURISDICTION OF THE TOWN OF ISLIP. THE CONTRACTOR IS ADVISED THAT STORM WATER POLLUTION PREVENTION PLAN DOCUMENTS HAVE BEEN PREPARED AND A NOTICE OF INTENT HAS BEEN FILED FOR THIS PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR COMPLIANCE WITH ALL REVISIONS OF THE GENERAL PERMIT AND SWPPP DOCUMENTS, INCLUDING COORDINATING MANDATORY INSPECTIONS AND MAINTAINING SWPPP DOCUMENTS ON-SITE FOR THE DURATION OF CONSTRUCTION.
11. CONTRACTOR IS REQUIRED TO PREVENT SEDIMENT FROM LEAVING THE SITE THROUGHOUT CONSTRUCTION BY ANY MEANS NECESSARY, AS SUCH, ADDITIONAL MEASURES NOT SHOWN ON THESE PLANS MAY BE REQUIRED IN ACCORDANCE WITH THE NYS DEC GUIDELINES FOR URBAN EROSION AND SEDIMENT CONTROL.
12. ALL STORM WATER RUNOFF IS CAPTURED ON SITE AND NO SURFACE RUNOFF IS DIRECTED TO SURFACE WATERS.
13. A LETTER OF CERTIFICATION FROM A NEW YORK STATE LICENSED PROFESSIONAL ENGINEER, SIGNED AND SEALED, STATING THAT THE SITE CONSTRUCTION METHODS CONFORMED WITH THE DEC PHASE II STORM WATER REGULATIONS IS REQUIRED AS PART OF THE CO SURVEY APPROVAL PROCESS.
14. ALL EROSION AND SEDIMENT CONTROL PRACTICES AND ALL POST-CONSTRUCTION MATER QUALITY AND WATER QUANTITY CONTROL PRACTICES ARE TO BE INSTALLED, INSPECTED, AND MAINTAINED AS PER THE NYSDEC 2015 DESIGN MANUAL AND THE NYSDEC 2016 STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL PRACTICES.
15. STABILIZATION PRACTICES (VEGETATIVE MEASURES) SHALL BE IMPLEMENTED ON THE SITE AS NEEDED BASED ON THE STATUS OF CONSTRUCTION AND/OR LAND DISTURBANCE:INSTALLATION:
   A. MULCHING WILL BE EMPLOYED ON ALL INACTIVE AND DISTURBED AREAS THAT WILL REMAIN UN-STABILIZED FOR MORE THAT 14 DAYS. REFER TO SWPPP MANUAL FOR EMPLOYMENT DETAILS.EMPTY DANDY BAG SHOULD BE PLACED OVER THE GRATE AS THE GRATE STANDS ON END.
   B. TEMPORARY SEEDING SHALL BE ESTABLISHED ON AREAS OF EXPOSED SOILS (INCLUDING STOCKPILES) THAT REMAIN INACTIVE AND UNSTABILIZED FOR A PERIOD OF MORE THAN 14 DAYS. REFER TO SWPPP MANUAL FOR EMPLOYMENT DETAILS.
   C. TEMPORARY SEDIMENT TRAPS CONSISTING OF SWALES AND BERMS WITH STONE OUTLET POINTS SHALL BE CONSTRUCTED AND MAINTAINED THROUGHOUT CONSTRUCTION, IN ORDER TO RETAIN RUNOFF ON-SITE DURING THE CONSTRUCTION PROCESS. CONTRACTOR SHALL MODIFY CONFIGURATION DURING CONSTRUCTION AS NECESSARY.

TOWN OF BABYLON APPROVAL STAMP SCHEDULE

BUILDING DEPT.	PLANNING BOARD APPROVAL	DEPARTMENTAL APPROVAL
ZONING _____		
CONFORMS _____		JOB № APPLICANT DATE
VARIANCE _____	RESOLUTION № _____	
CONST. COST _____		HIGHWAY DEPT. DATE
DATE _____	DATE _____	
SIGNATURE		TOWN ENGINEERING DIVISION DATE
SEE GENERAL NOTE FOR SPECIFIC INFORMATION PERTAINING TO A VARIANCE IF REQUIRED & APPROVED.	SIGNATURE	PLANNING DIVISION DATE

0 30 60 120Feet

Proposed Industrial Uses

1330 Broadhollow Road
Farmingdale, NY 11735

No.	Revision	Date	Appvd.
1	Revised Layout Per Town Comments	8/10/23	KPW
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Designed by CS — Checked by KPW

Issued for: Site Plan Approval — Date: February 10, 2023

Not Approved for Construction

Drawing Title: Erosion and Sediment Control Plan

Drawing Number: C5.01

Sheet 11 of 21

Project Number: 20760.02

IT IS A VIOLATION OF SECTION 7209 OF ARTICLE 145 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON TO ALTER ANY DOCUMENT THAT BEARS THE SEAL OF A PROFESSIONAL ENGINEER, UNLESS THE PERSON IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER

CONSTRUCTION SPECIFICATIONS

1. FILTER FABRIC SHALL HAVE AN EOS OF 40-85.
2. WOODEN FRAME SHALL BE CONSTRUCTED OF 2" x 4" CONSTRUCTION GRADE LUMBER.
3. WIRE MESH ACROSS THROAT SHALL BE A CONTINUOUS PIECE 30 INCH MINIMUM WIDTH WITH A LENGTH 4 FEET LONGER THAN THE THROAT. IT SHALL BE SHAPED AND SECURELY NAILED TO A 2" x 4" WEIR.
4. THE WEIR SHALL BE SECURELY NAILED TO 2" x 4" SPACERS 9 INCHES LONG SPACED NO MORE THAN 6 FEET APART.
5. THE ASSEMBLY SHALL BE PLACED AGAINST THE INLET AND SECURED BY 2" x 4" ANCHORS 2 FEET LONG EXTENDING ACROSS THE TOP OF THE INLET AND HELD IN PLACE BY SANDBAGS OR ALTERNATE WEIGHTS. ANY ASSOCIATED INLET GRATE SHALL ALSO BE PROVIDED SEDIMENT PROTECTIONS. MAXIMUM DRAINAGE AREA 1 ACRE

Curb Drop Inlet Protection

N.T.S. Source: VHB

PLAN

ELEVATION

NOTES

1. INSTALL TREE PROTECTION FENCE AT THE DRIP LINE OF EXISTING TREES TO REMAIN.

Tree Protection Fence

1/16

N.T.S. Source: VHB LD_610

Special Site Grading Notes

General Notes

1. NO SOILS MAY BE MOVED FROM SOUTH OF REGULATED SITE BOUNDARY TO NORTH SIDE OF REGULATED SITE BOUNDARY.
2. ALL EXCAVATED SOIL FROM CIS AREA MUST REMAIN WITHIN CIS AREA OR BE REMOVED FROM THE SITE.
3. STOCKPILED SOIL IN BUD AREA MAY BE USED ANYWHERE ON THE SITE.
4. ALL EXCAVATED SOIL FROM PCB AREA MUST REMAIN WITHIN PCB AREA OR BE REMOVED FROM THE SITE.
5. REFER TO APPROVED SOIL MANAGEMENT PLAN BY ROUX ASSOCIATES FOR FURTHER DETAIL.

Dandy Bag Notes

INSTALLATION:

EMPTY DANDY BAG SHOULD BE PLACED OVER THE GRATE AS THE GRATE STANDS ON END.

IF USING OPTIONAL OIL ABSORBENTS, PLACE ABSORBENT PILLOW IN POUCH ON BOTTOM OF THE UNIT. ATTACH ABSORBENT TO TETHER LOOP. HOLDING THE LIFTING DEVICE (DO NOT RELY ON LIFTING DEVICE TO SUPPORT ENTIRE WEIGHT OF GRATE) PLACE THE GRATE INTO IT'S FRAME.

MAINTENANCE:

REMOVE ALL ACCUMULATED SEDIMENT AND DEBRIS FROM THE SURFACE AND VICINITY OF THE UNIT AFTER EACH STORM EVENT.

REMOVE THE SEDIMENT THAT HAS ACCUMULATED WITHIN THE CONTAINMENT AREA OF THE DANDY BAG AS NEEDED.

IF USING OPTIONAL OIL ABSORBENTS, REMOVE AND REPLACE ABSORBENT PILLOW NEAR SATURATION

PERSPECTIVE VIEW

SECTION VIEW

CONSTRUCTION SPECIFICATIONS

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.
2. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION. FENCE SHALL BE WOVEN WIRE, 12 1/2 GAUGE, 6" MAXIMUM MESH OPENING.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.
4. PREFABRICATED UNITS SHALL BE GEOFAB, ENVIROFENCE, OR APPROVED EQUIVALENT.
5. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

SILT FENCE

N.T.S. Source: U.S. DEPARTMENT OF AGRICULTURE N.Y.D.E.C.

CROSS-SECTION

NOTES

1. EXIT WIDTH SHALL BE A TWENTY-FIVE (25) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS.
2. THE EXIT SHALL BE MAINTAINED IN A CONDITION WHICH SHALL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY. BERM SHALL BE PERMITTED. PERIODIC INSPECTION AND MAINTENANCE SHALL BE PROVIDED AS NEEDED.
3. STABILIZED CONSTRUCTION EXIT SHALL BE REMOVED PRIOR TO FINAL FINISH MATERIALS BEING INSTALLED.

Stabilized Construction Exit

1/16

N.T.S. Source: VHB LD_682

NOTES:

1. AREA CHOSEN FOR STOCKPILING OPERATIONS SHALL BE DRY AND STABLE.
2. MAXIMUM SLOPE OF STOCKPILE SHALL BE 1:2.
3. UPON COMPLETION OF SOIL STOCKPILING, EACH PILE SHALL BE SURROUNDED WITH EITHER SILT FENCING OR STRAW BALES.
4. CONTRACTOR SHALL INSPECT INSTALLATIONS EVERY 7 DAYS MINIMUM AND/OR AS REQUIRED AND AFTER ANY RAINFALL EVENT OF 1/2" OR GREATER AND MAKE NECESSARY REPAIRS AS NEEDED.

Material Stockpile Area Detail

N.T.S.

PLAN

Notes:

1. TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE LOCATED AS SHOWN ON PLANS.
2. IN LIEU OF HAY BALES AND PLASTIC, CONTRACTOR MAY PROVIDE PREFABRICATED CONCRETE WASHOUT STRUCTURE. APPROVAL FROM ENGINEER REQUIRED PRIOR TO ON SITE ARRIVAL OF PREFABRICATED STRUCTURE.
3. ONCE CONCRETE WASTES ARE WASHED INTO THE DESIGNATED AREA AND ALLOWED TO HARDEN, THE CONCRETE SHOULD BE BROKEN UP, REMOVED, AND DISPOSED OF OFF-SITE. CONTRACTOR TO DISPOSE OF HARDENED CONCRETE ON A REGULAR BASIS.
4. A CONCRETE WASHOUT SIGN SHALL BE INSTALLED TO DESIGNATE THE TEMPORARY CONCRETE WASHOUT FACILITY.
5. PLASTIC LINING MATERIAL SHOULD BE A MINIMUM OF 10 MIL POLYETHYLENE SHEETING AND SHOULD BE FREE OF HOLES, TEARS, OR OTHER DEFECTS THAT COMPROMISE THE IMPERMEABILITY OF THE MATERIAL.
6. WASHOUT FACILITIES MUST BE CLEANED, OR NEW FACILITIES MUST BE CONSTRUCTED AND READY FOR USE ONCE THE WASHOUT IS 75% FULL.
7. STRAW BALE AND STAPLES MAY BE SUBSTITUTED WITH ALTERNATE SECURING MEASURES SUCH AS CONCRETE BLOCK.
8. IF EXCAVATED, SIDE SLOPES SHALL BE 2 HORIZONTAL TO 1 VERTICAL.

Concrete Truck Washout

1/18

N.T.S. Source: VHB

DANDY BAG® SPECIFICATIONS

NOTE: THE DANDY BAG® WILL BE MANUFACTURED IN THE U.S.A. FROM A WOVEN MONOFILAMENT FABRIC THAT MEETS OR EXCEEDS THE FOLLOWING SPECIFICATIONS:

HI-FLOW DANDY BAG® (SAFETY ORANGE)

Mechanical Properties	Test Method	Units	MARV
Grab Tensile Strength	ASTM D 4632	kN (lbs)	1.62 (365) X 0.89 (200)
Grab Tensile Elongation	ASTM D 4632	%	24 X 10
Puncture Strength		kN (lbs)	0.40 (90)
Mullen Burst Strength		kPa (psi)	3241 (470)
Trapezoid Tear Strength		kN (lbs)	0.51 (115) X 0.33 (75)
UV Resistance		%	90
Apparent Opening Size		Mm (US Std Sieve)	0.425 (40)
		Litres/m² (gal/min/ft²)	5307 (145)
		Sec	2.1

*Note: All Dandy Bags® can be ordered with our optional oil absorbent pillows

HI-FLOW DANDY BAG® (SAFETY ORANGE)

Mechanical Properties	Test Method	Units	MARV
Grab Tensile Strength	ASTM D 4632	kN (lbs)	1.62 (365) X 0.89 (200)
Grab Tensile Elongation	ASTM D 4632	%	24 X 10
Puncture Strength	ASTM D 4833	kN (lbs)	0.40 (90)
Mullen Burst Strength	ASTM D 3786	kPa (psi)	3241 (470)
Trapezoid Tear Strength	ASTM D 4533	kN (lbs)	0.51 (115) X 0.33 (75)
UV Resistance	ASTM D 4355	%	90
Apparent Opening Size	ASTM D 4751	Mm (US Std Sieve)	0.425 (40)
Flow Rate	ASTM D 4491	L/min/M (gal/min/ft) ²²	5907 (145)
Permitivity	ASTM D 4491	Sec⁻¹	2.1

*Note: All Dandy Bags® can be ordered with our optional oil absorbent pillows

Inlet Sediment Control Device

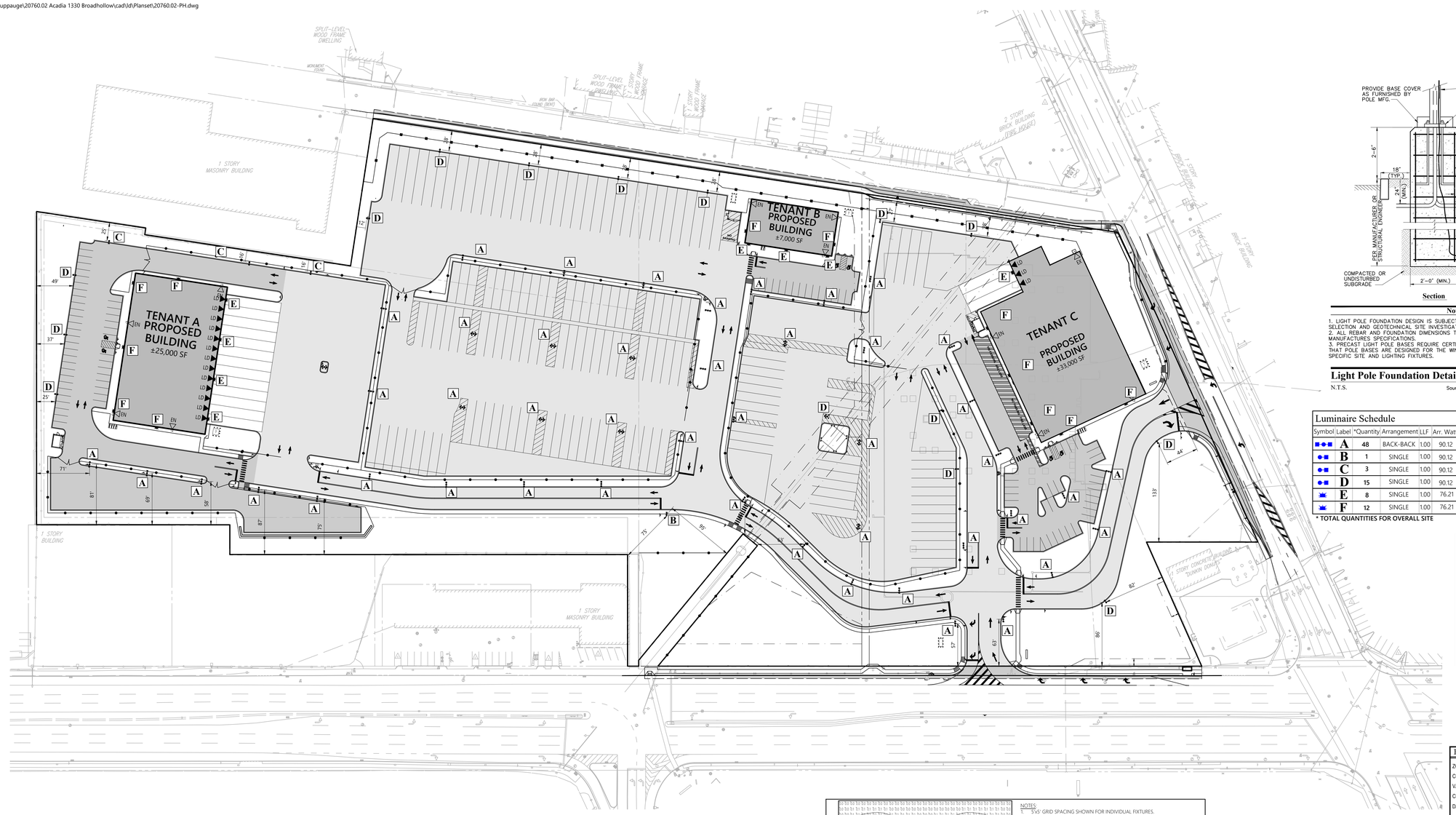
N.T.S. Source: Dandy Products

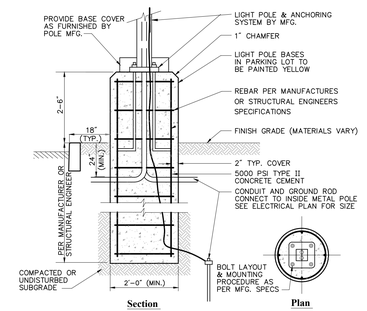
Detail of Curb Inlet Sediment Control Device with Curb Filter

N.T.S. Source: Dandy Products

Saved Monday, July 29, 2024 5:36:07 PM CSULLIVAN Plotted Tuesday, November 12, 2024 11:54:30 AM Christopher Sullivan

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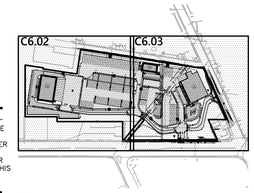
Notes:

1. LIGHT POLE FOUNDATION DESIGN IS SUBJECT TO CHANGE BASED ON FINAL POLE AND FIXTURE SELECTION AND GEOTECHNICAL SITE INVESTIGATION.
2. ALL REBAR AND FOUNDATION DIMENSIONS TO BE DESIGNED BY STRUCTURAL ENGINEER OR PER MANUFACTURES SPECIFICATIONS.
3. PRECAST LIGHT POLE BASES REQUIRE CERTIFICATION FROM THE MANUFACTURER OR SUPPLIER THAT POLE BASES ARE DESIGNED FOR THE WIND LOADS AND STRUCTURAL REQUIREMENTS OF THIS SPECIFIC SITE AND LIGHTING FIXTURES.

Light Pole Foundation Detail

2/11

N.T.S. Source: VHB REV LD_.310



Key

Not To Scale

Luminaire Schedule

Symbol	Label	*Quantity	Arrangement	LLF	Arr. Watts	Total Watts	Arr. Lum. Lumens	Description	Mounting Height
■◆■	A	48	BACK-BACK	1.00	90.12	5226.96	16720	DSX0 LED P5 30K 70CRI T5W HS	15 FT
●■	B	1	SINGLE	1.00	90.12	180.24	9942	DSX0 LED P5 30K 70CRI TFTM HS	15 FT
●■	C	3	SINGLE	1.00	90.12	270.36	8055	DSX0 LED P5 30K 70CRI BLC4 EG	15 FT
●■	D	15	SINGLE	1.00	90.12	1532.04	8360	DSX0 LED P5 30K 70CRI T5W HS	15 FT
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* TOTAL QUANTITIES FOR OVERALL SITE

Calculation Summary

LABEL	MIN.	MAX.	AVG.	UNIFORMITY AVG./MIN.
PROPERTY	0.90	10.8	0.0	N/A
TENANT A PARKING AREA	1.0	5.3	2.05	2.05:1
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Table VIII-1 - Town of Babylon Lighting Requirements

AREA	FOOTCANDLES REQUIRED	UNIFORMITY RATIO	EXAMPLES OF AREAS
HIGH ACTIVITY	4	5:1	MAJOR LEAGUE ATHLETIC EVENTS MAJOR CULTURAL OR CIVIC EVENTS MAJOR REGIONAL SHOPPING
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LOW ACTIVITY	0.80 (COMPLIES)	5:1 (COMPLIES)	LOCAL MERCHANT PARKING INDUSTRIAL EMPLOYEE PARKING EDUCATIONAL FACILITY PARKING

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TOWN OF BABYLON APPROVAL STAMP SCHEDULE

BUILDING DEPT.	PLANNING BOARD APPROVAL	DEPARTMENTAL APPROVAL
ZONING		
CONFORMS		JOB NO APPLICANT DATE
VARIANCE	RESOLUTION NO.	
CONST. COST		HIGHWAY DEPT. DATE
DATE	DATE	
SIGNATURE		TOWN ENGINEERING DIVISION DATE
SEE GENERAL NOTE FOR SPECIFIC INFORMATION PERTAINING TO A VARIANCE IF REQUIRED & APPROVED.	SIGNATURE	PLANNING DIVISION DATE

0 30 60 120Feet

Proposed Industrial Uses

1330 Broadhollow Road
Farmingdale, NY 11735

No.	Revision	Date	Appvd.
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6	Updated Set Per Town Comments Dated September 19, 2024	11/12/24	KPW

Designed by: CS Checked by: KPW

Issued for Date

Site Plan Approval February 10, 2023

Not Approved for Construction

Drawing Title

Overall Lighting Plan

Drawing Number

C6.01

Sheet 12 of 21

Project Number 20760.02

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D-Series Size 0

LED Area Luminaire

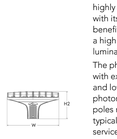
d-series

Catalog Number
Notes
Type

Hit the Tab key or mouse over the page to see all interactive elements.

Specifications

EPA:	0.44 ft² (0.04 m²)
Length:	26.18" (665 mm)
Width:	14.06" (357 mm)
Height H1:	2.26" (57 mm)
Height H2:	7.46" (189 mm)
Weight:	23 lbs (10.4 kg)



Introduction

The modern styling of the D-Series features a highly refined aesthetic that blends seamlessly with its environment. The D-Series offers the benefits of the latest in LED technology into a high performance, high efficacy, long-life luminaire.

The photometric performance results in sites with excellent uniformity, greater pole spacing and lower power density. D-Series outstanding photometry aids in reducing the number of poles required in area lighting applications, with typical energy savings of 70% and expected service life of over 100,000 hours.

Ordering Information

EXAMPLE: DSX0 LED P6 40K 70CRI T3M MVOLT SPA NLTAIR2 PIRHN DDBXD

DSX0 LED

Series	LEDs	Color temperature[1]	Color Rendering Index	Distribution		Voltage	Mounting
DSX0 LED	**Forward optics** P1 P5 P2 P6 P3 P7 P4 **Rotated optics** P10[1] P12[1] P11[1] P13[1]	(this section 70CRI only) 30K 3000K 40K 4000K 50K 5000K (this section 80CRI only, extended lead times apply) 27K 2700K 30K 3000K 35K 3500K 40K 4000K 50K 5000K	70CRI 70CRI 70CRI 80CRI 80CRI 80CRI 80CRI	AFR Automotive front row T1S Type I short T2M Type II medium T3M Type III medium T3LG Type III low glare[1] T4M Type IV medium T4LG Type IV low glare[1] TFTM Forward throw medium T5M Type V medium T5LG Type V low glare T5W Type V wide BLC3 Type III backlight control[1] BLC4 Type IV backlight control[1] LCCO Left corner cutoff[1] RCCO Right corner cutoff[1]	MVOLT (120V-277V)[2] HVOLT (347V-480V)[2,3] XVOLT (277V-480V)[2,3] **Shipped included** SPA Square pole mounting (#8 drilling, 3.5" min. SQ pole) RPA Round pole mounting (#8 drilling, 3" min. RND pole) SPA5 Square pole mounting (#5 drilling, 3" min. SQ pole)[1] RPA5 Round pole mounting (#5 drilling, 3" min. RND pole)[1] SPA8N Square narrow pole mounting (#8 drilling, 3" min. SQ pole) WBA Wall bracket[4]	

Control options			Other options		Finish (required)	
Shipped installed NLTAIR2 PIRHN nLight AIR gen 2 enabled with bi-level motion / ambient sensor, 8-40' mounting height, ambient sensor enabled at 2fc[5,6,7,8,9] PIR High/low, motion/ambient sensor, 8-40' mounting height, ambient sensor enabled at 2fc[5,6,7,8] PER NEMA twist-lock receptacle only (controls ordered separate)[10] PERS Five-pin receptacle only (controls ordered separate)[6,8,9]		PER7 Seven-pin receptacle only (controls ordered separate)[6,8,9] FAO Field adjustable output[11,12] BL30 Bi-level switched dimming, 30%[6,8,9] BL50 Bi-level switched dimming, 50%[6,8,9] DMG 0-10v dimming wires pulled outside fixture (for use with an external control, ordered separately)[13]	**Shipped installed** HS Houseside shield (black finish standard)[14] L90 Left rotated optics[1] R90 Right rotated optics[1] CCE Coastal Construction[15] **Shipped separately** EGSR External Glare Shield (reversible, field install required, matches housing finish) BSSD Bird Spikes. (field install required)		DDBXD Dark Bronze DBLXD Black DNAXD Natural Aluminum DWHXD White DDBTXD Textured dark bronze DBLBXD Textured black DNATXD Textured natural aluminum DWHGXD Textured white	



WDGE4 LED

Architectural Wall Sconce

Catalog Number
Notes
Type

Hit the Tab key or mouse over the page to see all interactive elements.

Specifications

Depth (D1):	10"
Depth (D2):	2"
Height:	9"
Width:	25"
Weight: (without options)	30.5 lbs

Introduction

The WDGE LED family is designed to meet specifier's every wall-mounted lighting need in a widely accepted shape that blends with any architecture. The clean rectilinear design comes in four sizes with lumen packages ranging from 1,200 to 25,000 lumens, providing a true site-wide solution. Embedded with nLight® AIR wireless controls, the WDGE family provides additional energy savings and code compliance.

WDGE4 has been designed to deliver up to 25,000 lumens through a precision refractive lens with wide distribution, perfect for augmenting the lighting from pole mounted luminaires.

WDGE LED Family Overview

Luminaire	Standard EM, 0° C	Cold EM, -20° C	Sensor	Lumens (4000K)					
				P1	P2	P3	P4	P5	P6
WDGE1 LED	4W	--	--	1,200	2,000	--	--	--	--
WDGE2 LED	10W	18W	Standalone / nLight	1,200	2,000	3,000	4,500	6,000	--
WDGE3 LED	15W	18W	Standalone / nLight	2,500	8,500	10,000	12,000	--	--
WDGE4 LED	--	--	Standalone / nLight	12,000	16,000	18,000	20,000	22,000	25,000

Ordering Information

EXAMPLE: WDGE4 LED P3 40K 70CRI R3 MVOLT SRM DDBXD

Series	Package	Color Temperature	CRI	Distribution	Voltage	Mounting
WDGE4 LED	P1 P4 P2 P5 P3 P6	30K 3000K 40K 4000K 50K 5000K	70CRI 80CRI	R2 Type 2 R3 Type 3 R4 Type 4 RFT Forward Throw	MVOLT 347[1] 480[1]	**Shipped included** SRM Surface mounting bracket ICW Indirect Ceiling/Ceiling Washer bracket (Dry/damp locations only)[2]

Shipped separately
AWS 3.5Inch Architectural wall spacer
PBBW Surface-mounted back box (top, left, right conduit entry). Use when there is no junction box available.

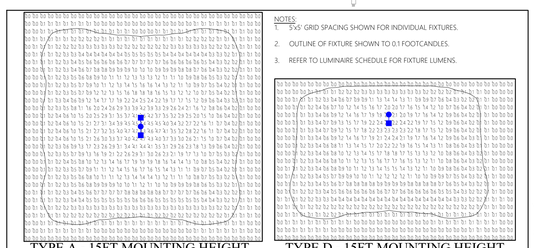
Options			Finish
PE[1] Photocell, Button Type DS[1] Dual switching (comes with 2 drivers and 2 light engines). DMG[1] 0-10V dimming wires pulled outside fixture (for use with an external control, ordered separately). BCE Bottom conduit entry for back box (PBBW). Total of 4 entry points. SPD10KV 10kV Surge pack BAA Buy American(tm) Act Compliant	**Standalone Sensors/Controls** PIR Bi-level (100/35%) motion sensor for 8-15' mounting heights. Intended for use on switched circuits with external dusk to dawn switching. PIRH Bi-level (100/35%) motion sensor for 15-30' mounting heights. Intended for use on switched circuits with external dusk to dawn switching. PIR1FC1V Bi-level (100/35%) motion sensor for 8-15' mounting heights with photocell pre-programmed for dusk to dawn operation. PIRH1FC1V Bi-level (100/35%) motion sensor for 15-30' mounting heights with photocell pre-programmed for dusk to dawn operation. **Networked Sensors/Controls** NLTAIR2 PIR nLight AIR Wireless enabled bi-level motion/ambient sensor for 8-15' mounting heights. NLTAIR2 PIRH nLight AIR Wireless enabled bi-level motion/ambient sensor for 15-30' mounting heights. See page 3 for out of box functionality	DDBXD Dark bronze DBLXD Black DNAXD Natural aluminum DWHXD White DSSXD Sandstone DDBTXD Textured dark bronze DBLBXD Textured black DNATXD Textured natural aluminum DWHGXD Textured white DSSTXD Textured sandstone

Accessories

Ordered and shipped separately.

WDGEWG DDBXD Wedge 3 Back Architectural Wall Spacer (specify finish)
WDGEAWBW DDBXD-U WDGE4 surface-mounted back box (specify finish)

NOTES
1. 347V and 480V not available with DS.
2. PE not available in 480V and with sensors/controls.
3. DS and DMG not available with sensors/controls.
4. Not qualified for DLC. Not available with emergency battery backup.



NOTES
1. 5'x5' GRID SPACING SHOWN FOR INDIVIDUAL FIXTURES.
2. OUTLINE OF FIXTURE SHOWN TO 0.1 FOOTCANDLES.
3. REFER TO LUMINAIRE SCHEDULE FOR FIXTURE LUMENS.

Individual Fixture Types

SCALE: 1" = 40'

NOTES:
1. ALL LIGHT FIXTURES ARE FULL CUTOFF AND PROVIDE ZERO UPLIGHT AND ARE DARK SKY COMPLIANT, REFER TO OPTICS UNDER FEATURES AND SPECIFICATION NOTES.
2. PROPOSED HOURS WHEN EACH LUMINAIRE WILL BE OPERATED WILL BE DETERMINED BY TENANT USES, REFER TO STANDARD AND NIGHT AIR CONTROLS UNDER FEATURES AND SPECIFICATION NOTES.
3. TOTAL LUMEN OUTPUT FOR ENTIRE PROPERTY IS APPROXIMATELY 1,182,319 LUMENS. LUMENS.
4. FOR CLARITY THE FOOTCANDLE GRID SPACING ON SHEETS C6.02 AND C6.03 IS SHOWN AT 10'x10'. INDIVIDUAL FIXTURE TYPES SHOWN ON THIS SHEET HAVE THE GRID SPACING AT 5'X5'.
5. LIGHTING SHALL BE DIRECTED SO AS NOT TO SHINE DIRECTLY ONTO NEIGHBORING PROPERTIES OR PUBLIC RIGHTS-OF-WAY. CONTRACTOR TO FABRICATE AND INSTALL.

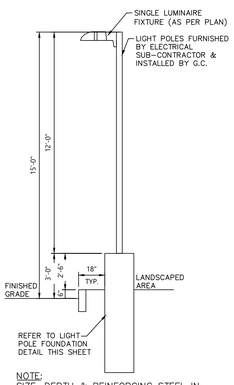
FEATURES & SPECIFICATIONS:

OPTICS
PRECISION-MOLDED PROPRIETARY SILICONE LENSES ARE ENGINEERED FOR SUPERIOR AREA LIGHTING DISTRIBUTION, UNIFORMITY, AND POLE SPACING. LIGHT ENGINES ARE AVAILABLE IN 3000 K, 4000 K OR 5000 K (70 CRI) CONFIGURATIONS. 80CRI CONFIGURATIONS ARE ALSO AVAILABLE. THE D-SERIES SIZE 0 HAS ZERO UPLIGHT AND QUALIFIES AS A NIGHTTIME FRIENDLY™ PRODUCT, MEANING IT IS CONSISTENT WITH THE LEED® AND GREEN GLOBES™ CRITERIA FOR ELIMINATING WASTEFUL UPLIGHT.

ELECTRICAL
LIGHT ENGINE(S) CONFIGURATIONS CONSIST OF HIGH-EFFICACY LEDS MOUNTED TO METAL CORE CIRCUIT BOARDS TO MAXIMIZE HEAT DISSIPATION AND PROMOTE LONG LIFE (UP TO L80/100,000 HOURS AT 25°C). CLASS 1 ELECTRONIC DRIVERS ARE DESIGNED TO HAVE A POWER FACTOR >90%, THD <20%, AND AN EXPECTED LIFE OF 100,000 HOURS WITH <1% FAILURE RATE. EASILY SERVICEABLE 10KV SURGE PROTECTION DEVICE MEETS A MINIMUM CATEGORY C LOW OPERATION (PER ANSI/IEEE C62.41.2).

STANDARD CONTROLS
THE DSX0 LED AREA LUMINAIRE HAS A NUMBER OF CONTROL OPTIONS. DSX SIZE 0, COMES STANDARD WITH 0-10V DIMMING DRIVER. DUSK TO DAWN CONTROLS CAN BE UTILIZED VIA AN OPTIONAL NEMA TWIST-LOCK PHOTOCELL RECEPTACLES. PIR INTEGRATED MOTION SENSOR WITH ON-BOARD PHOTOCELL FEATURE FIELD-ADJUSTABLE PROGRAMMING AND ARE SUITABLE FOR MOUNTING HEIGHTS UP TO 40 FEET. CONTROL OPTION BL FEATURES A BI-LEVEL DEVICE THAT ALLOWS A SECOND CONTROL CIRCUIT TO SWITCH ALL LIGHT ENGINES TO EITHER 30% OR 50% LIGHT OUTPUT.

NLIGHT AIR CONTROLS
THE DSX0 LED AREA LUMINAIRE IS ALSO AVAILABLE WITH NLIGHT® AIR FOR THE ULTIMATE IN WIRELESS CONTROL. THIS POWERFUL CONTROLS PLATFORM PROVIDES OUT-OF-THE-BOX BASIC MOTION SENSING AND PHOTOCONTROL FUNCTIONALITY AND IS SUITABLE FOR MOUNTING HEIGHTS UP TO 40 FEET. ONCE COMMISSIONED USING A SMARTPHONE AND THE EASY-TO USE CLARITY APP, NLIGHT AIR EQUIPPED LUMINAIRES CAN BE GROUPED, RESULTING IN MOTION SENSOR AND PHOTOCELL GROUP RESPONSE WITHOUT THE NEED FOR ADDITIONAL EQUIPMENT. SCHEDULED DIMMING WITH MOTION SENSOR OVER-RIDE CAN BE ACHIEVED
WHEN USED WITH THE NLIGHT ECLYPSE.



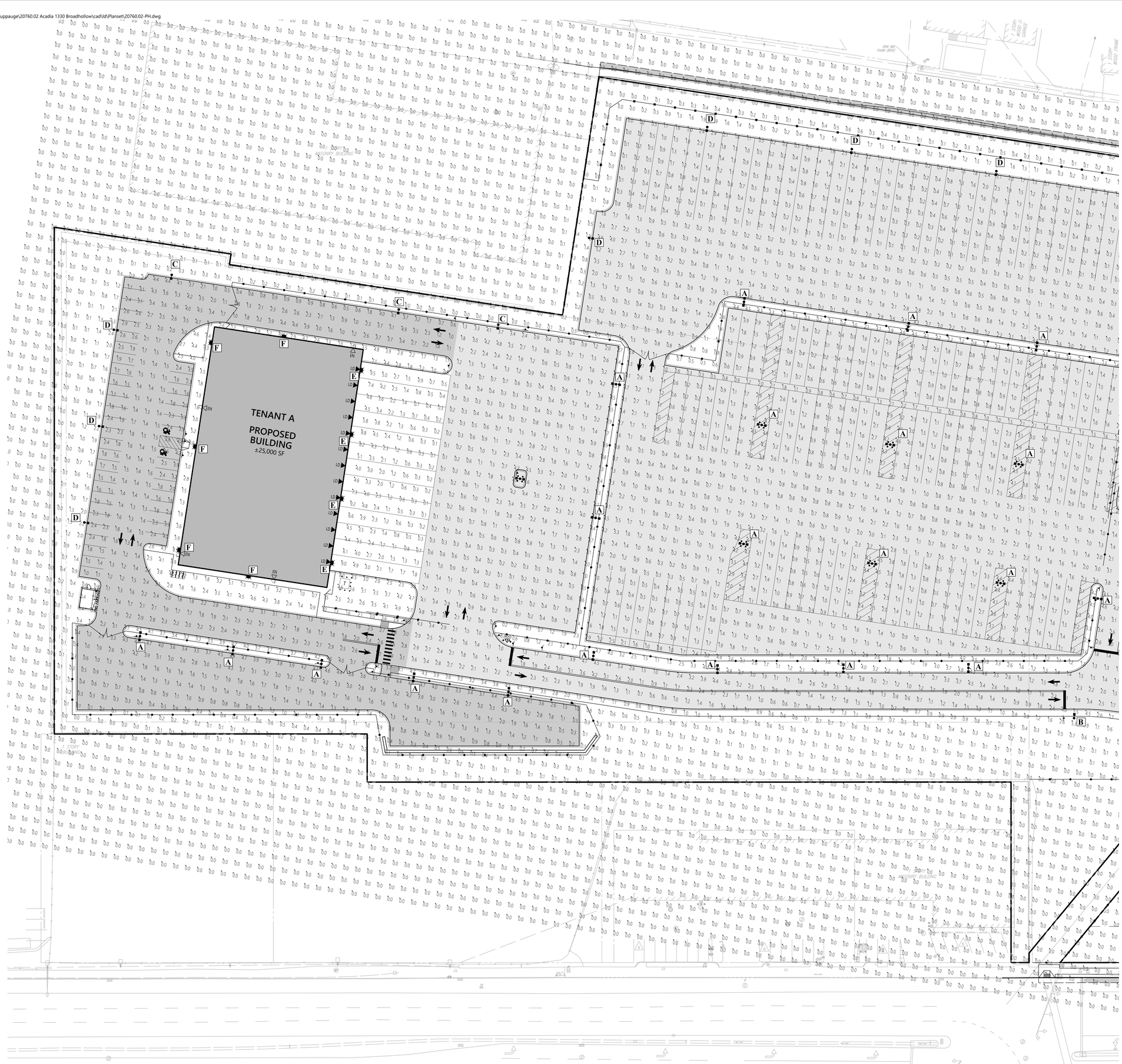
NOTE:
SIZE, DEPTH & REINFORCING STEEL IN BASE TO BE DETERMINED BY GEO. TECH & STRUCTURAL ENGINEER

Light Pole Base Detail

N.T.S.

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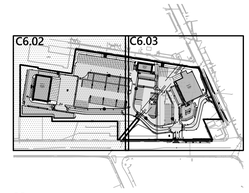
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Hauppauge, NY 11788
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Key

Not To Scale

Luminaire Schedule

Symbol	Label	*Quantity	Arrangement	LLF	Arr. Watts	Total Watts	Arr. Lum. Lumens	Description	Mounting Height
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* TOTAL QUANTITIES FOR OVERALL SITE

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TOWN OF BABYLON APPROVAL STAMP SCHEDULE

BUILDING DEPT.	PLANNING BOARD APPROVAL	DEPARTMENTAL APPROVAL
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0 15 30 60 Feet

Proposed Industrial Uses

1330 Broadhollow Road
Farmingdale, NY 11735

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Designed by CS — Checked by KPW

Issued for: **Site Plan Approval** — Date: **February 10, 2023**

Not Approved for Construction

Drawing Title: **Partial Photometric Plan (South)**

Drawing Number: **C6.02**

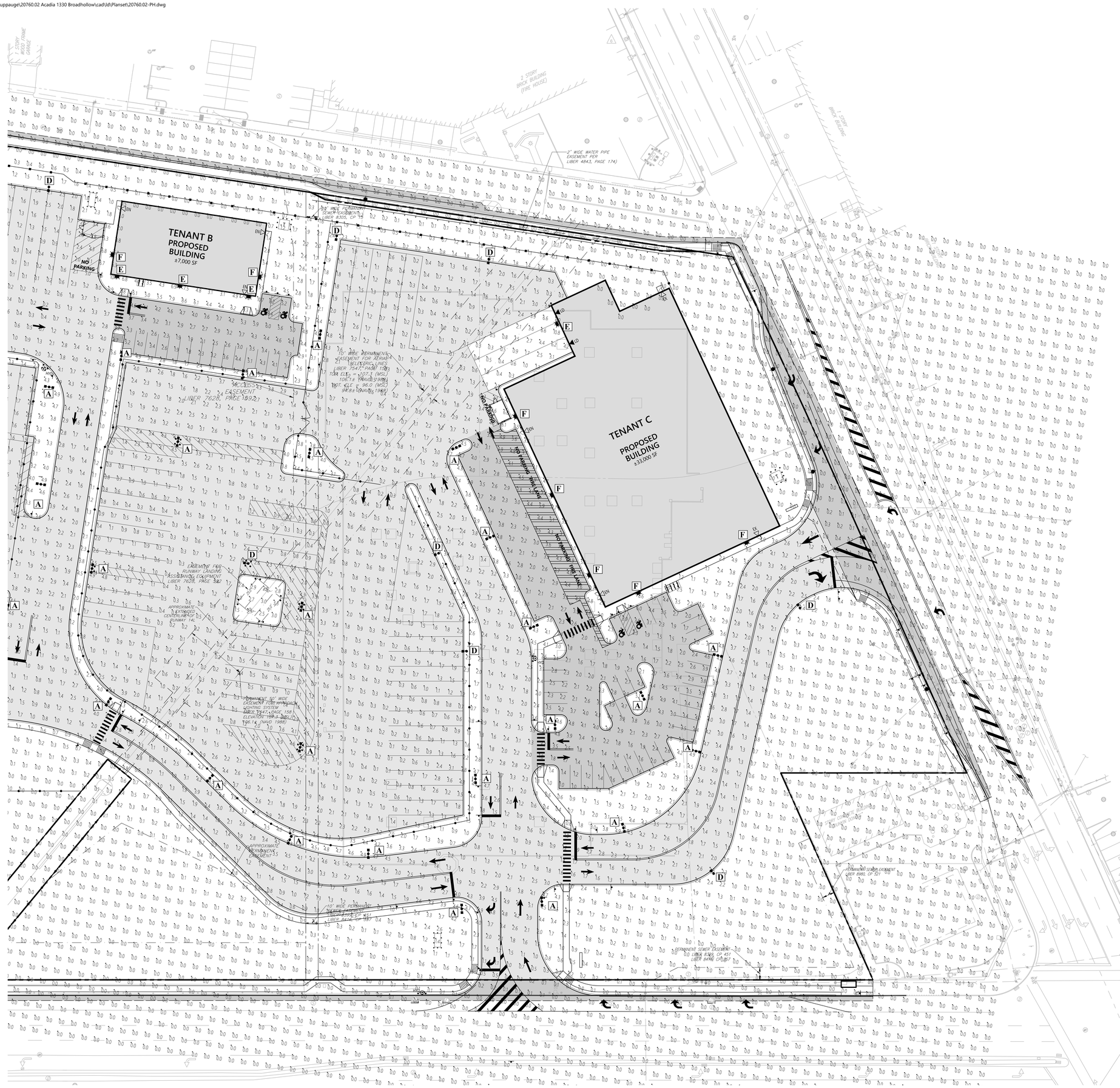
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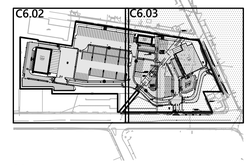
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Key

Not To Scale

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Symbol	Label	*Quantity	Arrangement	LLF	Arr. Watts	Total Watts	Arr. Lum. Lumens	Description	Mounting Height
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TOWN OF BABYLON APPROVAL STAMP SCHEDULE

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0 15 30 60 Feet

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Designed by CS | Checked by KPW

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Drawing Title
Partial Photometric Plan (North)

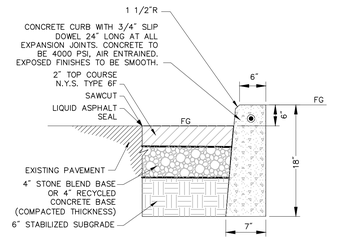
Drawing Number
C6.03

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Project Number
20760.02

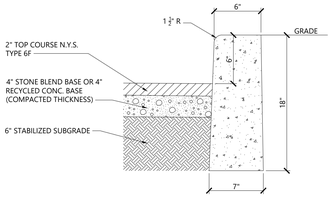
IT IS A VIOLATION OF SECTION 7209 OF ARTICLE 145 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON TO ALTER THIS DOCUMENT UNLESS THE SEAL OF A PROFESSIONAL ENGINEER BEARS THE SEAL OF A PROFESSIONAL ENGINEER, UNLESS THE PERSON IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER

Saved Thursday, August 8, 2024 3:11:29 PM CSULLIVAN Plotted Tuesday, November 12, 2024 11:55:33 AM Christopher Sullivan



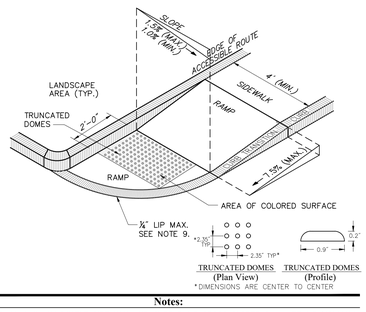
Concrete Curb and Pavement Restoration (Off-Site)

N.T.S. Source: Town of Babylon



Typ. Bumper Curb & On-site Pavement Detail

N.T.S. Source: Town of Babylon



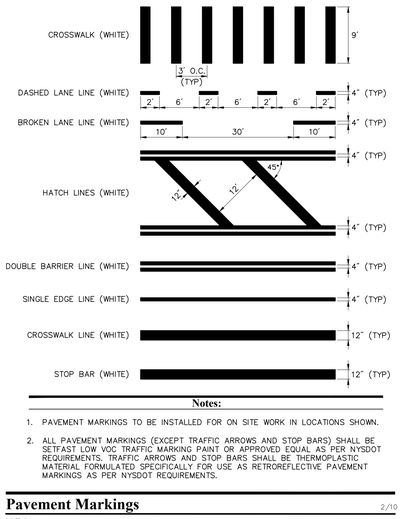
Notes:

1. THE MAXIMUM ALLOWABLE SIDEWALK AND CURB RAMP CROSS SLOPES SHALL BE 1.5 (1% MIN.).
2. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE EXCLUDING CURB RAMPS SHALL BE 5%.
3. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE AT CURB RAMPS SHALL BE 7.5%.
4. A MINIMUM OF 3 FEET CLEAR SHALL BE MAINTAINED AT ANY PERMANENT OBSTACLE IN ACCESSIBLE ROUTE (I.E., HYDRANTS, UTILITY POLES, TREE WELLS, SIGNS, ETC.).
5. CURB TREATMENT VARIES, SEE PLANS FOR CURB TYPE.
6. RAMP, CURB AND ADJACENT PAVEMENTS SHALL BE GRADED TO PREVENT PONDING.
7. SEE TYPICAL SIDEWALK SECTION FOR RAMP CONSTRUCTION.
8. WHERE ACCESSIBLE ROUTES ARE LESS THAN 5' IN WIDTH (EXCLUDING CURBING) A 5' x 5' PASSING AREA SHALL BE PROVIDED AT INTERVALS NOT TO EXCEED 200 FEET.
9. ELIMINATE CURBING AT RAMP WHERE IT ABUTS ROADWAY, EXCEPT WHERE VERTICAL CURBING IS INDICATED ON THE DRAWINGS TO BE INSTALLED AND SET FLUSH.
10. DETECTABLE WARNINGS SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES.
11. DETECTABLE WARNINGS SHALL BE INSTALLED PERPENDICULAR TO THE ACCESSIBLE ROUTE.
12. CONTRACTOR TO SUBMIT R.F.I. FOR THIS TYPE OF ACCESSIBLE CURB RAMP FOR APEX ROADWAY CROSSINGS.

Accessible Curb Ramp (ACR) - Type 'B-D'

11/10

N.T.S. Source: VHB REV LD_501



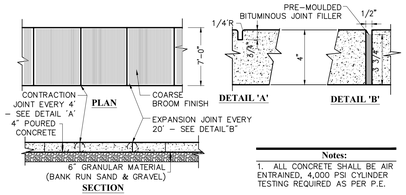
Notes:

1. PAVEMENT MARKINGS TO BE INSTALLED FOR ON SITE WORK IN LOCATIONS SHOWN.
2. ALL PAVEMENT MARKINGS (EXCEPT TRAFFIC ARROWS AND STOP BARS) SHALL BE SETFAST LOW VOC TRAFFIC MARKING PAINT OR APPROVED EQUAL AS PER NYSDOT REQUIREMENTS. TRAFFIC ARROWS AND STOP BARS SHALL BE THERMOPLASTIC MATERIAL FORMULATED SPECIFICALLY FOR USE AS RETROREFLECTIVE PAVEMENT MARKINGS AS PER NYSDOT REQUIREMENTS.

Pavement Markings

2/10

N.T.S.

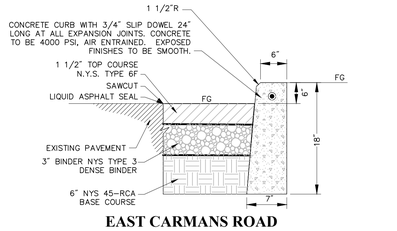


EAST CARMANS ROAD

Concrete Sidewalk (Off-Site)

7/12

N.T.S. LD_



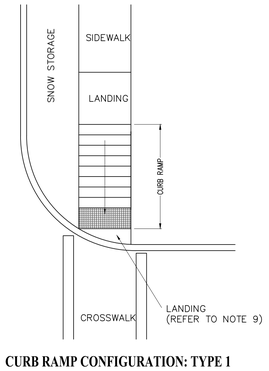
NOTES

1. THE MAXIMUM ALLOWABLE SIDEWALK AND CURB RAMP CROSS SLOPES SHALL BE 1.5 (1% MIN.).
2. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE EXCLUDING CURB RAMPS SHALL BE 5%.
3. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE AT CURB RAMPS SHALL BE 7.5%.
4. A MINIMUM OF 3 FEET CLEAR SHALL BE MAINTAINED AT ANY PERMANENT OBSTACLE IN ACCESSIBLE ROUTE (I.E., HYDRANTS, UTILITY POLES, TREE WELLS, SIGNS, ETC.).
5. CURB TREATMENT VARIES, SEE PLANS FOR CURB TYPE.
6. RAMP, CURB AND ADJACENT PAVEMENTS SHALL BE GRADED TO PREVENT PONDING.
7. SEE TYPICAL SIDEWALK SECTION FOR RAMP CONSTRUCTION.
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9. ELIMINATE CURBING AT RAMP WHERE IT ABUTS ROADWAY, EXCEPT WHERE VERTICAL CURBING IS INDICATED ON THE DRAWINGS TO BE INSTALLED AND SET FLUSH.
10. DETECTABLE WARNINGS SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES.
11. DETECTABLE WARNINGS SHALL BE INSTALLED PERPENDICULAR TO THE ACCESSIBLE ROUTE.
12. CONTRACTOR TO SUBMIT R.F.I. FOR THIS TYPE OF ACCESSIBLE CURB RAMP FOR APEX ROADWAY CROSSINGS.

Accessible Curb Ramp (ACR) Type 'C-D'

12/20

N.T.S. Source: VHB LD_502

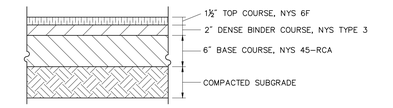


CURB RAMP CONFIGURATION: TYPE 1

NYS DOT Sidewalk Curb Ramp Detail

9/19/2008

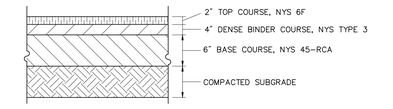
N.T.S. Source: NYS DOT



(SEE LIMITS OF PAVEMENT SECTION ON SITE PLANS)
(TO BE REVIEWED W/ GEOTECHNICAL RECOMMENDATION ONCE COMPLETED)

On-Site Bituminous Flexible Pavement Section within Car Parking and Driveway Areas

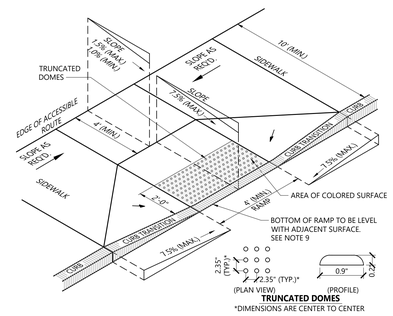
N.T.S. Source: VHB



(SEE LIMITS OF HEAVY DUTY PAVEMENT SECTION ON SITE PLANS)
(TO BE REVIEWED W/ GEOTECHNICAL RECOMMENDATION ONCE COMPLETED)

On-Site Bituminous Flexible Heavy Duty Pavement Section within Access Roadways

N.T.S. Source: VHB



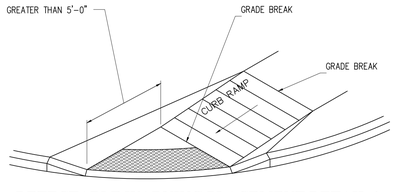
NOTES

1. THE MAXIMUM ALLOWABLE SIDEWALK AND CURB RAMP CROSS SLOPES SHALL BE 1.5 (1% MIN.).
2. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE EXCLUDING CURB RAMPS SHALL BE 5%.
3. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE AT CURB RAMPS SHALL BE 7.5%.
4. A MINIMUM OF 3 FEET CLEAR SHALL BE MAINTAINED AT ANY PERMANENT OBSTACLE IN ACCESSIBLE ROUTE (I.E., HYDRANTS, UTILITY POLES, TREE WELLS, SIGNS, ETC.).
5. CURB TREATMENT VARIES, SEE PLANS FOR CURB TYPE.
6. RAMP, CURB AND ADJACENT PAVEMENTS SHALL BE GRADED TO PREVENT PONDING.
7. SEE TYPICAL SIDEWALK SECTION FOR RAMP CONSTRUCTION.
8. WHERE ACCESSIBLE ROUTES ARE LESS THAN 5' IN WIDTH (EXCLUDING CURBING) A 5' x 5' PASSING AREA SHALL BE PROVIDED AT INTERVALS NOT TO EXCEED 200 FEET.
9. ELIMINATE CURBING AT RAMP WHERE IT ABUTS ROADWAY, EXCEPT WHERE VERTICAL CURBING IS INDICATED ON THE DRAWINGS TO BE INSTALLED AND SET FLUSH.
10. DETECTABLE WARNINGS SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES.
11. DETECTABLE WARNINGS SHALL BE INSTALLED PERPENDICULAR TO THE ACCESSIBLE ROUTE.

Accessible Curb Ramp (ACR) Type 'D-D'

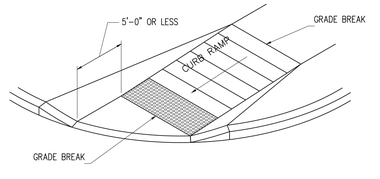
12/20

N.T.S. Source: VHB LD_503



DETECTABLE WARNING PLACEMENT DETAIL 1

NOTE: IF THE DISTANCE FROM THE GRADE BREAK IS GREATER THAN OF EQUAL TO 5'-0", DETECTABLE WARNINGS SHOULD BE PLACED ALONG THE RADIUS OF THE CURVE AS SHOWN IN THE ABOVE DETAIL.



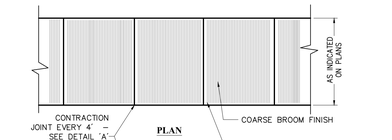
DETECTABLE WARNING PLACEMENT DETAIL 2

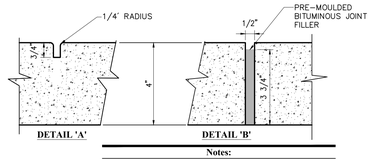
NOTE: IF THE DISTANCE FROM THE GRADE BREAK IS LESS THAN OR EQUAL TO 5'-0", DETECTABLE WARNINGS SHOULD BE PLACED ON THE CURB RAMP ALONG THE BOTTOM GRADE BREAK WITH ONE CORNER 5" TO 9" FROM THE FRONT OF THE CURB OR EDGE OF THE ROADWAY.

NYS DOT Sidewalk Curb Ramp Detectable Warning Details

9/19/2008

N.T.S. Source: NYS DOT





Notes:

1. ALL CONCRETE SHALL BE AIR ENTRAINED, 4,000 PSI CYLINDER TESTING REQUIRED AS PER P.E.

Concrete Sidewalk (On-site)

7/12

N.T.S. Source: VHB LD_

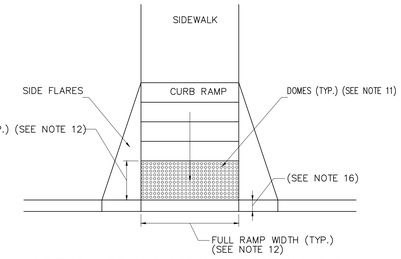
NOTES

1. ALL DIMENSIONS TO EDGES OF 4" PAVEMENT STRIPING.
2. 9' STALL WIDTH REFERS TO 8' CLEAR BETWEEN INSIDE EDGES OF PAVEMENT MARKINGS.
3. ALL SLOPES THROUGHOUT THE ACCESSIBLE PARKING AND AISLE AREAS SHALL NOT EXCEED 1.5%.

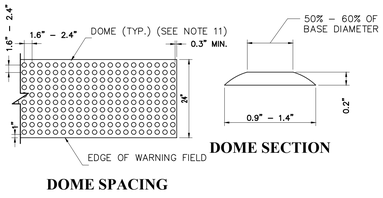
Accessible Parking Space

2006

N.T.S. Source: Town of Babylon REV

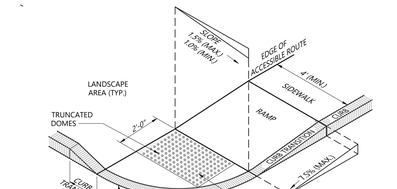


DETECTABLE WARNING AT CURB RAMP



DOME SECTION

DOME SPACING



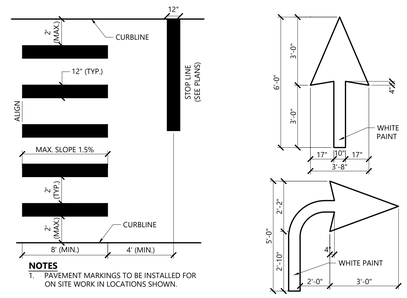
NOTES

1. THE MAXIMUM ALLOWABLE SIDEWALK AND CURB RAMP CROSS SLOPES SHALL BE 1.5 (1% MIN.).
2. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE EXCLUDING CURB RAMPS SHALL BE 5%.
3. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE AT CURB RAMPS SHALL BE 7.5%.
4. A MINIMUM OF 3 FEET CLEAR SHALL BE MAINTAINED AT ANY PERMANENT OBSTACLE IN ACCESSIBLE ROUTE (I.E., HYDRANTS, UTILITY POLES, TREE WELLS, SIGNS, ETC.).
5. CURB TREATMENT VARIES, SEE PLANS FOR CURB TYPE.
6. RAMP, CURB AND ADJACENT PAVEMENTS SHALL BE GRADED TO PREVENT PONDING.
7. SEE TYPICAL SIDEWALK SECTION FOR RAMP CONSTRUCTION.
8. WHERE ACCESSIBLE ROUTES ARE LESS THAN 5' IN WIDTH (EXCLUDING CURBING) A 5' x 5' PASSING AREA SHALL BE PROVIDED AT INTERVALS NOT TO EXCEED 200 FEET.
9. ELIMINATE CURBING AT RAMP WHERE IT ABUTS ROADWAY, EXCEPT WHERE VERTICAL CURBING IS INDICATED ON THE DRAWINGS TO BE INSTALLED AND SET FLUSH.
10. DETECTABLE WARNINGS SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES.
11. DETECTABLE WARNINGS SHALL BE INSTALLED PERPENDICULAR TO THE ACCESSIBLE ROUTE.
12. CONTRACTOR TO SUBMIT R.F.I. FOR THIS TYPE OF ACCESSIBLE CURB RAMP FOR APEX ROADWAY CROSSINGS.

Accessible Curb Ramp (ACR) - Type 'B-D'

12/20

N.T.S. Source: VHB LD_501



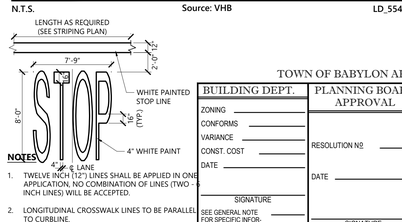
NOTES

1. PAVEMENT MARKINGS TO BE INSTALLED FOR ON SITE WORK IN LOCATIONS SHOWN.

Painted Pavement Markings - On Site

1/16

N.T.S. Source: VHB LD_554



NOTES

1. TWELVE INCH (12") LINES SHALL BE APPLIED IN ONE APPLICATION. NO COMBINATION OF LINES (TWO - 6 INCH LINES) WILL BE ACCEPTED.
2. LONGITUDINAL CROSSWALK LINES TO BE PARALLEL TO CURBLINE.
3. ALL LONGITUDINAL CROSSWALK LINES SHALL BE THE SAME LENGTH AND PROPERLY ALIGNED.
4. CROSS WALK SIDESLOPE SHALL NOT EXCEED 1.5%.

TOWN OF BABYLON APPROVAL STAMP SCHEDULE

BUILDING DEPT.	PLANNING BOARD APPROVAL	DEPARTMENTAL APPROVAL
ZONING		JOB № APPLICANT DATE
CONFORMS		
VARIANCE	RESOLUTION №	
CONST. COST		HIGHWAY DEPT. DATE
DATE	DATE	
SIGNATURE		TOWN ENGINEERING DIVISION DATE
SEE GENERAL NOTE FOR SPECIFIC INFORMATION PERTAINING TO VARIANCE IF REQUIRED & APPROVED.	SIGNATURE	PLANNING DIVISION DATE

Notes:

GENERAL NOTES:

1. THE DIMENSIONS AND SLOPES PRESENTED IN THE DETAILS ARE THE MINIMUM NECESSARY TO COMPLY WITH THE ADA AND DOT STANDARDS. ANY DEVIATION LESS THAN THE MINIMUM WIDTH OR GREATER THAN THE MAXIMUM SLOPE FROM THESE STANDARDS MUST BE DOCUMENTED WITH THE STANDARDS BEING MET TO THE GREATEST EXTENT PRACTICABLE AND CONSISTENT WITH THE MOST CURRENT ADAAG.
2. CURB RAMPS, LANDINGS AND BLENDED TRANSITIONS MAY REQUIRE THE USE OF DETECTABLE WARNINGS. DETECTABLE WARNINGS ON THIS SHEET ARE SHOWN FOR ILLUSTRATION ONLY. REFER TO THE DETECTABLE WARNING DETAILS ON SHEET 4 OF 4 FOR DETAILS ON PLACEMENT, ORIENTATION & DIMENSIONS. REFER TO CHAPTER 18 OF THE HIGHWAY DESIGN MANUAL FOR MORE INFORMATION.

CURB RAMP NOTES:

3. THE MINIMUM WIDTH FOR SIDEWALK CURB RAMPS IS 5'-0".
4. THE RUNNING SLOPE OF A CURB RAMP SHALL BE 1:20 (5%) MINIMUM (PREFERRED) AND 1:12 (8.33%) MAXIMUM.
5. THE CROSS SLOPE OF CURB RAMPS SHOULD BE AS FLAT AS POSSIBLE, NOT TO EXCEED 1:50 (2%).
6. THE VERTICAL ALIGNMENT OF A CURB RAMP, EXCLUDING THE FLARES, SHALL BE PLANAR. GRADE BREAKS SHALL BE FLUSH AND PERPENDICULAR TO THE DIRECTION OF THE RAMP RUN.
7. RAMP TRANSITIONS BETWEEN WALKS, LANDINGS, GUTTERS, OR STREETS SHALL BE FLUSH AND FREE OF ABRUPT VERTICAL CHANGES (1/4" MAX).
8. WHERE A PEDESTRIAN CIRCULATION PATH CROSSES THE CURB RAMP, FLARED SIDES WITH A SLOPE OF 10% MAXIMUM, MEASURED PARALLEL TO THE CURB LINE, SHALL BE PROVIDED.

LANDING NOTES

9. LANDINGS SHALL HAVE A MINIMUM CLEAR DIMENSION OF A 5'-0" BY 5'-0" EXCEPT AT THE BOTTOM OF RAMPS TYPE 2.
10. THE RUNNING AND CROSS SLOPES ON LANDINGS AT INTERSECTIONS IS 1:50 (2%) MAXIMUM.

DETECTABLE WARNING NOTES:

11. THE DETAILS PROVIDED ARE NOT DRAWN TO SCALE. THE QUANTITY OF DOMES DEPICTED ON THE DETECTABLE WARNING UNIT (THE DOMES AND THE ENTIRE 24" LEVEL SURFACE) IS FOR ILLUSTRATION ONLY.

DETECTABLE WARNING UNIT DIMENSIONS:

12. THE SIZE OF THE DETECTABLE WARNING FIELD SHALL BE 24" IN THE DIRECTION OF TRAVEL AND SHALL EXTEND THE FULL WIDTH OF THE CURB RAMP OR FLUSH SURFACE, EXCLUSIVE OF SIDE FLARES.

DOME ALIGNMENT:

13. THE ROWS OF DOMES SHALL BE ALIGNED TO BE PERPENDICULAR OR RADIAL TO THE GRADE BREAK BETWEEN THE RAMP/ LANDING OR CURB RAMP AND THE STREET.
14. WHERE DOMES ARE ARRAYED RADIALLY THEY MAY DIFFER IN DOME DIAMETER AND CENTER-TO-CENTER SPACING WITHIN THE RANGES SPECIFIED ON THIS SHEET.

COLOR REQUIREMENTS:

15. THE DETECTABLE WARNING FIELD SHALL BE THE COLOR SPECIFIED IN THE CONTRACT DOCUMENTS OR MEET THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS.

DETECTABLE WARNINGS LOCATIONS:

16. DETECTABLE WARNINGS SHALL BE LOCATED SO THAT THE EDGE OR CORNER OF THE WARNING FIELD NEAREST TO THE ROADWAY IS 5" TO 9" FROM THE FRONT OF THE CURB OR THE ROADWAY EDGE (12" WHERE TRAVERSABLE CURB IS USED).

NYS DOT Sidewalk Curb Ramp Notes

9/19/2008

N.T.S. Source: NYS DOT

vhb.com
vhb
Engineering, Surveying, Landscape Architecture and Geology, PC
100 Motor Parkway
Suite 350
Hauppauge, NY 11788
631.787.3400

Proposed Industrial Uses

1330 Broadhollow Road
Farmingdale, NY 11735

No.	Revision	Date	Appvd.
1	Revised Layout Per Town Comments	8/10/23	KPW
2	Revised Layout Per Town Comments	1/31/24	KPW
3	Reduced Parking Per FAA Comments	4/25/24	KPW
4	Revised Tenant Outdoor Storage Areas	7/1/24	KPW
5	Updated Set Per with FAA Layout / Town and Fire Marshal Comments	8/9/24	KPW
1	Updated Set Per Town Comments Dated September 19, 2024	11/12/24	KPW

Designed by CS Checked by KPW

Issued for: Site Plan Approval Date: February 10, 2023

Not Approved for Construction

Drawing Title: Site Details 1

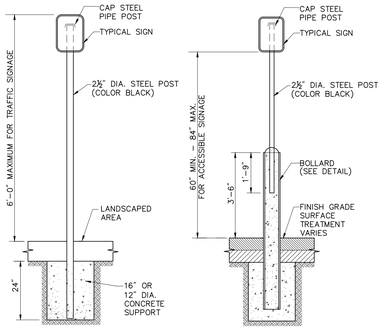
Drawing Number: C7.01

Sheet 15 of 21

Project Number: 20760.02

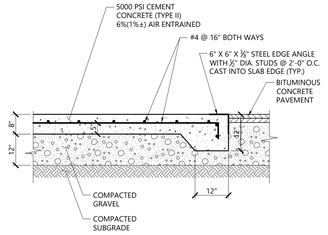
IT IS A VIOLATION OF SECTION 7209 OF ARTICLE 145 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON TO ALTER ANY DOCUMENT THAT BEARS THE SEAL OF A LICENSED PROFESSIONAL UNLESS THE PERSON IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER

Saved Friday, October 25, 2024 4:20:27 PM CSULLIVAN Plotted Tuesday, November 12, 2024 11:55:49 AM Christopher Sullivan



Sign Post - Type 'A' **Bollard Mounted Sign**

NOTE: SIGNS TO BE 18" MINIMUM FROM FACE TO CURB



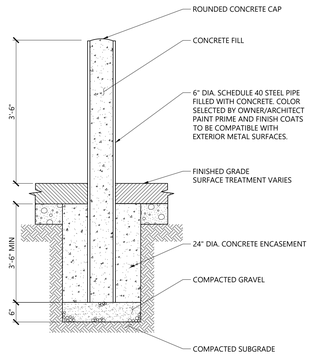
NOTES

1. SIZE OF PAD TO BE AS INDICATED ON PLANS.
2. CONSTRUCTION JOINTS SHALL BE SPACED NO MORE THAN 20 FEET ON CENTER AND SHALL BE EQUALLY SPACED OVER THE LENGTH AND WIDTH OF THE PAD.

Loading Dock Pad

1/16

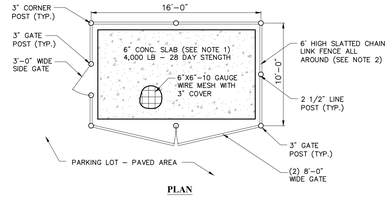
N.T.S. Source: VHB LD_711S



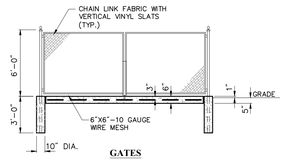
Bollard

12/19

N.T.S. Source: VHB LD_700



PLAN



GATES

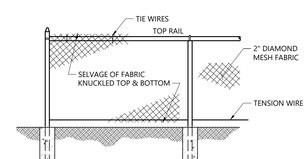
Notes:

1. LENGTH AND WIDTH TO BE DETERMINED BY THE ARCHITECT OR ENGINEER AS NECESSITATED BY THE NEEDS OF THE SITE. THE SIZE IS SUBJECT TO THE APPROVAL OF THE TOWN ENGINEER & PLANNING BOARD.
2. TERMINAL LINE & LINE POSTS SHALL NOT BE SET IN THE SLAB. THEY SHALL BE INSTALLED IN ACCORDANCE WITH SECTION VI, FENCING, PARAGRAPH B–2.

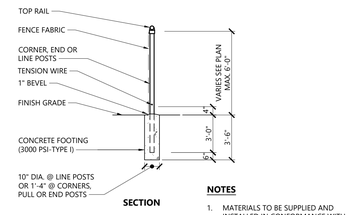
Refuse Enclosure Detail

12/4

N.T.S. Source: Town of Babylon



ELEVATION



SECTION

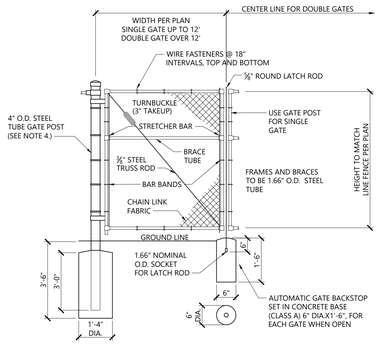
NOTES

1. MATERIALS TO BE SUPPLIED AND INSTALLED IN CONFORMANCE WITH "CHAIN LINK MANUFACTURER'S INSTITUTE" PRODUCT MANUAL.

Chain Link Fence up to 6'

1/16

N.T.S. Source: VHB REV LD_481



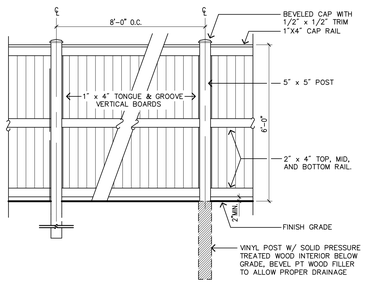
NOTES

1. CHAIN LINK FABRIC FOR GATES TO BE THE SAME AS REQUIRED FOR FENCE.
2. GATE POST BASE-PORTLAND CEMENT CONCRETE (3000 PSI).
3. FENCE FABRIC, POSTS, FRAMEWORKS, AND HARDWARE SHALL BE GALVANIZED STEEL PER SPECIFICATIONS.
4. GATE POSTS TO BE USED ON EACH SIDE OF SINGLE AND DOUBLE GATE OPENINGS.

Chain Link Fence Gate

12/19

N.T.S. Source: VHB LD_482



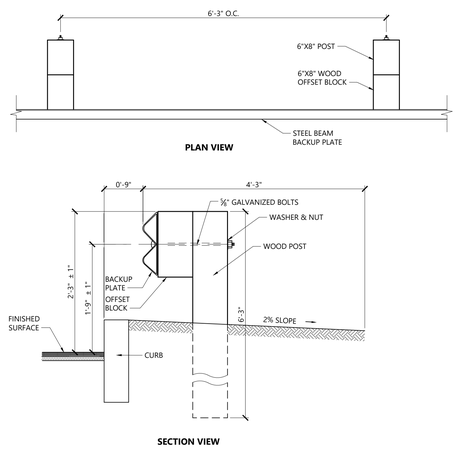
Notes:

1. ALL VINYL TO BE 100% VIRGIN, MONO–EXTRUSION WITH 10% TITANIUM DIOXIDE THROUGHOUT ENTIRE THICKNESS, CAPE COD GREY COLOR. AS MANUFACTURED BY PERFECTION FENCE, OR APPROVED EQUAL.

6' Vinyl Board Fence

1/04

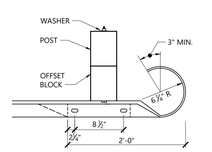
N.T.S. Source: VHB REV



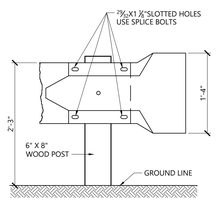
Steel Beam Guardrail with Wood Post

1/16

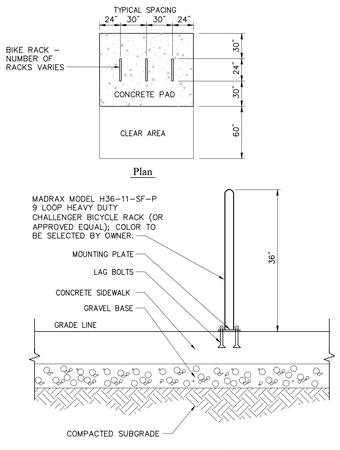
N.T.S. Source: VHB REV LD_455



PLAN VIEW



ELEVATION VIEW



NOTE: MAXIMUM HEIGHT OF WALL WITHOUT REINFORCEMENT = 4'.

Segmental Block Retaining Wall Detail

11/15

N.T.S. Source: VHB LD_

Note:

1. INSTALL IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

Bicycle Rack (Surface Mounted)

N.T.S.

TOWN OF BABYLON APPROVAL STAMP SCHEDULE

BUILDING DEPT.	PLANNING BOARD APPROVAL	DEPARTMENTAL APPROVAL
ZONING _____		
CONFORMS _____		JOB NO. APPLICANT DATE
VARIANCE _____	RESOLUTION NO. _____	
CONST. COST _____		HIGHWAY DEPT. DATE
DATE _____	DATE _____	
SIGNATURE		TOWN ENGINEERING DIVISION DATE
SEE GENERAL NOTE FOR SPECIFIC INFORMATION PERTAINING TO A VARIANCE IF REQUIRED & APPROVED.	SIGNATURE	PLANNING DIVISION DATE

vhb.com
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Engineering, Surveying, Landscape Architecture and Geology, PC
100 Motor Parkway
Suite 350
Hauppauge, NY 11788
631.787.3400

Proposed Industrial Uses

1330 Broadhollow Road
Farmingdale, NY 11735

No.	Revision	Date	Apprvd.
1	Revised Layout Per Town Comments	8/10/23	KPW
2	Revised Layout Per Town Comments	1/31/24	KPW
3	Reduced Parking Per FAA Comments	4/25/24	KPW
4	Revised Tenant Outdoor Storage Areas	7/1/24	KPW
5	Updated Set Per with FAA Layout / Town and Fire Marshal Comments	8/9/24	KPW
6	Updated Set Per Town Comments Dated September 19, 2024	11/12/24	KPW

Designed by: CS Checked by: KPW

Issued for: **Site Plan Approval** Date: **February 10, 2023**

Not Approved for Construction

Drawing Title: **Site Details 2**

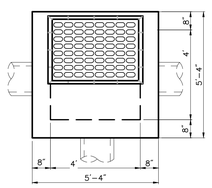
Drawing Number: **C7.02**

Sheet 16 of 21

Project Number: **20760.02**

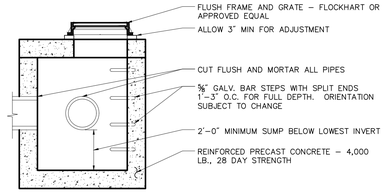
IT IS A VIOLATION OF SECTION 7209 OF ARTICLE 145 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON TO ALTER ANY DOCUMENT THAT BEARS THE SEAL OF A PROFESSIONAL ENGINEER, UNLESS THE PERSON IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER

Saved Friday, October 25, 2024 4:20:27 PM CSULLIVAN Plotted Tuesday, November 12, 2024 11:55:52 AM Christopher Sullivan



Notes:

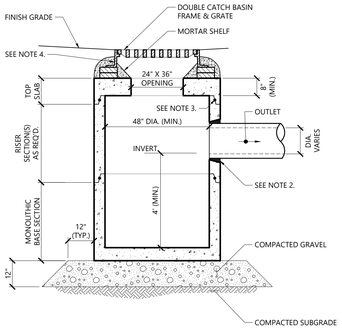
1. ALL CONCRETE TO BE REINFORCED PRECAST CONCRETE – 4,000 P.S.I. @ 28 DAYS.
2. PROVIDE PIPE OPENINGS AS REQUIRED.
3. ADDITIONAL INLETS TO BE SPACED 5' APART.



Catch Basin

3/12

N.T.S. Source: Town of Babylon TBD



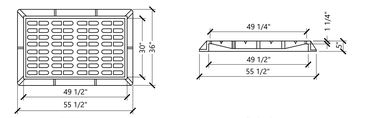
NOTES

1. ALL SECTIONS SHALL BE DESIGNED FOR HS-20 LOADING.
2. FOR HDPE, PVC, AND DI PIPE, PROVIDE FLEXIBLE BOOT CONNECTION INSTALLED PER MANUFACTURER'S RECOMMENDATIONS. FOR RCP, PROVIDE OPENINGS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE AND MORTAR CONNECTIONS.
3. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE BUTYL RUBBER.
4. DOUBLE CATCH BASIN FRAME AND GRATE SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR (2 BRICKS TYPICALLY, 5 BRICK COURSES MAXIMUM)

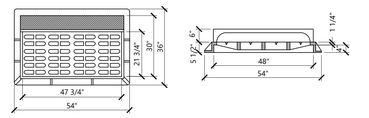
Double Grate Catch Basin (DCB)

11/19

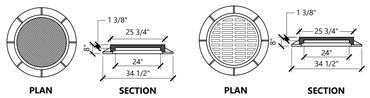
N.T.S. Source: VHB LD_102



CAMPBELL FOUNDRY 3408 HEAVY DUTY FRAME & GRATE



CAMPBELL FOUNDRY 2617 HEAVY DUTY CURB INLET



CAMPBELL FOUNDRY 1009 HEAVY DUTY FRAME & COVER

CAMPBELL FOUNDRY 1184 HEAVY DUTY FRAME & GRATE

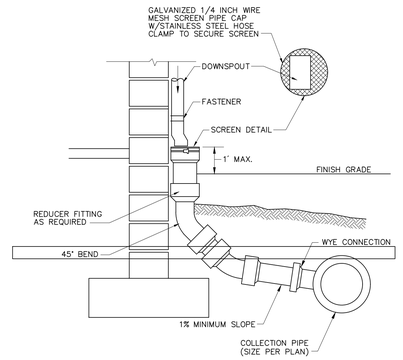
NOTES

1. MATERIALS: CONFORMS TO ASTM A48 CLASS 30B OR 35B SPECIFICATIONS LOAD RATING: FOR AASHTO & H20. CAMPBELL FOUNDRY OR APPROVED EQUAL.
2. CASTINGS MUST MATCH PRECAST OPENING.
3. 2 INCHES OF CASTING MUST REST ON CONCRETE PRECAST.

Castings

10/13

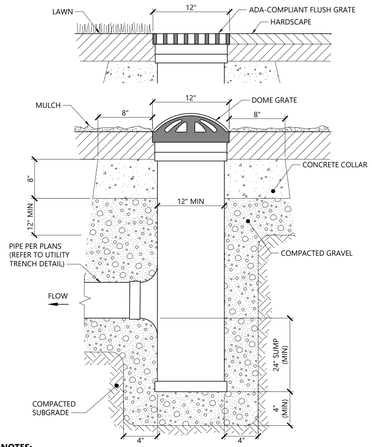
N.T.S. Source: Town of Brookhaven



Downspout Rain Leader

6/08

N.T.S. Source: VHB LD_195



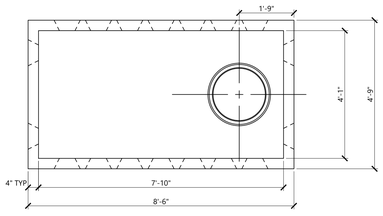
NOTES:

1. AREA DRAINS SHALL BE NYLOPLAST 12" DIAMETER DRAIN BASIN, OR APPROVED EQUAL.
2. GRATES SHALL BE NYLOPLAST 12" PEDESTRIAN MODEL 1299CGP OR 12" DOME GRATE MODEL 1299CGD (OR APPROVED EQUAL).

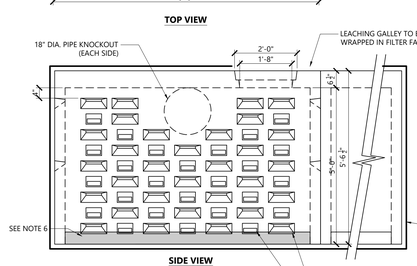
Area Drain (AD) Type 1

12/19

N.T.S. Source: VHB LD_193

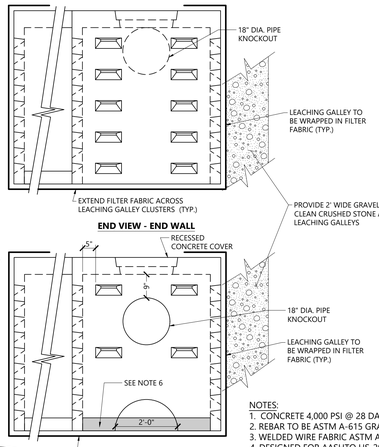


TOP VIEW

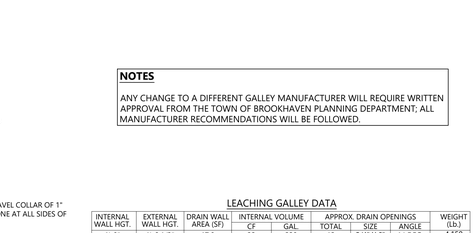


SIDE VIEW

SINGLE / TOP UNIT



SINGLE / TOP UNIT



NOTES:
1. CONCRETE 4,000 PSI @ 28 DAYS
2. REBAR TO BE ASTM A-615 GRADE 60
3. WELDED WIRE FABRIC ASTM A-185
4. DESIGNED FOR AASHTO HS-20 LOADING
5. TOP SLAB AND WALL ARE MONOLITHIC
6. LEACHING GALLEYS AT PIPE CONNECTIONS AND/OR INLETS TO HAVE SCOUR PROTECTION CONSISTING OF STONE, CONCRETE OR ASPHALT BOTTOM.

Heavy Duty Storm Leaching Galley 5'-0" Deep

4/17

N.T.S. Source: Long Island Precast PD-LG-09

LEACHING GALLEY DATA

INTERNAL WALL HGT.	EXTERNAL WALL HGT.	DRAIN WALL AREA (SF)	INTERNAL VOLUME CF	INTERNAL VOLUME GAL.	APPROX. DRAIN OPENINGS TOTAL	APPROX. DRAIN OPENINGS SIZE	APPROX. DRAIN OPENINGS ANGLE	WEIGHT (Lb.)
1'-0"	1'-6 1/2"	17.0	32	239	12	3/4" X 6"	14 DEG.	4,150
1'-6"	2'-0 1/2"	25.5	48	359	22	3/4" X 6"	14 DEG.	4,730
2'-0"	2'-6 1/2"	34.0	64	479	20	3/4" X 6"	14 DEG.	5,325
2'-6"	3'-0 1/2"	42.5	80	598	26	3/4" X 6"	14 DEG.	5,905
3'-0"	3'-6 1/2"	51.0	96	718	34	3/4" X 6"	14 DEG.	6,485
3'-6"	4'-0 1/2"	59.5	112	838	40	3/4" X 6"	14 DEG.	7,065
4'-0"	4'-6 1/2"	68.0	128	957	48	3/4" X 6"	14 DEG.	7,645
4'-6"	5'-0 1/2"	76.5	144	1077	54	3/4" X 6"	14 DEG.	8,225
5'-0"	5'-6 1/2"	85	160	1197	62	3/4" X 6"	14 DEG.	8,805

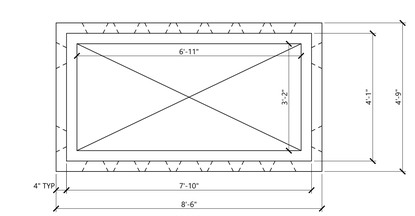
NOTES

ANY CHANGE TO A DIFFERENT GALLEY MANUFACTURER WILL REQUIRE WRITTEN APPROVAL FROM THE TOWN OF BROOKHAVEN PLANNING DEPARTMENT; ALL MANUFACTURER RECOMMENDATIONS WILL BE FOLLOWED.

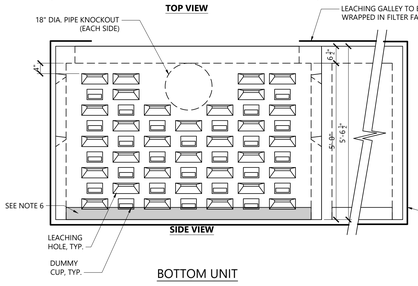
Leaching Galley Data

4/17

N.T.S. Source: Long Island Precast PD-LG-09

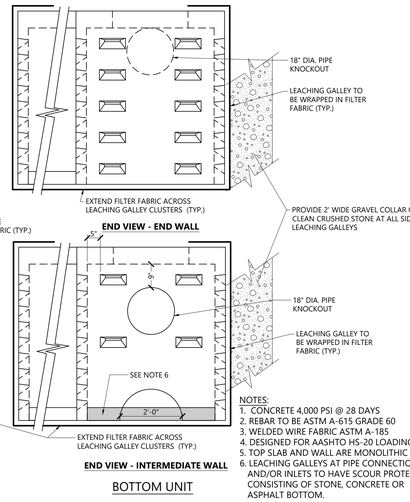


TOP VIEW

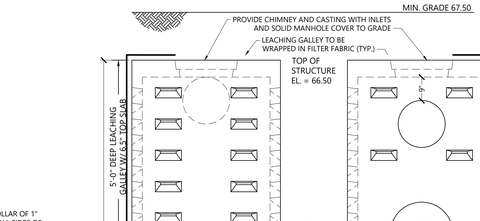


SIDE VIEW

BOTTOM UNIT



BOTTOM UNIT

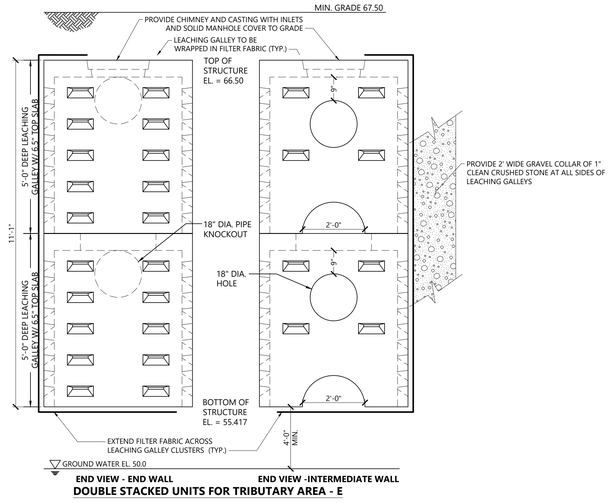


NOTES:
1. CONCRETE 4,000 PSI @ 28 DAYS
2. REBAR TO BE ASTM A-615 GRADE 60
3. WELDED WIRE FABRIC ASTM A-185
4. DESIGNED FOR AASHTO HS-20 LOADING
5. TOP SLAB AND WALL ARE MONOLITHIC
6. LEACHING GALLEYS AT PIPE CONNECTIONS AND/OR INLETS TO HAVE SCOUR PROTECTION CONSISTING OF STONE, CONCRETE OR ASPHALT BOTTOM.

Heavy Duty Storm Leaching Galley 5'-0" Deep (Vertically Stacked - Intermediate Wall)

4/17

N.T.S. Source: Long Island Precast PD-LG-09



DOUBLE STACKED UNITS FOR TRIBUTARY AREA - E

Heavy Duty Storm Leaching Galley (Vertically Stacked)

N.T.S. Source: Long Island Precast PD-LG-09

TOWN OF BABYLON APPROVAL STAMP SCHEDULE

BUILDING DEPT.	PLANNING BOARD APPROVAL	DEPARTMENTAL APPROVAL
ZONING _____		JOB № APPLICANT DATE
CONFORMS _____		
VARIANCE _____	RESOLUTION № _____	HIGHWAY DEPT. DATE
CONST. COST _____		
DATE _____	DATE _____	TOWN ENGINEERING DIVISION DATE
SIGNATURE		
SEE GENERAL NOTE FOR SPECIFIC INFORMATION PERTAINING TO A VARIANCE IF REQUIRED & APPROVED.	SIGNATURE	PLANNING DIVISION DATE

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Engineering, Surveying, Landscape Architecture and Geology, PC
100 Motor Parkway
Suite 350
Hauppauge, NY 11788
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Proposed Industrial Uses

1330 Broadhollow Road
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No.	Revision	Date	Appvd.
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Designed by CS Checked by KPW

Issued for: Site Plan Approval — Date: February 10, 2023

Not Approved for Construction

Drawing Title: Site Details 3

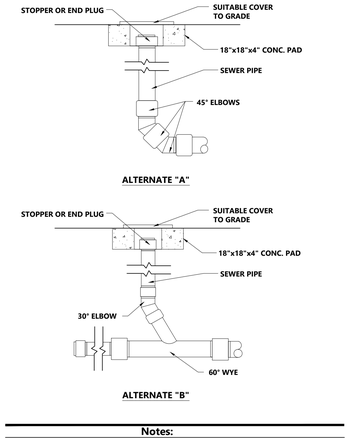
Drawing Number: C7.03

Sheet 17 of 21

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Project Number 20760.02

Saved Friday, October 25, 2024 4:20:27 PM CSULLIVAN Plotted Tuesday, November 12, 2024 11:55:57 AM Christopher Sullivan

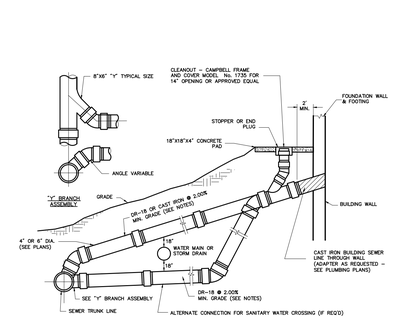


Notes:

1. **CLEANOUT(S) LOCATED IN TRAFFIC AREAS SHALL BE PROVIDED WITH TRAFFIC BEARING FRAME AND COVER.**
2. **IN ALL VIEWS, ALTERNATE "A" IS FOR BENDS AND ALTERNATE "B" IS FOR USE WITH BUILDING EXTENSION/CONNECTION.**

Typical Cleanout

N.T.S. Source: SCDHS – Wastewater Management Figure 13

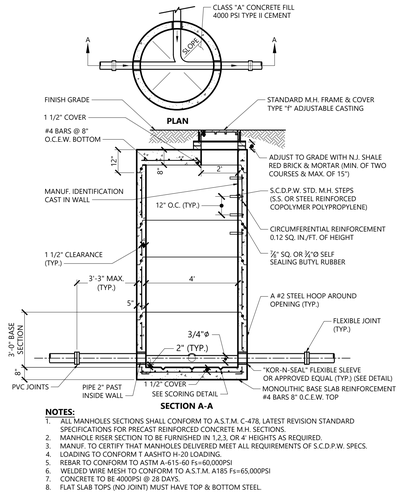


Note:

1. WHERE SERVICE CONNECTIONS PASS ABOVE WATER MAINS OR STORM DRAINS WITH 18" SEPARATION, PIPE AND FITTINGS TO BE DR–18 PVC PRESSURE PIPE.
2. WHERE SERVICE CONNECTIONS PASS ABOVE WATER MAINS OR STORM DRAINS WITH LESS THAN 18" SEPARATION, PIPE AND FITTINGS TO BE CAST IRON.
3. WHERE SERVICE CONNECTIONS PASS BELOW WATER MAINS OR STORM DRAINS WITH 18" SEPARATION, PIPE AND FITTINGS TO BE DR–18.
4. WHERE SERVICE CONNECTIONS PASS BELOW WATER MAINS OR STORM DRAINS WITH LESS THAN 18" SEPARATION, PIPE AND FITTINGS TO BE DR–18 PVC PRESSURE PIPE.

Sewer Service Connection 7/12

N.T.S. Source: VHB LD_

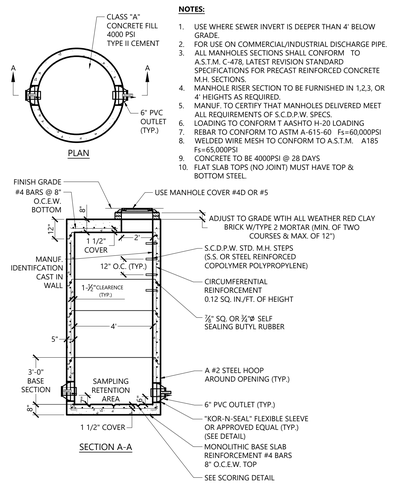


NOTES:

1. ALL MANHOLES SECTIONS SHALL CONFORM TO A.S.T.M. C-478, LATEST REVISION STANDARD SPECIFICATIONS FOR PRECAST REINFORCED CONCRETE M.H. SECTIONS.
2. MANHOLE RISER SECTION TO BE FURNISHED IN 1,2,3, OR 4' HEIGHTS AS REQUIRED.
3. MANUF. TO CERTIFY THAT MANHOLES DELIVERED MEET ALL REQUIREMENTS OF S.C.D.P.W. SPECS.
4. LOADING TO CONFORM T AASHTO H-20 LOADING.
5. REBAR TO CONFORM TO ASTM A-615-60 Fs=60,000PSI
6. WELDED WIRE MESH TO CONFORM TO A.S.T.M. A185 Fs=65,000PSI
7. CONCRETE TO BE 4000PSI @ 28 DAYS.
8. FLAT SLAB TOPS (NO JOINT) MUST HAVE TOP & BOTTOM STEEL.

4' Diameter Sanitary Sewer Manhole 6/15

N.T.S. Source: SCDPW LD_

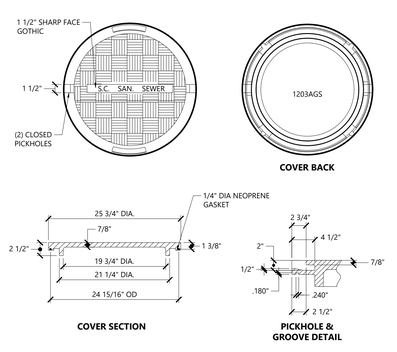


NOTES:

1. USE WHERE SEWER INVERT IS DEEPER THAN 4' BELOW GRADE.
2. FOR USE ON COMMERCIAL/INDUSTRIAL DISCHARGE PIPE.
3. ALL MANHOLES SECTIONS SHALL CONFORM TO A.S.T.M. C-478, LATEST REVISION STANDARD SPECIFICATIONS FOR PRECAST REINFORCED CONCRETE M.H. SECTIONS.
4. MANHOLE RISER SECTION TO BE FURNISHED IN 1,2,3, OR 4' HEIGHTS AS REQUIRED.
5. MANUF. TO CERTIFY THAT MANHOLES DELIVERED MEET ALL REQUIREMENTS OF S.C.D.P.W. SPECS.
6. LOADING TO CONFORM T AASHTO H-20 LOADING
7. REBAR TO CONFORM TO ASTM A-615-60 Fs=60,000PSI
8. WELDED WIRE MESH TO CONFORM TO A.S.T.M. A185 Fs=65,000PSI
9. CONCRETE TO BE 4000PSI @ 28 DAYS
10. FLAT SLAB TOPS (NO JOINT) MUST HAVE TOP & BOTTOM STEEL.

Sewer Access Port With Sampling Retention Area 06/2016

N.T.S. Source: SCDPW - Standard Sewer Details Sheet 6 of 7



NOTES

1. AASHTO M306 LOADING
2. DETAIL FROM SCDPW STANDARD SHEET LAST REVISED 06/15. CONTRACTOR TO ENSURE CASTING AND COVER MEET REQUIREMENTS OF ORIGINAL DETAILS PRIOR TO PURCHASE AND INSTALLATION

ITEM NUMBER: 4D

GASKETED COVER FOR WATERTIGHT MANHOLE WITHOUT LOCK (USE FOR SAMPLE MANHOLE - GREASE, LINT, & SEDIMENT)
(USE FOR ANY AREAS SUBJECT TO FLOODING)

DESIGN FEATURES

- MATERIALS
  GRAY IRON (CL35B)
-DESIGN LOAD
  HEAVY DUTY
- OPEN AREA
  N/A
- COATING
  UNDIPPED
- √ (DESIGNATES MACHINE SURFACE)

CERTIFICATION
- ASTM A48
- COUNTRY OF ORIGIN
  USA

Wastewater-Manhole Casting and Cover 6/15

N.T.S. Source: SCDPW ITEM NUMBER: 4D

Notes:

1. CLASS I, II, III OR IV COMPACTED BACKFILL MATERIAL REQUIRED IN ALL PIPE ZONES, PER USCS (UNIFIED SOIL CLASSIFICATION SYSTEM)
2. IF DEPTH OF TRENCH EXCEEDS 5', THE CONTRACTOR MUST PROVIDE SHEETING AND BRACING OR A SHEETING BOX IN ACCORDANCE WITH OSHA REGULATION AS AN ALTERNATIVE, IF PERMITTED BY THE ENGINEER, THE TRENCH WALLS MAY BE CUT BACK TO A 1:1 SLOPE OR THE NATURAL ANGLE OF REPOSE FOR THE SOIL, WHICHEVER IS GREATER.
3. WHERE PIPE IS INSTALLED WITH LESS THAN 3' OF COVER, ALL BACKFILL MATERIAL THROUGH THE PIPE ZONE IS TO BE CLASS I MATERIAL.

Pipe Trench

N.T.S. Source: VHB

Notes:

1. CONCRETE THRUST BLOCKS TO BE USED ONLY WHERE THEY CAN BEAR ON UNDISTURBED EARTH AS SHOWN. USE CLAMPS AND TIE RODS OR OTHER ACCEPTABLE METHOD OF JOINT RESTRAINT WHERE SOIL CONDITIONS PROHIBIT THE USE OF THRUST BLOCKS.
2. HYDRANT IN SIDEWALK AREAS TO BE LOCATED TO PROVIDE MINIMUM CLEAR SIDEWALK PASSAGE WIDTH OF 3 FEET AT HYDRANT.

Hydrant Construction 6/08

N.T.S. Source: VHB REV LD_250

Table Of Dimensions

BENDS	B	C	D	E	F	BENDS	B	C	D	E	F
6" 11 1/4"	8"	15"	12"	24"	12"	6" 45°	8"	30"	12"	24"	14"
6" 22 1/2"	-	19"	-	-	13"	6" 90°	-	30"	-	-	27"
8" 11 1/4"	-	20"	-	-	12"	8" 45°	-	30"	-	-	24"
8" 22 1/2"	-	22"	-	-	17"	8" 90°	-	38"	-	-	36"
12" 11 1/4"	-	30"	-	-	15"	12" 45°	-	40"	-	-	40"
12" 22 1/2"	-	35"	-	-	25"	12" 90°	-	60"	-	-	52"

Bends

Table Of Dimensions

TEES	G	H	I	J	TEES	G	H	I	J
6"x 6"x 6"	12"	24"	24"	18"	12"x 12"x 6"	12"	24"	24"	18"
8"x 8"x 6"	-	-	-	-	12"x 12"x 8"	-	-	-	24"
8"x 8"x 8"	-	-	-	24"	12"x 12"x 12"	-	36"	-	36"

Tees

Notes:

1. PROVIDE BLOCKS FOR TAPPING SLEEVES, DEAD ENDS, GATE VALVES, AND VERTICAL BENDS (SAME SIZE AS REQUIRED FOR TEES). PROVIDE ANCHOR RODS AT VERTICAL BENDS AND GATE VALVES.
2. CONCRETE SHALL NOT BE PLACED AGAINST PIPE BEYOND FITTING.
3. CONCRETE SHALL BE 3000 PSI–TYPE I.

Concrete Thrust Block 10/10

N.T.S. Source: VHB LD_260

Note:

1. WHERE SEWER LINE CROSSES OVER WATER LINE, ADEQUATE STRUCTURAL SUPPORT SHALL BE PROVIDED FOR THE SEWER AND WATER LINE. SEWER LINE JOINTS SHALL BE 10 FEET FROM THE POINT OF CROSSING WHERE SEWER LINES CROSS OVER WATER LINES. IF 18 INCH SEPARATION CANNOT BE MAINTAINED, A VERTICAL SEPARATION OF AT LEAST 12 INCHES MAY BE ALLOWED ON A CASE BY CASE BASIS.
2. WHERE WATER LINE CROSSES OVER SEWER LINE AND 18 INCH SEPARATION CANNOT BE MAINTAINED, BOTH WATER AND SEWER LINES SHALL BE CONSTRUCTED OF PRESSURE PIPE AND A MINIMUM SEPARATION BETWEEN THE BOTTOM OF THE WATER LINE AND THE TOP OF THE SEWER LINE OF 12 INCHES SHALL BE MAINTAINED.
3. IN THE EVENT THAT A STORM SEWER CROSSES OVER A SANITARY SEWER, THE SANITARY SEWER MUST BE CONSTRUCTED OF DIP UNLESS 18 INCH SEPARATION IS MAINTAINED.

Water/Sanitary/Drainage Pipe Crossing Detail 7/12

N.T.S. Source: VHB LD_

TOWN OF BABYLON APPROVAL STAMP SCHEDULE

BUILDING DEPT.	PLANNING BOARD APPROVAL	DEPARTMENTAL APPROVAL
ZONING _____		JOB №: APPLICANT DATE
CONFORMS _____		
VARIANCE _____	RESOLUTION №:	HIGHWAY DEPT. DATE
CONST. COST _____	DATE _____	
DATE _____		TOWN ENGINEERING DIVISION DATE
SIGNATURE	SIGNATURE	
SEE GENERAL NOTE FOR SPECIFIC INFOR-MATION PERTAINING TO A VARIANCE IF REQUIRED & APPROVED.		PLANNING DIVISION DATE

NOTES

1. WHERE UTILITY TRENCHES ARE CONSTRUCTED THROUGH DETENTION BASIN BERMS OR OTHER SUCH SPECIAL SECTIONS, PLACE TRENCH BACKFILL WITH MATERIALS SIMILAR TO THE SPECIAL SECTION REQUIREMENTS.
2. USE METALLIC TRACING/WARNING TAPE OVER ALL PIPES.

Utility Trench 1/16

N.T.S. Source: VHB LD_300

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631.787.3400

Proposed Industrial Uses

1330 Broadhollow Road
Farmingdale, NY 11735

No.	Revision	Date	Appvd.
1	Revised Layout Per Town Comments	8/10/23	KPW
2	Revised Layout Per Town Comments	1/31/24	KPW
3	Reduced Parking Per FAA Comments	4/25/24	KPW
4	Revised Tenant Outdoor Storage Areas	7/1/24	KPW
5	Updated Set Per with FAA Layout / Town and Fire Marshal Comments	8/9/24	KPW
6	Updated Set Per Town Comments Dated September 19, 2024	11/12/24	KPW

Designed by: CS Checked by: KPW

Issued for: **Site Plan Approval** Date: **February 10, 2023**

Not Approved for Construction

Drawing Title: **Site Details 4**

Drawing Number: **C7.04**

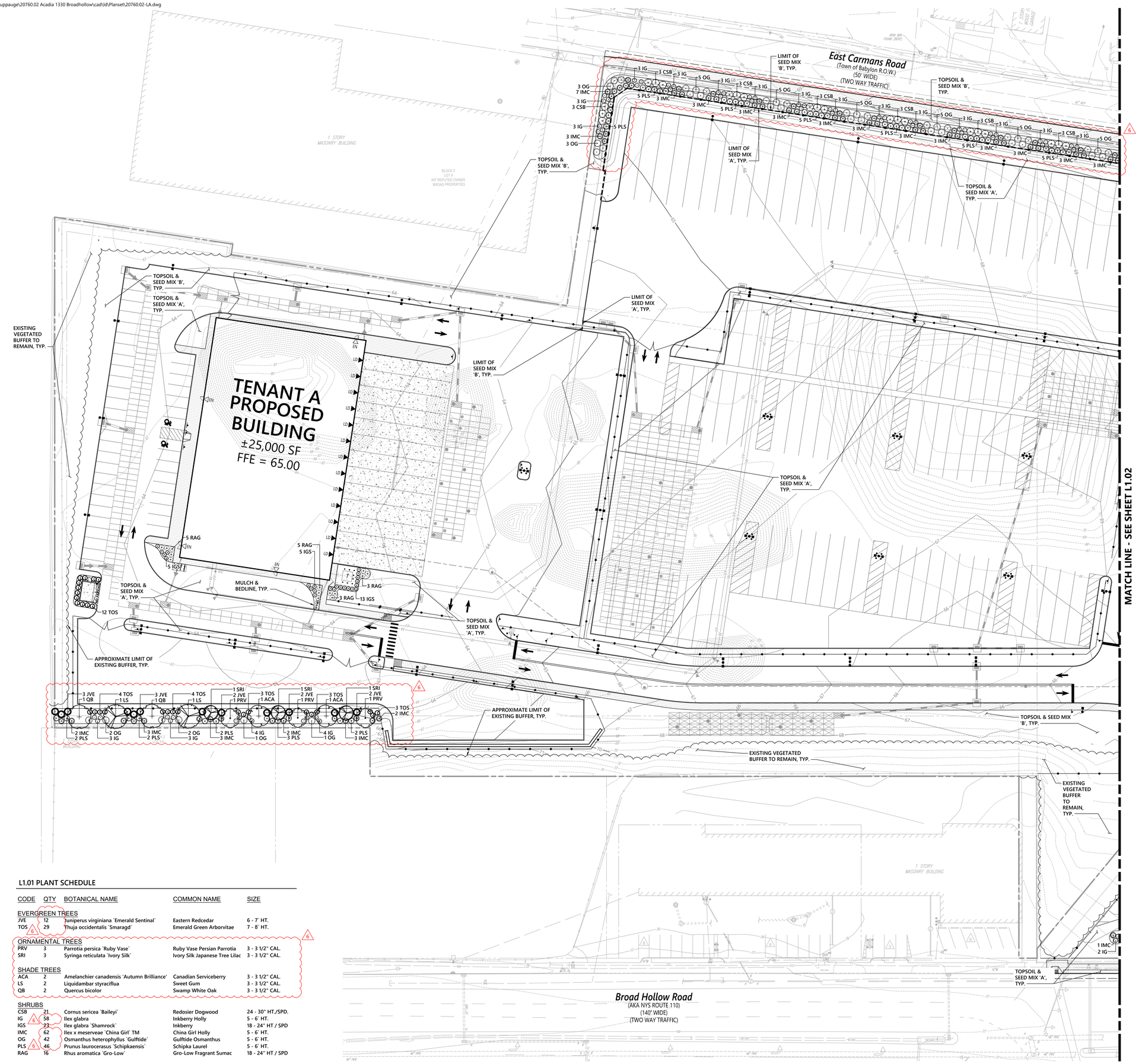
Sheet 18 of 21

Project Number: **20760.02**

IT IS A VIOLATION OF SECTION 7209 OF ARTICLE 145 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON TO ALTER ANY DOCUMENT THAT BEARS THE SEAL OF A PROFESSIONAL ENGINEER, UNLESS THE PERSON IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER

Saved Friday, October 25, 2024 4:20:27 PM CSULLIVAN Plotted Tuesday, November 12, 2024 11:56:02 AM Christopher Sullivan

\\vhb.com\gbl\proj\Hauppauge\20760.02 Acadia 1330 Broadhollow\cad\ld\Planset\20760.02-LA.dwg



L1.01 PLANT SCHEDULE

CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE
EVERGREEN TREES				
JVE	12	Juniperus virginiana `Emerald Sentinal`	Eastern Redcedar	6 - 7` HT.
TOS	29	Thuja occidentalis `Smaragd`	Emerald Green Arborvitae	7 - 8` HT.
ORNAMENTAL TREES				
PRV	3	Parrotia persica `Ruby Vase`	Ruby Vase Persian Parrotia	3 - 3 1/2" CAL.
SRI	3	Syringa reticulata `Ivory Silk`	Ivory Silk Japanese Tree Lilac	3 - 3 1/2" CAL.
SHADE TREES				
ACA	2	Amelanchier canadensis `Autumn Brilliance`	Canadian Serviceberry	3 - 3 1/2" CAL.
LS	2	Liquidambar styraciflua	Sweet Gum	3 - 3 1/2" CAL.
QB	2	Quercus bicolor	Swamp White Oak	3 - 3 1/2" CAL.
SHRUBS				
CSB	21	Cornus sericea `Baileyi`	Redosier Dogwood	24 - 30" HT./SPD.
IG	58	Ilex glabra	Inkberry Holly	5 - 6` HT.
IGS	23	Ilex glabra `Shamrock`	Inkberry	18 - 24" HT / SPD
IMC	62	Ilex x meserveae `China Girl` TM	China Girl Holly	5 - 6` HT.
OG	42	Osmanthus heterophyllus `Gulftide`	Gulftide Osmanthus	5 - 6` HT.
PLS	46	Prunus laurocerasus `Schipkaensis`	Schipka Laurel	5 - 6` HT.
RAG	16	Rhus aromatica `Gro-Low`	Gro-Low Fragrant Sumac	18 - 24" HT / SPD

TOWN OF BABYLON APPROVAL STAMP SCHEDULE

BUILDING DEPT.	PLANNING BOARD APPROVAL	DEPARTMENTAL APPROVAL
ZONING		JOB № APPLICANT DATE
CONFORMS		
VARIANCE	RESOLUTION №	HIGHWAY DEPT. DATE
CONST. COST		
DATE	DATE	TOWN ENGINEERING DIVISION DATE
SIGNATURE	SIGNATURE	PLANNING DIVISION DATE
SEE GENERAL NOTE FOR SPECIFIC INFORMATION PERTAINING TO A VARIANCE IF REQUIRED & APPROVED.		

0 15 30 60 Feet

Proposed Industrial Uses

1330 Broadhollow Road
Farmingdale, NY 11735

No.	Revision	Date	Appvd.
1	Revised Layout Per Town Comments	8/10/23	KPW
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5	Updated Set Per with FAA Layout / Town and Fire Marshal Comments	8/9/24	KPW
6	Updated Set Per Town Comments Dated September 19, 2024	11/12/24	KPW

Designed by: CN — Checked by: CV

Issued for: **Site Plan Approval** — Date: February 10, 2023

Not Approved for Construction

Drawing Title: **Partial Planting Plan (South)**

Drawing Number: **L1.01**

Sheet 19 of 21

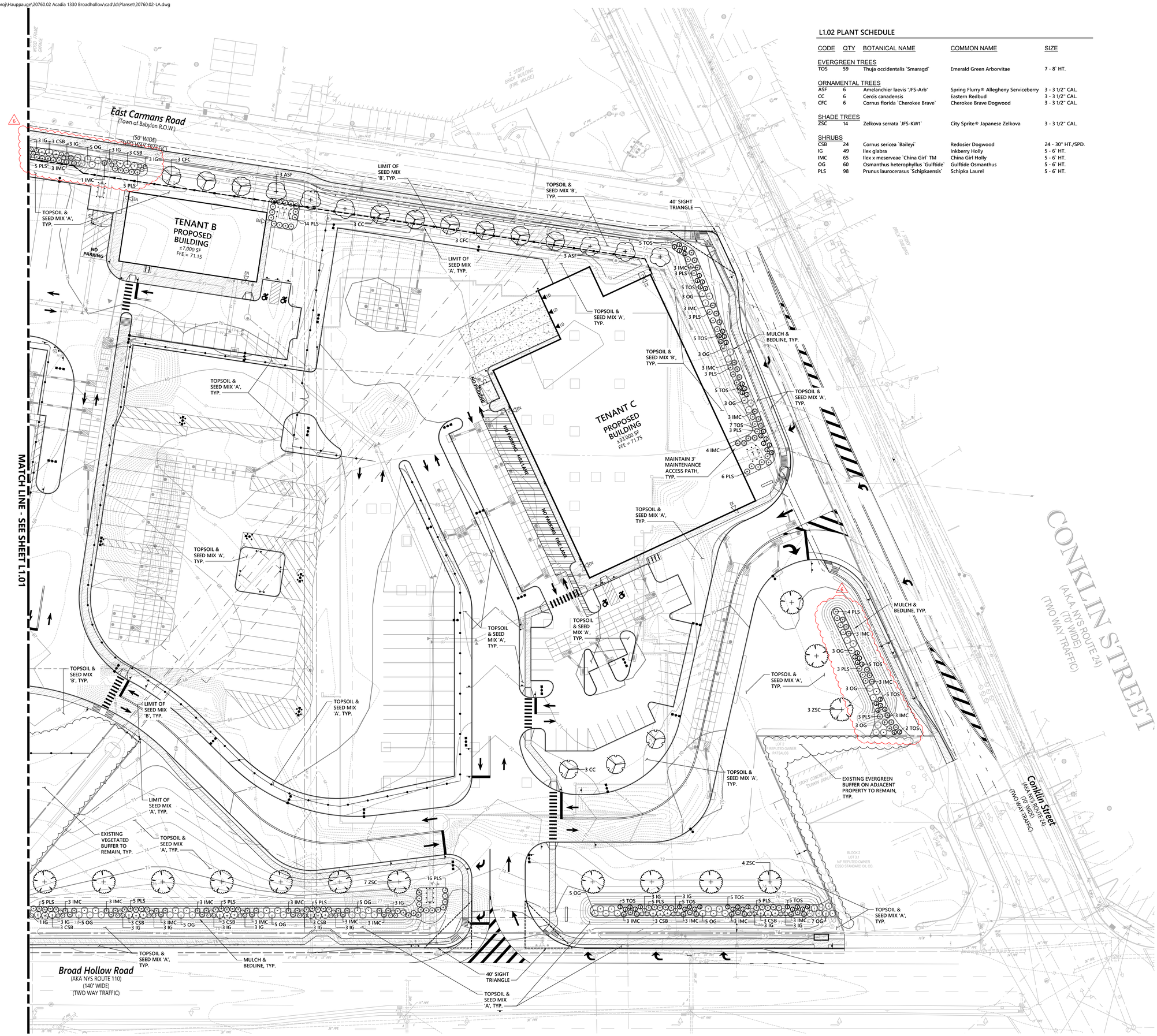
Project Number: 20760.02

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Saved Tuesday, November 12, 2024 10:49:35 AM CNAMAROFF Plotted Tuesday, November 12, 2024 10:54:55 AM Claudia Namaroff

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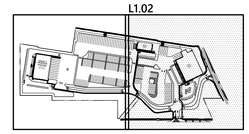
L1.02 PLANT SCHEDULE

CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE
EVERGREEN TREES				
TOS	59	Thuja occidentalis `Smaragd`	Emerald Green Arborvitae	7 - 8` HT.
ORNAMENTAL TREES				
ASF	6	Amelanchier laevis `JFS-Arb`	Spring Flurry® Allegheny Serviceberry	3 - 3 1/2" CAL.
CC	6	Cercis canadensis	Eastern Redbud	3 - 3 1/2" CAL.
CFC	6	Cornus florida `Cherokee Brave`	Cherokee Brave Dogwood	3 - 3 1/2" CAL.
SHADE TREES				
ZSC	14	Zelkova serrata `JFS-KW1`	City Sprite® Japanese Zelkova	3 - 3 1/2" CAL.
SHRUBS				
CSB	24	Cornus sericea `Baileyi`	Redosier Dogwood	24 - 30" HT./SPD.
IG	49	Ilex glabra	Inkberry Holly	5 - 6` HT.
IMC	65	Ilex x meserveae `China Girl` TM	China Girl Holly	5 - 6` HT.
OG	60	Osmanthus heterophyllus `Gulftide`	Gulftide Osmanthus	5 - 6` HT.
PLS	98	Prunus laurocerasus `Schipkaensis`	Schipka Laurel	5 - 6` HT.

TOWN OF BABYLON APPROVAL STAMP SCHEDULE

BUILDING DEPT.	PLANNING BOARD APPROVAL	DEPARTMENTAL APPROVAL
ZONING _____		
CONFORMS _____		JOB № APPLICANT DATE
VARIANCE _____	RESOLUTION № _____	
CONST. COST _____		HIGHWAY DEPT. DATE
DATE _____	DATE _____	
SIGNATURE		TOWN ENGINEERING DIVISION DATE
SEE GENERAL NOTE FOR SPECIFIC INFORMATION PERTAINING TO A VARIANCE IF REQUIRED & APPROVED.	SIGNATURE	PLANNING DIVISION DATE

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Suite 350
Hauppauge, NY 11788
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Key
Not To Scale

0 15 30 60 Feet

Proposed Industrial Uses

1330 Broadhollow Road
Farmingdale, NY 11735

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Designed by CN | Checked by CV

Issued for: Site Plan Approval — Date: February 10, 2023

Not Approved for Construction

Drawing Title: Partial Planting Plan (North)

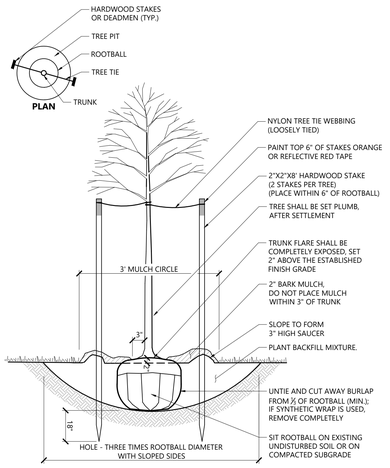
Drawing Number: L1.02

Sheet 20 of 21

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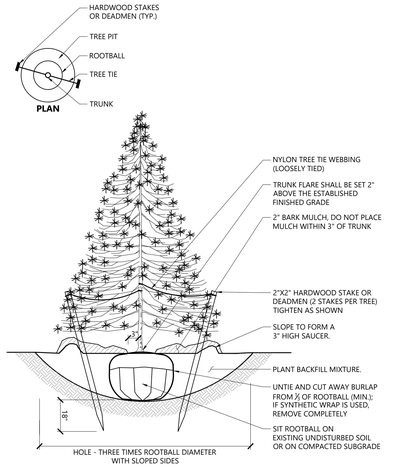
Project Number: 20760.02

Saved Tuesday, November 12, 2024 10:49:35 AM CNAMAROFF Plotted Tuesday, November 12, 2024 10:55:08 AM Claudia Namaroff



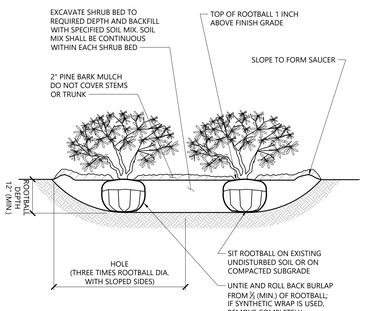
Tree Planting (For Trees Under 4" Caliper) 9/21

N.T.S. Source: VHB REV LD_602



Evergreen Tree Planting 9/21

N.T.S. Source: VHB REV LD_604



NOTES

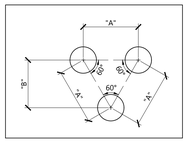
1. LOOSEN ROOTS AT THE OUTER EDGE OF ROOTBALL OF CONTAINER GROWN SHRUBS.

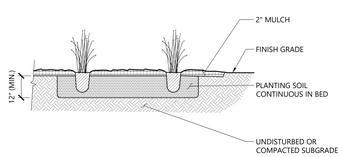
Shrub Bed Planting 1/16

N.T.S. Source: VHB REV LD_601

PLANT SPACING

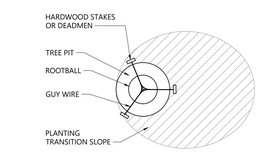
PLANT SPACING("A")	ROW SPACING ("B")
6 IN. O.C.	5 IN. O.C.
8 IN. O.C.	7 IN. O.C.
10 IN. O.C.	8⅔ IN. O.C.
12 IN. O.C.	10⅓ IN. O.C.
15 IN. O.C.	13 IN. O.C.
18 IN. O.C.	16 IN. O.C.
24 IN. O.C.	21 IN. O.C.
30 IN. O.C.	26 IN. O.C.
36 IN. O.C.	30 IN. O.C.
48 IN. O.C.	42 IN. O.C.
54 IN. O.C.	48 IN. O.C.
60 IN. O.C.	54 IN. O.C.

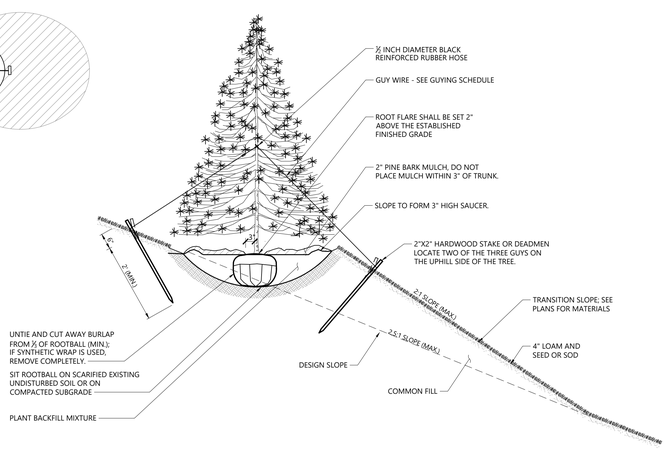




Perennial and Ornamental Grass Planting 1/16

N.T.S. Source: VHB REV LD_618





Tree Planting on Slope 1/16

N.T.S. Source: VHB REV LD_605

Town of Babylon Notes

1. ALL PLANTING INSTALLATION SHALL BE IN ACCORDANCE WITH THE LATEST PLANNING BOARD SITE IMPROVEMENT & SPECIFICATIONS
2. ALL MULCH SHALL BE PRIMARILY COMPOSED OF SHREDDED HARDWOOD BARK. A WRITTEN CERTIFICATION OF MATERIAL COMPOSITION SHALL BE SUBMITTED TO TOB ENGINEERING FOR APPROVAL PRIOR TO CONSTRUCTION.
3. THE WRITTEN CERTIFICATION FURNISHED TO TOB ENGINEERING SHALL SPECIFICALLY MENTION THAT MULCH SUPPLIED CONTAINS NONE OF THE FOLLOWING:
   A.) GROUND RECYCLED PALLETS
   B.) CHEMICAL TREATMENTS OR RESIDUES
4. MULCH SHALL NOT BE LAID GREATER THAN 2" DEEP
5. ALL LANDSCAPED AREAS SHALL HAVE UNDERGROUND SPRINKLER SYSTEMS WITH AUTOMATIC MOISTURE SENSORS AS PER PLANNING BOARD REQUIREMENTS. SPRINKLER HEADS SHALL BE DIRECTED TOWARDS INTERIOR OF SITE.

Planting Notes

1. ALL PROPOSED PLANTING LOCATIONS SHALL BE STAKED AS SHOWN ON THE PLANS FOR FIELD REVIEW AND APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
2. CONTRACTOR SHALL VERIFY LOCATIONS OF ALL BELOW GRADE AND ABOVE GROUND UTILITIES AND NOTIFY OWNERS REPRESENTATIVE OF CONFLICTS.
3. NO PLANT MATERIALS SHALL BE INSTALLED UNTIL ALL GRADING AND CONSTRUCTION HAS BEEN COMPLETED IN THE IMMEDIATE AREA. CONTRACTOR SHALL NOTIFY OWNER'S REPRESENTATIVE OF ANY CONFLICT.
4. A 2-INCH DEEP MULCH PER SPECIFICATION SHALL BE INSTALLED UNDER ALL TREES AND SHRUBS, AND IN ALL PLANTING BEDS, UNLESS OTHERWISE INDICATED ON THE PLANS, OR AS DIRECTED BY OWNER'S REPRESENTATIVE.
5. ALL PLANTING BACKFILL SOILS SHALL RECEIVE CERTIFIED WEED-FREE FULLY COMPOSTED LEAF MOLD SOIL AMENDMENT AT A RATE OF 33% (1 PART COMPOST TO 2 PARTS PLANTING SOIL). SUBMIT COMPOST CERTIFICATION & PRODUCT DATA PRIOR TO ORDERING FOR APPROVAL.
6. ALL TREES SHALL BE BALLED AND BURLAPPED, UNLESS OTHERWISE NOTED IN THE DRAWINGS OR SPECIFICATION, OR APPROVED BY THE OWNER'S REPRESENTATIVE.
7. FINAL QUANTITY FOR EACH PLANT TYPE SHALL BE AS GRAPHICALLY SHOWN ON THE PLAN. THIS NUMBER SHALL TAKE PRECEDENCE IN CASE OF ANY DISCREPANCY BETWEEN QUANTITIES SHOWN ON THE PLANT LIST AND ON THE PLAN. THE CONTRACTOR SHALL REPORT ANY DISCREPANCIES BETWEEN THE NUMBER OF PLANTS SHOWN ON THE PLANT LIST AND PLANT LABELS PRIOR TO BIDDING.
8. ANY PROPOSED PLANT SUBSTITUTIONS MUST BE REVIEWED BY LANDSCAPE ARCHITECT AND APPROVED IN WRITING BY THE OWNER'S REPRESENTATIVE.
9. ALL PLANT MATERIALS INSTALLED SHALL MEET THE LATEST SPECIFICATIONS OF THE "AMERICAN STANDARDS FOR NURSERY STOCK" PUBLISHED BY AMERICAN HORT AND CONTRACT DOCUMENTS.
10. ALL PLANT MATERIALS SHALL BE GUARANTEED FOR TWO YEARS FOLLOWING DATE OF FINAL ACCEPTANCE. DEAD PLANTS, AND PLANTS LESS THAN 75% ALIVE SHALL BE REPLACED. PLANT GUARANTEE DATE STARTS UPON FINAL ACCEPTANCE IN WRITING FROM LANDSCAPE ARCHITECT ACKNOWLEDGING SUCCESSFUL COMPLETION OF PROPOSED LANDSCAPE INSTALLATION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, AND PUNCH LISTS AND DEFICIENCIES HAVE BEEN RESOLVED.
11. AREAS DESIGNATED "TOPSOIL & SEED" SHALL RECEIVE MINIMUM 6" OF TOPSOIL AND SPECIFIED SEED MIX. LAWNS OVER 2:1 SLOPE SHALL BE PROTECTED WITH EROSION CONTROL FABRIC, SUBMIT PRODUCT DATA FOR APPROVAL.
12. ALL DISTURBED AREAS NOT OTHERWISE NOTED ON CONTRACT DOCUMENTS SHALL BE TOPSOIL AND SEEDED OR MULCHED AS DIRECTED BY OWNER'S REPRESENTATIVE.
13. THIS PLAN IS INTENDED FOR PLANTING PURPOSES. REFER TO SITE / CIVIL DRAWINGS FOR ALL OTHER SITE CONSTRUCTION INFORMATION.
14. ALL SPECIFIED PLANT MATERIAL IS SUBJECT TO INSPECTION AND APPROVAL BY THE LANDSCAPE ARCHITECT AT BOTH THE NURSERY AND JOBSITE PRIOR TO INSTALLATION
15. CAREFULLY DISRUPT CIRCLING ROOTS FROM ALL CONTAINER-GROWN PLANTS, EXCEPT PLUGS, VIA TOOL SCARIFICATION OR BY HAND.
16. ALL B&B MATERIALS (I.E. BURLAP, TWINE, ETC) SHALL BE ALL BIO-DEGRADABLE MATERIALS.
17. ALL PLANTINGS SHALL RECEIVE BIOSTIMULANT (MYCORRHIZAL FUNGI) AS PER MANUFACTURER'S RECOMMENDED RATES. SUBMIT PRODUCT DATA FOR APPROVAL PRIOR TO ORDERING.
18. CONTRACTOR SHALL MAINTAIN (I.E. WEEDING, MULCHING, WATERING, CUT BEDS, REPLACEMENTS, ETC) ALL LANDSCAPE PLANTS AND AREAS WITHIN CONTRACT LIMITS DURING SPRING, SUMMER, AND FALL UNTIL EXPIRATION OF GUARANTEE PERIOD.
19. LANDSCAPE CONTRACTOR SHALL SUBMIT LETTER OF AGREEMENT TO THE PROPERTY OWNER ACKNOWLEDGING AND AGREEING TO FULFILLING THE SPECIFIED CONTRACTED GUARANTEE PERIOD AND MAINTENANCE AT NO-ADDITIONAL COST TO THE OWNER. SUBMIT LETTER FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.
20. CONTRACTOR SHALL REMOVE ALL TREE STAKING AND GUYING MATERIALS PRIOR TO THE EXPIRATION OF THE PLANT WARRANTY PERIOD, OR 1 YEAR FROM THE DATE OF INSTALLATION, WHICHEVER COMES FIRST.
21. ACCEPTABLE LANDSCAPE INSTALLATION WINDOWS SHALL BE FROM: APRIL 1ST TO MAY 31ST AND SEPTEMBER 15TH TO NOVEMBER 15TH. INSTALLATION OUTSIDE OF THESE WINDOWS WILL BE AT RISK.
22. ALL NURSERY PLANT IDENTIFICATION TAGS SHALL REMAIN ON PLANT MATERIALS UNTIL PUNCH LIST, CONTRACT SHALL REMOVE TAGS UPON FINAL ACCEPTANCE.

Tree Protection

1. EXISTING TREES TO REMAIN SHALL BE PROTECTED WITH TEMPORARY CONSTRUCTION FENCE. ERECT FENCE AT EDGE OF THE TREE DRIPLINE PRIOR TO START OF CONSTRUCTION.
2. CONTRACTOR SHALL NOT OPERATE VEHICLES WITHIN THE TREE PROTECTION AREA. CONTRACTOR SHALL NOT STORE VEHICLES OR MATERIALS, OR DISPOSE OF ANY WASTE MATERIALS, WITHIN THE TREE PROTECTION AREA.
3. DAMAGE TO EXISTING TREES CAUSED BY THE CONTRACTOR SHALL BE REPAIRED BY A CERTIFIED ARBORIST AT THE CONTRACTOR'S EXPENSE.
4. NO UNAUTHORIZED TREE REMOVALS, UNLESS AS SPECIFIED ON CONTRACT DOCUMENTS, APPROVED BY LOCAL MUNICIPALITIES, AND LANDSCAPE ARCHITECT.

Edge of Woods Clearing

1. EXISTING TREES TO REMAIN SHALL BE PROTECTED WITH TEMPORARY EROSION CONTROL FENCE AND HAY BALE BARRIER. ERECT BARRIER AT EDGE OF THE EARTHWORK CUT LINE PRIOR TO TREE CLEARING. LAY OUT THIS LINE BY FIELD SURVEY.

Turf Seeding Notes:

1. **SEED MIX 'A':** UNLESS OTHERWISE NOTED, ALL DISTURBED LANDSCAPE AREAS NOT BEING PLANTED, SHALL BE SEEDED WITH THE FOLLOWING SEED MIX:

   TURF-TYPE TALL FESCUE BLEND:

VARIETY	PURITY %	GERM %	ORIGIN
4TH MILLENNIUM SRP TALL FESCUE	33.13	94	OR
RAPTOR III TALL FESCUE	33.28	95	OR
AVENGER III TALL FESCUE	32.97	97	OR

   WEEDS %: 0.00 OTHER CROP %: 0.00 INERT %: 0.62

   OR, APPROVED EQUAL

   SEEDING RATE SHALL BE 8 LBS. PER 1,000.00 SQ. FT.

2. **SEED MIX 'A' - ALTERNATE BID** - UNLESS OTHERWISE NOTED, ALL DISTURBED LANDSCAPE AREAS NOT BEING PLANTED OR MULCHED, SHALL BE **SODDED** WITH A TURF-TYPE TALL FESCUE BLEND SOD PRODUCT.
3. **SEED MIX 'B':** AS INDICATED ON PLANTING PLAN(S), AREA(S) SHALL BE SEEDED WITH THE FOLLOWING SEED MIX:

   'NO-MOW' HARD FESCUE BLEND:

   33.24% SPARTAN II HARD FESCUE
   33.00% BEACON HARD FESCUE
   32.78% NANOOK HARD FESCUE
   00.94% INERT MATTER
   00.00% WEED SEED

   OR, APPROVED EQUAL

   SEEDING RATE SHALL BE 5 lbs. PER 1,000.00 SQ. FT.

4. ALL SEEDING SHALL BE HYDRO-SEEDED WITH THE FOLLOWING ENGINEERED WOOD FIBER HYDROMULCH AS PER MANUFACTURER'S SPECIFICATIONS. SUBMIT SAMPLE & PRODUCT DATA FOR APPROVAL PRIOR TO ORDERING.

   FLEXTERRA HP-FGM - AS MANUFACTURED BY:
   PROFILE PRODUCTS
   750 W. LAKE COOK RD
   SUITE 440
   BUFFALO GROVE, IL 60089
   1-800-207-6457

   OR, APPROVED EQUAL.

5. CONTRACTOR SHALL SUBMIT SEED: SOURCE, SAMPLE, AND CERTIFIED ANALYSIS; AND HYDRO-MULCH SAMPLE & PRODUCT DATA FOR LANDSCAPE ARCHITECT APPROVAL PRIOR TO ORDERING.
6. LAWNS SHALL EXHIBIT A UNIFORM, THICK, WELL-DEVELOPED STAND OF GRASS AND SHALL NOT HAVE BARE SPOTS IN EXCESS OF FOUR INCHES IN DIAMETER. BARE SPOTS SHALL COMPRISE NO MORE THAN TWO-PERCENT (2%) OF THE TOTAL AREA OF THE LAWN.

Irrigation Notes

1. CONTRACTOR SHALL PROVIDE COMPLETE IRRIGATION SYSTEM DESIGN AND INSTALLATION FOR PLANTINGS AND LAWN AREAS. DESIGN SHALL BE CERTIFIED BY A PROFESSIONAL LANDSCAPE ARCHITECT, ENGINEER, OR CERTIFIED IRRIGATION DESIGNER. DESIGN PLANS SHALL BE SUBMITTED TO OWNER'S REPRESENTATIVE FOR APPROVAL.
2. ALL LAWN AREAS SHALL BE ZONED SEPARATELY FROM PLANTING (MULCH) BEDS AREAS.
3. CONTRACTOR SHALL PROVIDE ALL MATERIALS, LABOR, AND EQUIPMENT FOR THE COMPLETE INSTALLATION OF THE IRRIGATION SYSTEM.
4. ALL IRRIGATION PIPING SHALL BE PVC, SUBMIT PIPE SIZES AND TYPES FOR APPROVAL.
5. CONTRACTOR SHALL PROVIDE DRAWINGS, MATERIAL SPECIFICATIONS, SCHEMATICS, AND OTHER LITERATURE AS MAY BE REQUIRED, FOR ALL CONDUIT, CONTROLS,TIMERS, VALVES, SPRINKLER HEADS, CONNECTORS, WIRING, RAIN GAUGE, ETC. TO THE OWNER'S CONSTRUCTION MANAGER FOR APPROVAL PRIOR TO INSTALLATION.
6. IRRIGATION CONTROLLER SHALL BE AN EPA WATERSENSE-LABELED WEATHER-BASED IRRIGATION CONTROLLER.
7. CONTRACTOR SHALL COORDINATE HIS/HER WORK WITH THE GENERAL CONTRACTOR AND SUB CONTRACTORS.
8. (INSIDE BUILDING) BACKFLOW PREVENTER AND METER IS REQUIRED. IT SHALL BE IN CONFORMANCE WITH STATE AND MUNICIPAL REQUIREMENTS.

   (OUTSIDE BUILDING) BACKFLOW PREVENTER AND METER IS REQUIRED. IT SHALL BE IN CONFORMANCE WITH STATE AND MUNICIPAL REQUIREMENTS. LOCATE THIS EQUIPMENT IN A LOCKABLE 'HOT BOX'.
9. (INSIDE BUILDING) IRRIGATION CONTROL PANEL, BACKFLOW PREVENTER AND METER SHALL BE LOCATED IN THE BUILDING MECHANICAL ROOM. COORDINATE WITH THE GENERAL CONTRACTOR.

   (OUTSIDE BUILDING) IRRIGATION CONTROL PANEL SHALL BE LOCATED IN A LOCKABLE CABINET DESIGNED TO HOUSE THE CONTROL PANEL.
10. SITE CONTRACTOR SHALL PROVIDE 4" SCHEDULE 40 PVC SLEEVES & PVC CAPS, BOTH ENDS, UNDER PAVEMENT TO PROVIDE ACCESS FOR IRRIGATION LINES TO ALL IRRIGATED AREAS.
11. IRRIGATION CONTRACTOR SHALL DEMONSTRATE FULL FUNCTIONALITY AND ADEQUATE WATERING OF PLANTINGS TO OWNER AND LANDSCAPE CONTRACTOR. SUBMIT WRITTEN SIGN-OFF FROM LANDSCAPE CONTRACTOR TO LANDSCAPE ARCHITECT FOR APPROVAL.

TOWN OF BABYLON APPROVAL STAMP SCHEDULE

BUILDING DEPT.	PLANNING BOARD APPROVAL	DEPARTMENTAL APPROVAL
ZONING _____		_____
CONFORMS _____		JOB NO APPLICANT DATE
VARIANCE _____	RESOLUTION NO. _____	_____
CONST. COST _____		HIGHWAY DEPT. DATE
DATE _____	DATE _____	_____
_____		TOWN ENGINEERING DIVISION DATE
SIGNATURE	SIGNATURE	_____
SEE GENERAL NOTE FOR SPECIFIC INFORMATION PERTAINING TO A VARIANCE IF REQUIRED & APPROVED.		PLANNING DIVISION DATE

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631.787.3400

Proposed Industrial Uses

1330 Broadhollow Road
Farmingdale, NY 11735

No.	Revision	Date	Appvd.
1	Revised Layout Per Town Comments	8/10/23	KPW
2	Revised Layout Per Town Comments	1/31/24	KPW
3	Reduced Parking Per FAA Comments	4/25/24	KPW
4	Revised Tenant Outdoor Storage Areas	7/1/24	KPW
5	Updated Set Per with FAA Layout / Town and Fire Marshal Comments	8/9/24	KPW
6	Updated Set Per Town Comments Dated September 19, 2024	11/12/24	KPW

Designed by CN Checked by CV

Issued for Date

Site Plan Approval **February 10, 2023**

Not Approved for Construction

Drawing Title
Planting Notes and Details

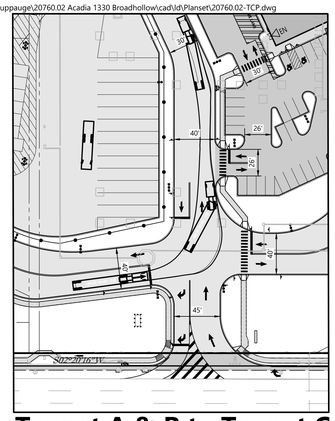
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Sheet 21 of 21

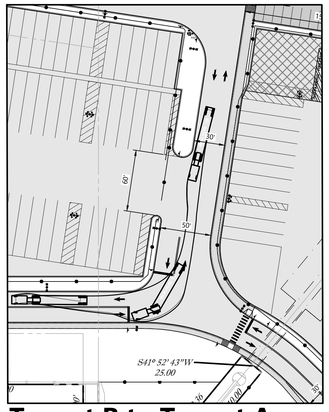
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Project Number
20760.02

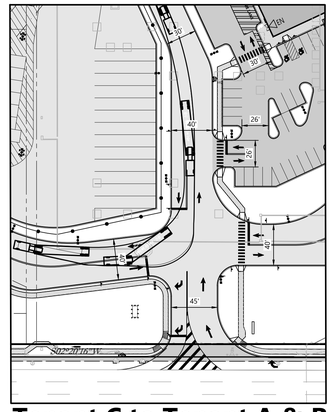
\\vhb.com\gbl\proj\Hauppauge\20760.02 Acadia 1330 Broadhollow\cad\ldt\Planset\20760.02-TCP.dwg



Tenant A & B to Tenant C



Tenant B to Tenant A

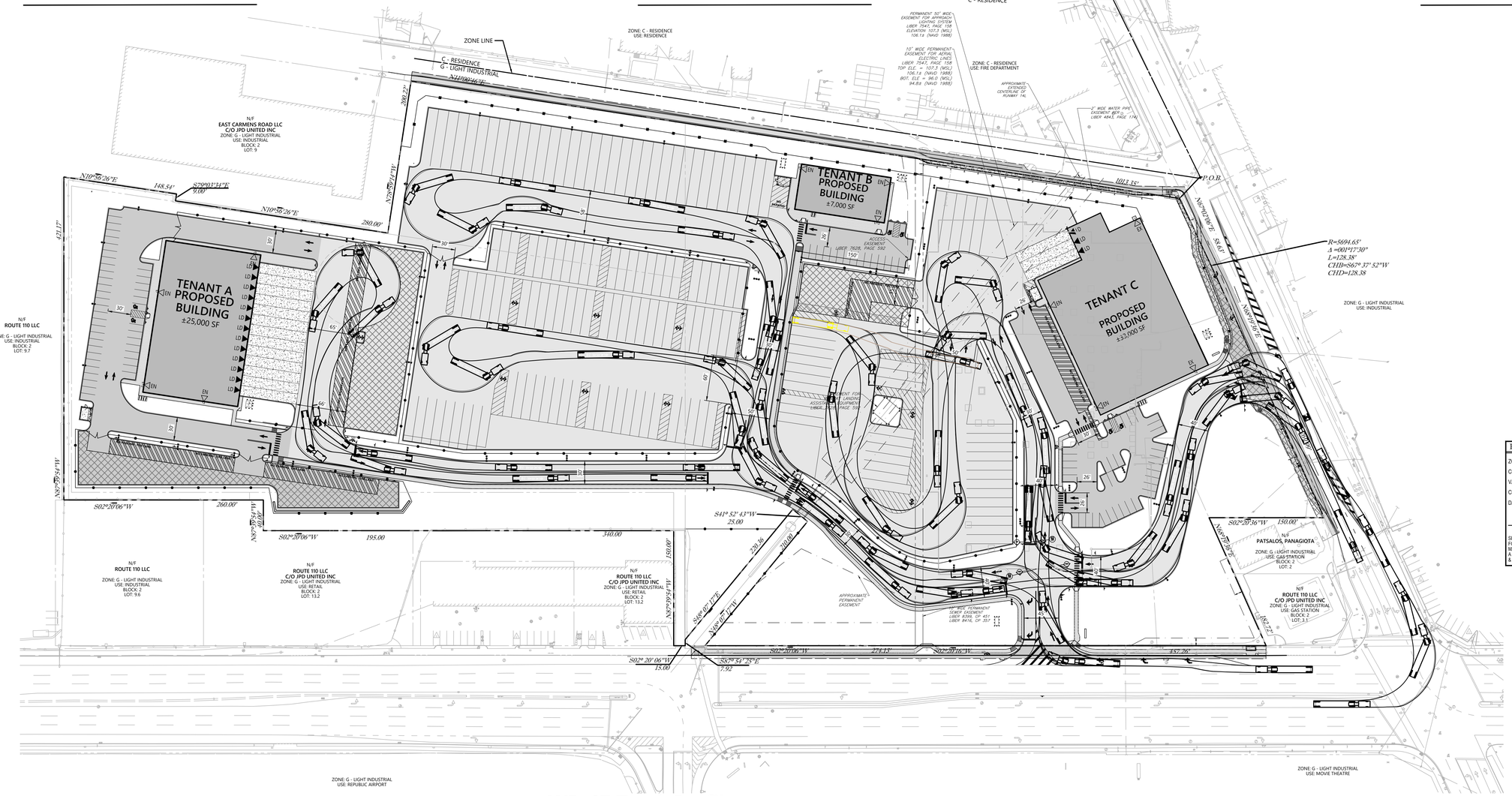


Tenant C to Tenant A & B

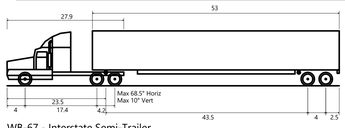
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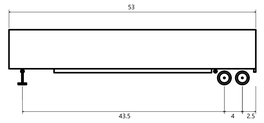


WB-67 Truck Profile



WB-67 - Interstate Semi-Trailer	
Overall Length	73.501ft
Overall Width	8.500ft
Overall Body Height	13.500ft
Min Body Ground Clearance	1.334ft
Track Width	8.500ft
Lock-to-lock time	6.00s
Max Steering Angle (Virtual)	28.40°

13.5' x 75' TRAILER PARKING



12' x 60' TRAILER STORAGE.

TOWN OF BABYLON APPROVAL STAMP SCHEDULE

BUILDING DEPT.	PLANNING BOARD APPROVAL	DEPARTMENTAL APPROVAL
ZONING _____		
CONFORMS _____		JOB № APPLICANT DATE
VARIANCE _____	RESOLUTION № _____	
CONST. COST _____		HIGHWAY DEPT. DATE
DATE _____	DATE _____	
SIGNATURE		TOWN ENGINEERING DIVISION DATE
SEE GENERAL NOTE FOR SPECIFIC INFORMATION PERTAINING TO A VARIANCE IF REQUIRED & APPROVED.	SIGNATURE	PLANNING DIVISION DATE

0 30 60 120Feet

Proposed Industrial Uses

1330 Broadhollow Road
Farmingdale, NY 11735

No.	Revision	Date	Appvd.
1	Revised Circulation for Updated Layout	8/9/24	

Designed by CS | Checked by KPW

Issued for: Site Plan Approval | Date: January 26, 2024

Not Approved for Construction

Drawing Title
Circulation Plan
WB-67 Truck

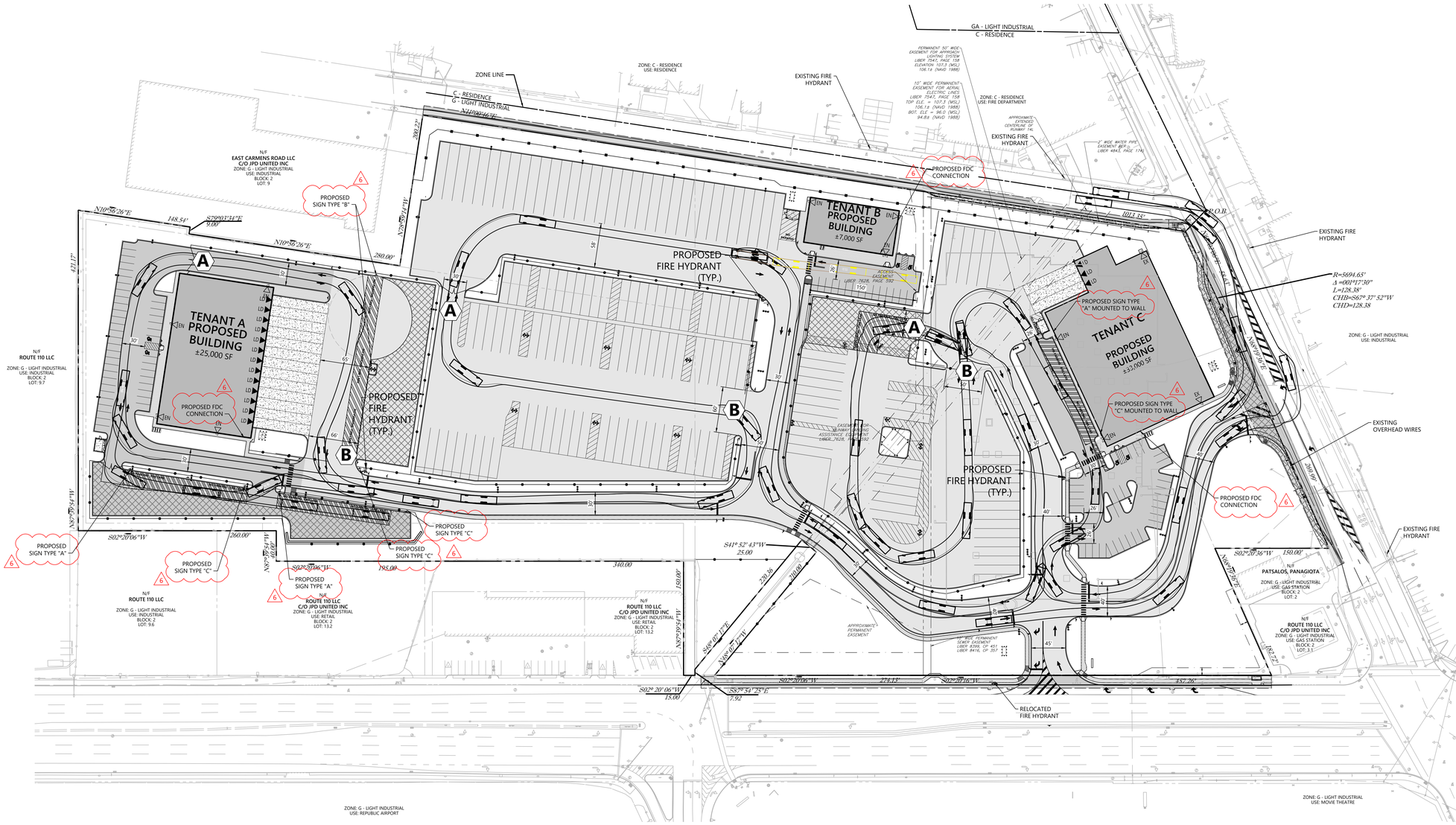
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Sheet 1 of 4

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Project Number 20760.02

Saved Tuesday, November 12, 2024 12:00:51 PM CSULLIVAN Plotted Tuesday, November 12, 2024 12:03:02 PM Christopher Sullivan



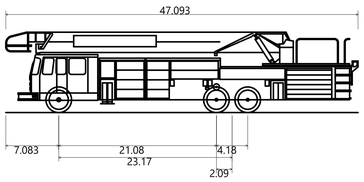
NY FIRE CODE COMPLIANCE 503, APPENDIX D

D102.1 ACCESS AND LOADING FACILITIES, BUILDINGS OR PORTIONS OF BUILDINGS HEREAFTER CONSTRUCTED SHALL BE ACCESSIBLE TO FIRE DEPARTMENT APPARATUS BY WAY OF AN APPROVED FIRE APPARATUS ACCESS ROAD WITH AN ASPHALT, CONCRETE OR OTHER APPROVED DRIVING SURFACE CAPABLE OF SUPPORTING THE IMPOSED LOAD OF FIRE APPARATUS WEIGHING UP TO 75,000 POUNDS (34 050 KG).	LIGHT AND HEAVY DUTY ASPHALT PROPOSED ON SITE WILL BE CAPABLE OF SUPPORTING THE WEIGHT SPECIFIED.
D103.1 ACCESS ROAD WIDTH WITH A HYDRANT WHERE A FIRE HYDRANT IS LOCATED ON A FIRE APPARATUS ACCESS ROAD, THE MINIMUM ROAD WIDTH SHALL BE 26 FEET.	THE MINIMUM ROAD WIDTH PROPOSED AT HYDRANT LOCATION EXCEEDS MINIMUM REQUIREMENTS.
D103.2 GRADE FIRE APPARATUS ACCESS ROADS SHALL NOT EXCEED 10 PERCENT IN GRADE.	THE PROPOSED ACCESS ROADS DO NOT EXCEED 10 PERCENT SLOPE ANYWHERE ON SITE.
D103.3 TURNING RADIUS THE MINIMUM TURNING RADIUS SHALL BE DETERMINED BY THE FIRE CODE OFFICIAL	TURNING MOVEMENTS ARE DEMONSTRATED ON THE PLAN FOR THE APPROPRIATE FIRE APPARATUS
D103.4 DEAD ENDS DEAD-END FIRE APPARATUS ACCESS ROADS IN EXCESS OF 150 FEET SHALL BE PROVIDED WITH WIDTH AND TURNAROUND PROVISIONS IN ACCORDANCE WITH TABLE D103.4.	THE PROPOSED DEAD END ACCESS ROAD AT TENANT B IS 150 FEET WHICH REQUIRES NO TURNAROUNDS.
D103.5 FIRE APPARATUS ACCESS ROAD GATES GATES SECURING THE FIRE APPARATUS ACCESS ROADS SHALL COMPLY WITH ALL OF THE FOLLOWING CRITERIA: WHERE A SINGLE GATE IS PROVIDED, THE GATE WIDTH SHALL BE NOT LESS THAN 20 FEET (6096 MM). WHERE A FIRE APPARATUS ROAD CONSISTS OF A DIVIDED ROADWAY, THE GATE WIDTH SHALL BE NOT LESS THAN 12 FEET (3658 MM). GATES SHALL BE OF THE SWINGING OR SLIDING TYPE. CONSTRUCTION OF GATES SHALL BE OF MATERIALS THAT ALLOW MANUAL OPERATION BY ONE PERSON. GATE COMPONENTS SHALL BE MAINTAINED IN AN OPERATIVE CONDITION AT ALL TIMES AND REPLACED OR REPAIRED WHEN DEFECTIVE. ELECTRIC GATES SHALL BE EQUIPPED WITH A MEANS OF OPENING THE GATE BY FIRE DEPARTMENT PERSONNEL FOR EMERGENCY ACCESS. EMERGENCY OPENING DEVICES SHALL BE APPROVED BY THE FIRE CODE OFFICIAL. METHODS OF LOCKING SHALL BE SUBMITTED FOR APPROVAL BY THE FIRE CODE OFFICIAL. ELECTRIC GATE OPERATORS, WHERE PROVIDED, SHALL BE LISTED IN ACCORDANCE WITH UL 325. GATES INTENDED FOR AUTOMATIC OPERATION SHALL BE DESIGNED, CONSTRUCTED AND INSTALLED TO COMPLY WITH THE REQUIREMENTS OF ASTM F2200.	PROPOSED ON-SITE SWING GATES TO HAVE A MINIMUM 26 FEET OPENING AND ALL ROLLING GATES TO HAVE A MINIMUM OF 50 FEET OPENING. ALL GATES WILL BE PROVIDED WITH A KNOX BOX FOR EMERGENCY ACCESS.
SECTION D103.6 SIGNS	AS INDICATED ON PLAN
SECTION D104 COMMERCIAL AND INDUSTRIAL DEVELOPMENTS D104.1 BUILDINGS EXCEEDING THREE STORIES OR 30 FEET IN HEIGHT BUILDINGS OR FACILITIES EXCEEDING 30 FEET (9144 MM) OR THREE STORIES IN HEIGHT SHALL HAVE NOT FEWER THAN TWO MEANS OF FIRE APPARATUS ACCESS FOR EACH STRUCTURE	ALL PROPOSED BUILDING ELEVATIONS ARE LESS THAN 30 FOOT BUILDING HEIGHT.
D104.2 BUILDINGS EXCEEDING 62,000 SQUARE FEET IN AREA BUILDINGS OR FACILITIES HAVING A GROSS BUILDING AREA OF MORE THAN 62,000 SQUARE FEET (5760 M2) SHALL BE PROVIDED WITH TWO SEPARATE AND APPROVED FIRE APPARATUS ACCESS ROADS. EXCEPTION: PROJECTS HAVING A GROSS BUILDING AREA OF UP TO 124,000 SQUARE FEET (11 520 M2) THAT HAVE A SINGLE APPROVED FIRE APPARATUS ACCESS ROAD WHERE ALL BUILDINGS ARE EQUIPPED THROUGHOUT WITH APPROVED AUTOMATIC SPRINKLER SYSTEMS.	MAXIMUM SQUARE FOOTAGE OF PROPOSED TENANT C BUILDING IS 33,000 SF.
D105 AERIAL FIRE APPARATUS ACCESS ROADS	NO BUILDINGS PROPOSED OVER 30' IN HEIGHT

TOWN OF BABYLON APPROVAL STAMP SCHEDULE

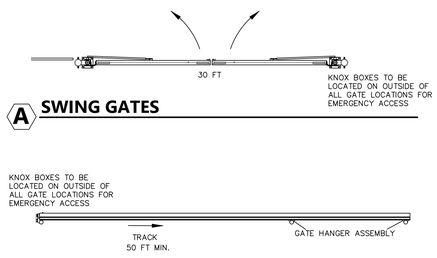
BUILDING DEPT.	PLANNING BOARD APPROVAL	DEPARTMENTAL APPROVAL
ZONING _____		
CONFORMS _____		JOB № APPLICANT DATE
VARIANCE _____	RESOLUTION № _____	
CONST. COST _____		HIGHWAY DEPT. DATE
DATE _____	DATE _____	
SIGNATURE		TOWN ENGINEERING DIVISION DATE
SEE GENERAL NOTE FOR SPECIFIC INFORMATION PERTAINING TO A VARIANCE IF REQUIRED & APPROVED.	SIGNATURE	PLANNING DIVISION DATE

Fire Truck Apparatus Profile



Fire Truck	
Overall Length	47.093ft
Overall Width	9.780ft
Overall Body Height	10.743ft
Min Body Ground Clearance	1.174ft
Track Width	9.780ft
Lock-to-lock time	6.00s
Max Steering Angle (Virtual)	45.00°

NOTE:
DIMENSIONS MEET OR EXCEED EAST FARMINGDALE LADDER TRUCK LARGEST TRUCK DIMENSIONS



NOTE:
LOCATION OF PROPOSED FIRE DEPARTMENT CONNECTIONS AND HYDRANTS SHALL BE COORDINATED WITH THE TOWN OF BABYLON FIRE MARSHAL PRIOR TO START OF WORK. 6

NOTE:
ALL GATES ON THE PROPERTY SHALL BE ELECTRIFIED WITH THE FOLLOWING ACCOMMODATIONS. 6

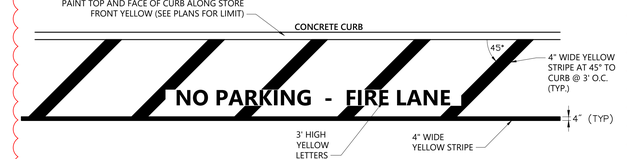
a. GATES SHALL HAVE FIRE DEPARTMENT SIREN ACTIVATION FOR QUICK OPENING
b. GATES SHALL HAVE A KNOX BOX ELECTRIC KEY SWITCH ACCESSIBLE FROM THE TRAVEL SIDE OF THE GATE WIRED IN TO OPEN THE GATE
c. GATES SHALL HAVE A KNOX PAD LOCK FOR MANUAL GATE OPERATION IN CASE OF POWER FAILURE ON SITE COMPLIANCE WITH ALL ASPECTS OF NYS FIRE CODE SECTION 503, APPENDIX D

6

SIGN TYPE "A" — NO PARKING FIRE LANE →
SIGN TYPE "C" — NO PARKING FIRE LANE ←
SIGN TYPE "D" — NO PARKING FIRE LANE

FIGURE D103.6

Fire Lane Signage



NOTE

1. THE WORDS "NO PARKING FIRE LANE" SHALL BE PAINTED ON THE PAVEMENT IN 3' HIGH LETTERS IN 3 LOCATIONS ALONG THE FRONT DRIVE AISLE ADJACENT TO THE FRONT SIDEWALK (SPACED 150' O.C.).

Fire Lane Striping

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100 Motor Parkway
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Hauppauge, NY 11788
631.787.3400

Proposed Industrial Uses

1330 Broadhollow Road
Farmingdale, NY 11735

No.	Revision	Date	Appvd.
1	Revised Circulation for Updated Layout	8/9/24	
2	Revised Circulation for Updated Layout	11/12/24	

Designed by CS — Checked by KPW

Issued for: Site Plan Approval — Date: January 26, 2024

Not Approved for Construction

Drawing Title: Circulation Plan / Fire Truck Apparatus

Drawing Number: CP.02

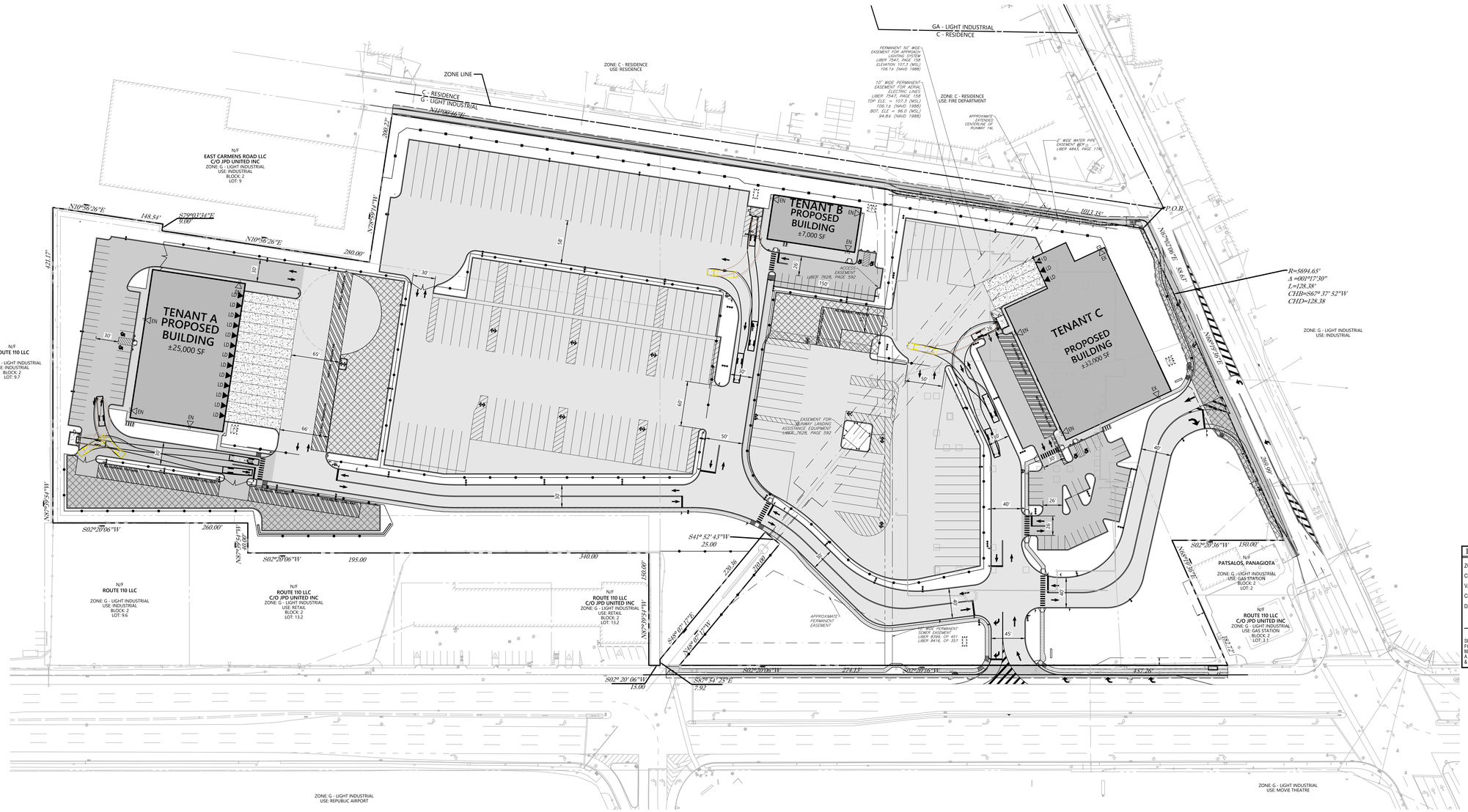
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Project Number: 20760.02

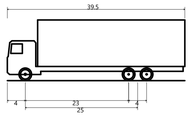
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Saved Tuesday, November 12, 2024 12:00:51 PM CSULLIVAN Plotted Tuesday, November 12, 2024 12:03:06 PM Christopher Sullivan

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Refuse Truck Profile



SU-40 - Single Unit Truck	
Overall Length	39.500ft
Overall Width	8.000ft
Overall Body Height	13.500ft
Min Body Ground Clearance	1.367ft
Track Width	8.000ft
Lock-to-lock time	5.00s
Max Steering Angle (Virtual)	31.80°

TOWN OF BABYLON APPROVAL STAMP SCHEDULE

BUILDING DEPT.	PLANNING BOARD APPROVAL	DEPARTMENTAL APPROVAL
ZONING _____		_____
CONFORMS _____		JOB № APPLICANT DATE
VARIANCE _____	RESOLUTION № _____	_____
CONST. COST _____		HIGHWAY DEPT. DATE
DATE _____	DATE _____	_____
_____		TOWN ENGINEERING DIVISION DATE
SIGNATURE	SIGNATURE	_____
SEE GENERAL NOTE FOR SPECIFIC INFORMATION PERTAINING TO A VARIANCE IF REQUIRED & APPROVED.		PLANNING DIVISION DATE

0 30 60 120Feet

Proposed Industrial Uses

1330 Broadhollow Road
Farmingdale, NY 11735

No.	Revision	Date	Appvd.
1	Revised Circulation for Updated Layout	8/9/24	

Designed by: CS
Checked by: KPW

Issued for: Site Plan Approval
Date: January 26, 2024

Not Approved for Construction

Drawing Title
Circulation Plan
Refuse Truck

Drawing Number
CP.03

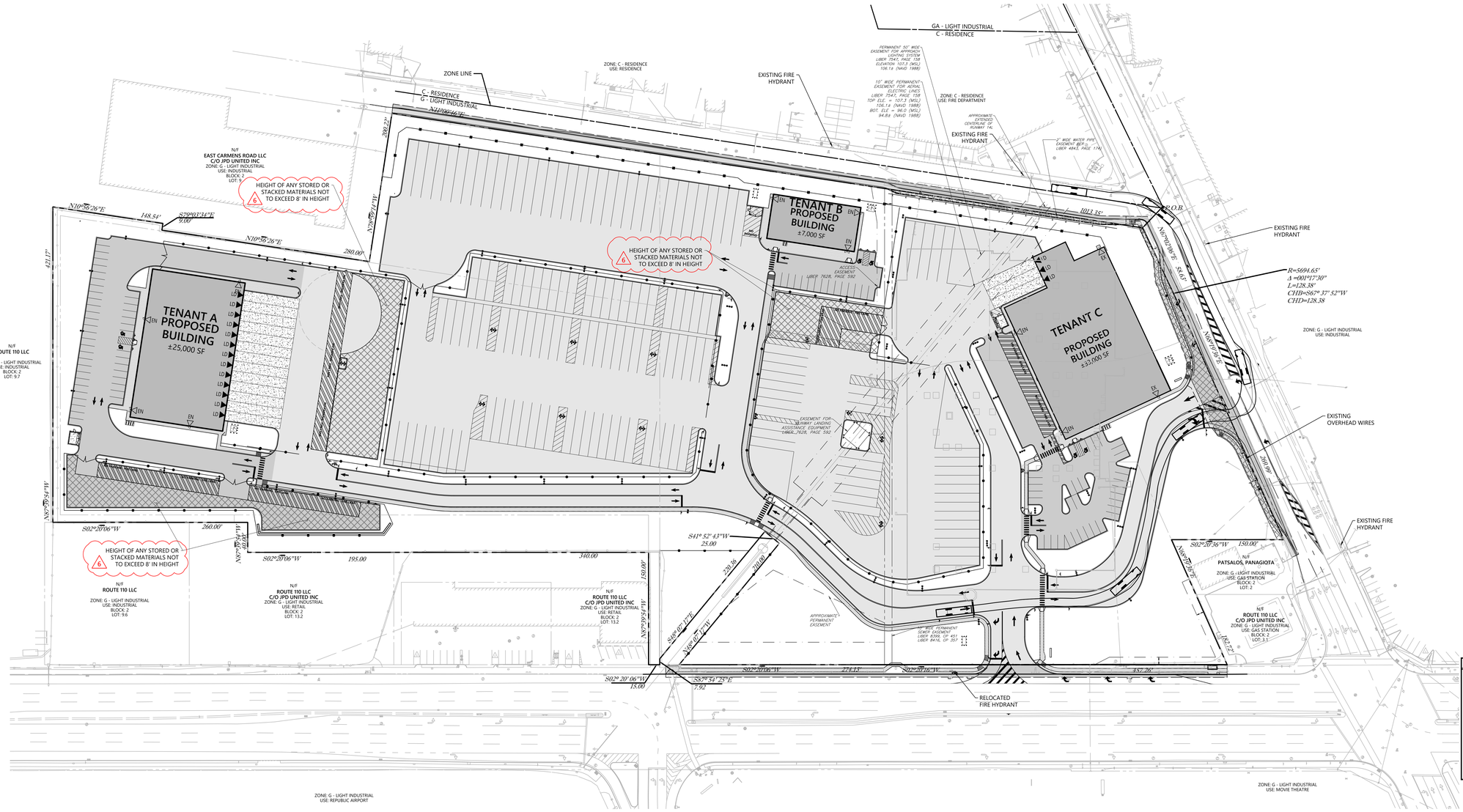
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Saved Tuesday, November 12, 2024 12:00:51 PM CSULLIVAN Plotted Tuesday, November 12, 2024 12:03:11 PM Christopher Sullivan



Hatch Legend

- PROPOSED DEDICATION AREAS
- PROPOSED FIRE LANE STRIPING

TOWN OF BABYLON APPROVAL STAMP SCHEDULE

BUILDING DEPT.	PLANNING BOARD APPROVAL	DEPARTMENTAL APPROVAL
ZONING _____		JOB № APPLICANT DATE
CONFORMS _____		
VARIANCE _____	RESOLUTION № _____	HIGHWAY DEPT. DATE
CONST. COST _____		
DATE _____	DATE _____	TOWN ENGINEERING DIVISION DATE
SIGNATURE		
SEE GENERAL NOTE FOR SPECIFIC INFORMATION PERTAINING TO A VARIANCE IF REQUIRED & APPROVED.	SIGNATURE	PLANNING DIVISION DATE

0 30 60 120Feet

Proposed Industrial Uses

1330 Broadhollow Road
Farmingdale, NY 11735

No.	Revision	Date	Apprvd.

Designed by CS | Checked by KPW

Issued for: **Site Plan Approval** — Date: **November 12, 2024**

Not Approved for Construction

Drawing Title
Storage Area Plan

Drawing Number
CP.04

Sheet 4 of 4

Project Number
20760.02

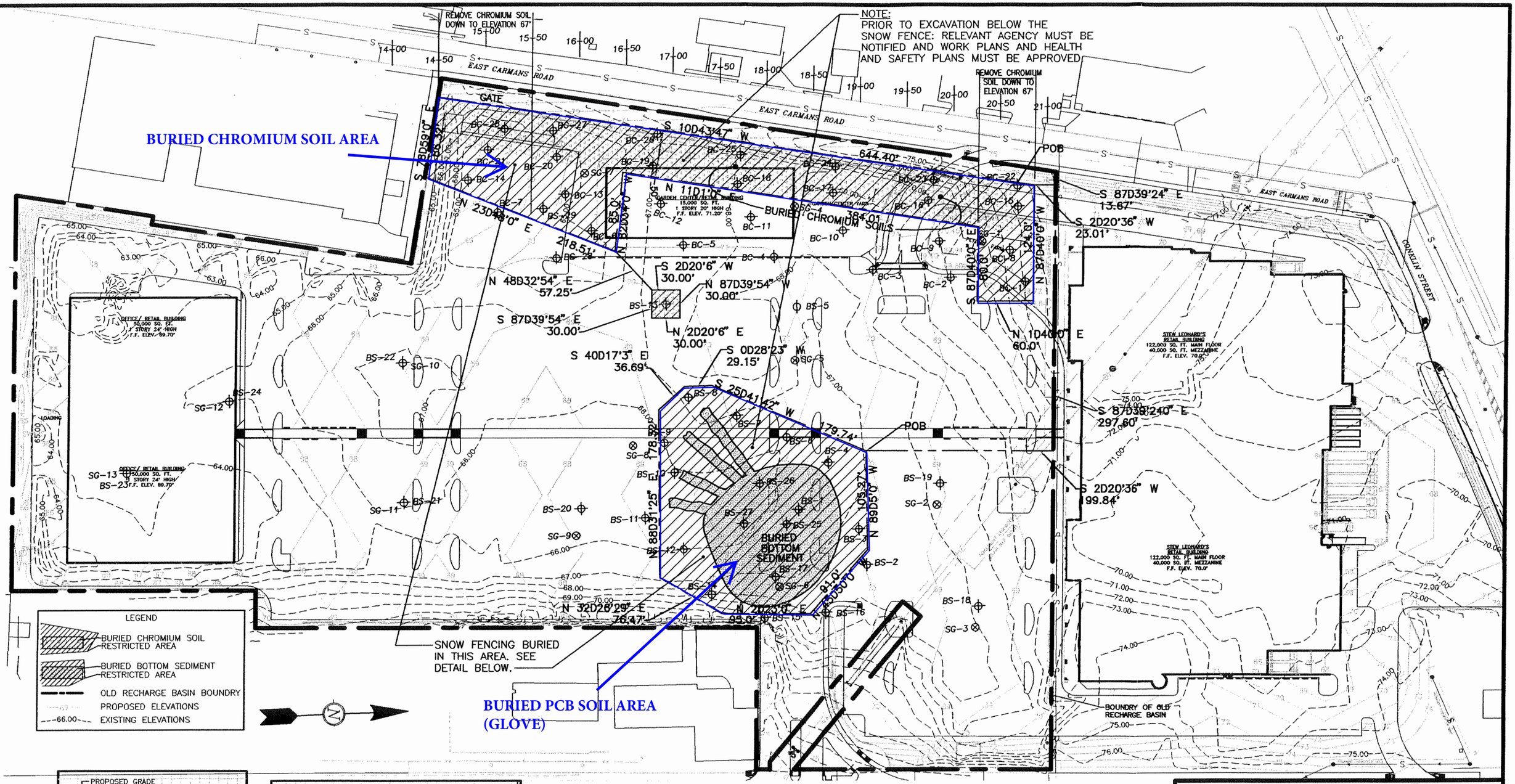
IT IS A VIOLATION OF SECTION 7209 OF ARTICLE 145 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON TO ALTER ANY DOCUMENT THAT BEARS THE SEAL OF A PROFESSIONAL ENGINEER, UNLESS THE PERSON IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER

vhb.com
vhb
Engineering, Surveying, Landscape Architecture and Geology, PC
100 Motor Parkway
Suite 350
Hauppauge, NY 11788
631.787.3400

Saved Tuesday, November 12, 2024 12:00:51 PM CSULLIVAN Plotted Tuesday, November 12, 2024 12:03:16 PM Christopher Sullivan

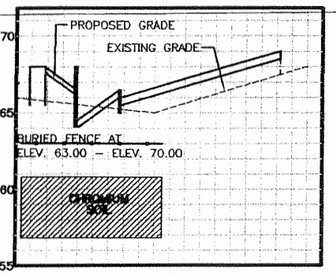
APPENDIX C

Impacted Soil Areas

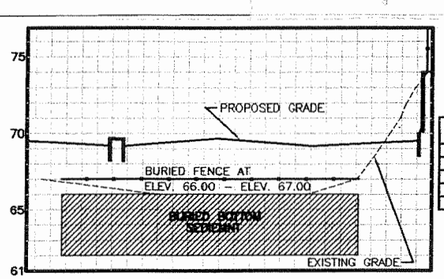


STATION	ELEVATION OF FENCE
14+50	*
15+00	*
15+50	65
16+00	65
16+50	66
17+00	66
17+50	66
18+00	66
18+50	69
19+00	69
19+50	70
20+00	67
20+50	67**
20+87	67**

* – REMOVE CHROMIUM SOILS FOR SEWER INSTALLATION.
** – REMOVE CHROMIUM SOILS DOWN TO ELEVATION 67.



TYPICAL SECTION – BURIED BOTTOM SEDIEMNT WASTE AREAS SNOW FENCE DETAIL



TYPICAL SECTION – BURIED BOTTOM SEDIEMNT WASTE AREAS SNOW FENCE DETAIL

STATION	ELEVATION OF FENCE
17+00	67
17+50	66
18+00	65
18+50	67
19+00	67

SOIL BORING LOG

BORING	CROMIUM DEPTH & CONCENTRATION	EXISTING ELEVATION	PROPOSED ELEVATION
BC–1	4–12' > 40 mg/kg	74.65	70.13
BC–6	4–12' > 40 mg/kg	64.77	70.91
BC–14	4–8' > 40 mg/kg	64.80	67.62
BC–16	4–12' > 40 mg/kg	69.66	70.72
BC–17	4–12' > 40 mg/kg	68.82	70.81
BC–18	8–12' > 40 mg/kg	67.42	71.70
BC–19	8–12' > 40 mg/kg	66.90	71.42
BC–20	4–12' > 40 mg/kg	64.32	70.11
BC–24	4–8' > 40 mg/kg	69.95	70.99
BC–25	4–12' > 40 mg/kg	67.59	71.50
BC–26	4–12' > 40 mg/kg	68.07	72.24
BC–27	4–8' > 40 mg/kg	64.86	70.56
BC–28	4–12' > 40 mg/kg	64.71	70.01

NOTE:
BC = BELOW CRITERIA
NA = NOT APPLICABLE
ND = NON DETECTED

SOIL BORING LOG

BORING	PCB DEPTH & CONCENTRATION	CROMIUM DEPTH & CONCENTRATION	EXISTING ELEVATION	PROPOSED ELEVATION
BS–3	0–4' 2.1 mg/kg 4–8' 1.5 mg/kg	BC	67.13	70.62
BS–4	8–12' 8.4 mg/kg	8–12' > 40 mg/kg	66.50	71.10
BS–8	8–12'	BC	67.04	70.11
BS–10	0–4'	BC	65.52	70.03
BS–12	BC	8–12' > 40 mg/kg	65.30	69.96
BS–13	4–8' 5.0 mg/kg 8–12' 4.0 mg/kg	4–8' > 40 mg/kg	67.79	70.10
BS–15	4–8'	BC	69.90	72.12
BS–25	12–16' 590 mg/kg	8–12' > 40 mg/kg	66.15	71.42
BS–27	8–12' 370 mg/kg	8–12' > 40 mg/kg	66.15	71.01

NOTE:
THE BARRIER FENCE SHALL BE PLACED AT ELEVATION 66.00 AT IDENTIFIED WASTE AREAS.
ENVIRONMENTAL DATA INTERPRETATION PREPARED BY MALCOLM PIRNIE, INC.
104 CORPORATE PARK DRIVE
WHITE PLAINS, NY 10602

CAUTION:
NO DIGGING BEYOND THIS POINT W/O NYSDEC AUTHORIZATION
10"
14"
NOTE:
SIGNS TO BE PLACED 25' O.C.

TYPICAL SIGN FOR WASTE AREAS
N.T.S.

THE PLANS AND SPECIFICATIONS SHALL NOT BE ALTERED IN ANY MANNER EXCEPT AS PROVIDED UNDER SECTION 7209 SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW.

EAST FARMINGDALE
SUFFOLK COUNTY, NEW YORK

STEW LEONARD'S @ BABYLON

EXHIBIT B
WASTE AREAS

SAVIK & MURRAY, LLP
CONSULTING ENGINEERS

DATE: 10–31–03
SCALE: 1"=100'
PROJECT NO.: 202012.04
CAD FILE: 202012.04PIRN
SHEET NO. 1 OF 1

CHROMIUM SOIL
PARCEL A (along East Carmens Road fence)

ALL THAT PIECE OR PARCEL OF LAND SITUATE AND BEING IN THE TOWN OF BABYLON, COUNTY OF SUFFOLK, STATE OF NEW YORK, AS SHOWN ON THE ACCOMPANYING MAP AND DESCRIBED AS FOLLOWS:

COMMENCING AT A POINT ON THE INTERSECTION OF THE SOUTHERLY SIDE OF CONKLIN STREET WITH THE EASTERLY SIDE OF EAST CARMANS ROAD; THENCE RUNNING ALONG THE EASTERLY SIDE OF EAST CARMANS ROAD, SOUTH 11 DEGREES 00 MINUTES 46 SECONDS WEST, 348.25 FEET TO A POINT;

THENCE RUNNING INTO THE PROPERTY KNOWN AS STEW LEONARD'S @ BABYLON THE FOLLOWING TWO (2) COURSES AND DISTANCES:

(1) SOUTH 87 DEGREES 39 MINUTES 24 SECONDS EAST, 13.67 FEET TO A POINT;
(2) SOUTH 02 DEGREES 20 MINUTES 36 SECONDS WEST, 23.01 FEET TO THE POINT OF BEGINNING.

FROM THE POINT OF BEGINNING THENCE RUNNING THE FOLLOWING EIGHT (8) COURSES AND DISTANCES:

(1) SOUTH 10 DEGREES 43 MINUTES 47 SECONDS WEST, 644.40 FEET;
(2) SOUTH 78 DEGREES 59 MINUTES 00 SECONDS WEST, 86.32 FEET;
(3) NORTH 23 DEGREES 48 MINUTES 00 SECONDS EAST, 218.51 FEET;
(4) NORTH 82 DEGREES 34 MINUTES 00 SECONDS WEST, 85.00 FEET;
(5) NORTH 11 DEGREES 01 MINUTES 00 SECONDS EAST, 384.00 FEET;
(6) SOUTH 87 DEGREES 40 MINUTES 00 SECONDS EAST, 80.00 FEET;
(7) NORTH 01 DEGREES 40 MINUTES 00 SECONDS EAST, 60.00 FEET:
(8) NORTH 87 DEGREES 40 MINUTES 00 SECONDS WEST, 124.00 FEET TO THE POINT OR PLACE OF BEGINNING.

CHROMIUM SOIL
PARCEL B (Isolated Area East of Parcel A)

ALL THAT PIECE OR PARCEL OF LAND SITUATE AND BEING IN THE TOWN OF BABYLON, COUNTY OF SUFFOLK, STATE OF NEW YORK, AS SHOWN ON THE ACCOMPANYING MAP AND DESCRIBED AS FOLLOWS:

COMMENCING AT A POINT ON THE INTERSECTION OF THE SOUTHERLY SIDE OF CONKLIN STREET WITH THE EASTERLY SIDE OF EAST CARMANS ROAD; THENCE RUNNING ALONG THE EASTERLY SIDE OF EAST CARMANS ROAD, SOUTH 11 DEGREES 00 MINUTES 46 SECONDS WEST, 348.25 FEET TO A POINT;

THENCE RUNNING INTO THE PROPERTY KNOWN AS STEW LEONARD'S @ BABYLON THE FOLLOWING SIX (6) COURSES AND DISTANCES:

(1) SOUTH 87 DEGREES 39 MINUTES 24 SECONDS EAST, 13.67 FEET TO A POINT;
(2) SOUTH 02 DEGREES 20 MINUTES 36 SECONDS WEST, 23.01 FEET;
(3) SOUTH 10 DEGREES 43 MINUTES 47 SECONDS WEST, 644.40 FEET;
(4) SOUTH 78 DEGREES 59 MINUTES 00 SECONDS WEST, 86.32 FEET;
(5) NORTH 23 DEGREES 48 MINUTES 00 SECONDS EAST, 218.51 FEET;
(6) NORTH 48 DEGREES 32 MINUTES 54 SECONDS EAST, 57.25 FEET TO THE POINT OR PLACE OF BEGINNING.

FROM THE POINT OF BEGINNING THENCE RUNNING THE FOLLOWING FOUR (4) COURSES AND DISTANCES:

(1) SOUTH 87 DEGREES 39 MINUTES 54 SECONDS EAST, 30.00 FEET;
(2) NORTH 02 DEGREES 20 MINUTES 06 SECONDS WEST, 30.00 FEET;
(3) NORTH 87 DEGREES 39 MINUTES 54 SECONDS WEST, 30.00 FEET;
(4) SOUTH 02 DEGREES 20 MINUTES 06 SECONDS EAST, 30.00 FEET TO THE POINT OR PLACE OF BEGINNING.

BURIED BOTTOM SEDIMENT
(aka Glove Area)

ALL THAT PIECE OR PARCEL OF LAND SITUATE AND BEING IN THE TOWN OF BABYLON, COUNTY OF SUFFOLK, STATE OF NEW YORK, AS SHOWN ON THE ACCOMPANYING MAP AND DESCRIBED AS FOLLOWS:

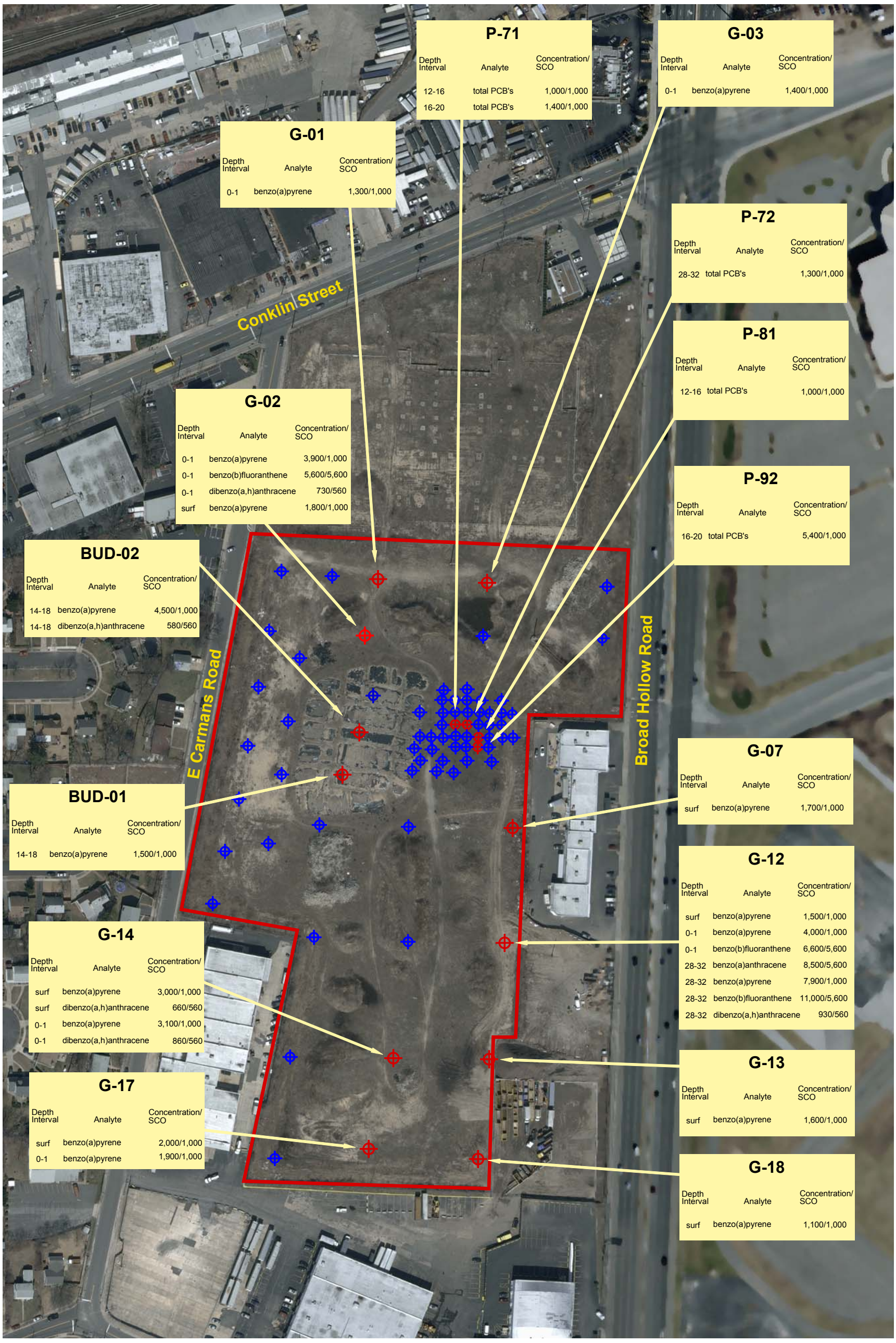
COMMENCING AT A POINT ON THE INTERSECTION OF THE SOUTHERLY SIDE OF CONKLIN STREET WITH THE EASTERLY SIDE OF EAST CARMANS ROAD; THENCE RUNNING ALONG THE EASTERLY SIDE OF EAST CARMANS ROAD, SOUTH 11 DEGREES 00 MINUTES 46 SECONDS WEST, 348.25 FEET TO A POINT;

THENCE RUNNING INTO THE PROPERTY KNOWN AS STEW LEONARD'S @ BABYLON THE FOLLOWING TWO (2) COURSES AND DISTANCES:

(1) SOUTH 87 DEGREES 39 MINUTES 24 SECONDS EAST, 297.60 FEET TO A POINT;
(2) SOUTH 02 DEGREES 20 MINUTES 36 SECONDS WEST, 199.84 FEET TO THE POINT OF BEGINNING.

FROM THE POINT OF BEGINNING THENCE RUNNING THE FOLLOWING EIGHT (8) COURSES AND DISTANCES:

(1) SOUTH 25 DEGREES 41 MINUTES 42 SECONDS WEST, 179.74 FEET;
(2) SOUTH 00 DEGREES 28 MINUTES 23 SECONDS WEST, 29.15 FEET;
(3) SOUTH 40 DEGREES 17 MINUTES 03 SECONDS EAST, 36.69 FEET;
(4) NORTH 88 DEGREES 31 MINUTES 25 SECONDS EAST, 178.32 FEET;
(5) NORTH 32 DEGREES 26 MINUTES 29 SECONDS EAST, 76.47 FEET;
(6) NORTH 02 DEGREES 23 MINUTES 00 SECONDS EAST, 95.00 FEET;
(7) NORTH 45 DEGREES 50 MINUTES 00 SECONDS WEST, 91.00 FEET:
(8) NORTH 89 DEGREES 05 MINUTES 00 SECONDS WEST, 105.27 FEET TO THE POINT OR PLACE OF BEGINNING.



P-71

Depth Interval	Analyte	Concentration/ SCO
12-16	total PCB's	1,000/1,000
16-20	total PCB's	1,400/1,000

G-03

Depth Interval	Analyte	Concentration/ SCO
0-1	benzo(a)pyrene	1,400/1,000

G-01

Depth Interval	Analyte	Concentration/ SCO
0-1	benzo(a)pyrene	1,300/1,000

P-72

Depth Interval	Analyte	Concentration/ SCO
28-32	total PCB's	1,300/1,000

P-81

Depth Interval	Analyte	Concentration/ SCO
12-16	total PCB's	1,000/1,000

G-02

Depth Interval	Analyte	Concentration/ SCO
0-1	benzo(a)pyrene	3,900/1,000
0-1	benzo(b)fluoranthene	5,600/5,600
0-1	dibenzo(a,h)anthracene	730/560
surf	benzo(a)pyrene	1,800/1,000

P-92

Depth Interval	Analyte	Concentration/ SCO
16-20	total PCB's	5,400/1,000

BUD-02

Depth Interval	Analyte	Concentration/ SCO
14-18	benzo(a)pyrene	4,500/1,000
14-18	dibenzo(a,h)anthracene	580/560

G-07

Depth Interval	Analyte	Concentration/ SCO
surf	benzo(a)pyrene	1,700/1,000

BUD-01

Depth Interval	Analyte	Concentration/ SCO
14-18	benzo(a)pyrene	1,500/1,000

G-12

Depth Interval	Analyte	Concentration/ SCO
surf	benzo(a)pyrene	1,500/1,000
0-1	benzo(a)pyrene	4,000/1,000
0-1	benzo(b)fluoranthene	6,600/5,600
28-32	benzo(a)anthracene	8,500/5,600
28-32	benzo(a)pyrene	7,900/1,000
28-32	benzo(b)fluoranthene	11,000/5,600
28-32	dibenzo(a,h)anthracene	930/560

G-14

Depth Interval	Analyte	Concentration/ SCO
surf	benzo(a)pyrene	3,000/1,000
surf	dibenzo(a,h)anthracene	660/560
0-1	benzo(a)pyrene	3,100/1,000
0-1	dibenzo(a,h)anthracene	860/560

G-13

Depth Interval	Analyte	Concentration/ SCO
surf	benzo(a)pyrene	1,600/1,000

G-17

Depth Interval	Analyte	Concentration/ SCO
surf	benzo(a)pyrene	2,000/1,000
0-1	benzo(a)pyrene	1,900/1,000

G-18

Depth Interval	Analyte	Concentration/ SCO
surf	benzo(a)pyrene	1,100/1,000

⊕ - Soil Sampling Location w/ Commercial SCO Exceedance

⊕ - Soil Sampling Location

All concentrations reported in ug/Kg

Depth intervals provided in feet below grade surface

All analyses by Test America, Inc.

0 175

SCALE IN FEET

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

225 Atlantic Avenue
Patchogue, New York 11772
Tel (631) 447-6400
Fax (631) 447-6497
Email Info@Enviro-Asmnt.com
www.Enviro-Asmnt.com

Figure 6

Commercial SCO Exceedances

June-July 2014 Remedial Investigation

6 NYCRR 375-6.8 Commercial Use Soil Cleanup Objectives

Fairchild Republic Aircraft; Old Sump
Broad Hollow Road
East Farmingdale, NY
Site No.152004

APPENDIX D

Beneficial Use Determination Extension

NEW YORK STATE | Department of Environmental Conservation

KATHY HOCHUL
Governor

AMANDA LEFTON
Commissioner

July 25, 2025

Jeff Wills, P.G.
Principal Geologist
Roux Associates Inc.
209 Shafter Street
Islandia, NY 11749

Dear Jeff Wills:

Re: BUD No. 788-1-30 **Modification**
Cold-Mix Asphalt as Parking Lot Subbase

The New York State Department of Environmental Conservation (Department) has reviewed your request dated July 14, 2025, to modify Beneficial Use Determination (BUD) No. 788-1-30, granted to Acadia Realty Trust (Acadia), for reuse of asphalt-emulsion-treated petroleum-contaminated soil ("cold-mix asphalt" or CMA), that is currently stockpiled on the Acadia-owned Old Recharge Basin (ORB) State Superfund site (DEC Site No. 152004) in East Farmingdale, for legitimate pavement or pavement system components (e.g., stabilized subbase) for upcoming construction on the site development area as depicted on Figure 2 of Roux Associates' August 5, 2015 letter. This BUD was originally granted on August 26, 2003 and has subsequently been renewed and modified. On July 14, 2025, you requested a modification of the BUD requesting to use this CMA on both the southern and northern portions of the site.

The Department herein modifies BUD No. 788-1-30 as requested, pursuant to 6 NYCRR 360.12(d)(7). The following BUD conditions supersede all previous conditions of BUD No. 788-1-30:

1. This BUD is only applicable to the stockpile of previously produced CMA on the ORB site. No additional CMA may be produced or imported under this determination. No CMA may be used off-site, or in areas outside of the site development area depicted by Roux Associates, without specific Department approval.

2. All cold-mix asphalt not used in accordance with this determination must be disposed of in accordance with all applicable Part 360 Series regulations.

3. The thickness of the subbase layer that will consist of the CMA material must correspond to thicknesses specified in site development plans or project specifications and may be placed up to 24 inches in thickness provided the following are met:

a. CMA must meet engineering properties needed for the subbase or foundation material for future development or construction, prior to and upon placement and compaction.
b. All deleterious material must be removed before placement;
c. Material is placed in four to six-inch lifts and compacted;
d. Material will be under a pavement or foundation; and
e. Material will be above the seasonal high water table and will not be in contact with any surface water body.

4. A report must be sent to the Department annually by March 1st for activities of the previous calendar year and at the end of the project stating the actual quantity of CMA used and how much, if any, was sent for disposal. Quantities should be displayed in tons. This report should be sent to:

NYSDEC Division of Materials Management
Region 1
50 Circle Road
Stony Brook, NY 11790-3409
R1DMM@dec.ny.gov

Bureau of Solid Waste Management
Central Office
625 Broadway, 9th Floor
Albany, NY 12233-7260
benuse@dec.ny.gov

Jared Donaldson, P.E.
Bureau A
Division of Environmental Remediation
NYSDEC
625 Broadway, 12th Floor
Albany, NY 12233-7015
Jared.Donaldson@dec.ny.gov

Electronic submissions are acceptable and preferred.

5. The Department reserves the right to modify, suspend, or revoke this BUD at any time, upon notice and opportunity to be heard, if it finds pursuant to 6 NYCRR Part 360.12(d)(5) any of the following: that one or more factors serving as the basis for this BUD is incorrect or no longer valid; or the Department finds there has been a violation of the conditions of this BUD; or if necessary to prevent adverse impacts to the public health or the environment or to control nuisances.

6. This determination does not relieve Arcadia Realty Trust or its contractors from responsibility to comply with applicable local, state or federal requirements.

7. Pursuant to 6 NYCRR 360.12(d)(7), this BUD will expire five years from the date of the previous BUD renewal or April 7, 2026. A renewal may be granted upon written request and justification.

Please contact Andrew Oskowsky, P.E. of my staff at (631) 444-0389 or andrew.oskowsky@dec.ny.gov if you have any questions regarding this determination.

Sincerely,



for James J. Wade, P.E.
Regional Solid Waste and Recycling Supervisor

Cc: Kathleen Prather, P.E.
Andrew Oskowsky, P.E.
Jared Donaldson, P.E.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Materials Management, Bureau of Solid Waste Management
625 Broadway, Albany, New York 12233-7260
P: (518) 402-8678 | F: (518) 402-9024
www.dec.ny.gov

April 7, 2021

Jeff Wills, P.G.
Senior Hydrogeologist
Roux Associates Inc.
209 Shafter Street
Islandia, NY 11749

Dear Jeff Wills:

Re: BUD No. 788-1-30 **Renewal**
Cold-Mix Asphalt as Parking Lot Subbase

The New York State Department of Environmental Conservation (Department) has reviewed your request dated March 15, 2021, to renew Beneficial Use Determination (BUD) No. 788-1-30, granted to Acadia Realty Trust (Acadia), for reuse of asphalt-emulsion-treated petroleum-contaminated soil ("cold-mix asphalt" or CMA), that is currently stockpiled on the Acadia-owned Old Recharge Basin (ORB) State Superfund site (DEC Site No. 152004) in East Farmingdale, for legitimate pavement or pavement system components (e.g., stabilized subbase) for upcoming construction on the site development area as depicted on Figure 2 of Roux Associates' August 5, 2015 letter. This BUD was originally granted on August 26, 2003 and has subsequently been renewed and modified. On March 15, 2021, you requested a renewal of the BUD without modification.

The Department herein renews BUD No. 788-1-30 as requested, pursuant to 6 NYCRR 360.12(d)(7). The following BUD conditions reflect the most recent modification dated August 4, 2016, and supersede all previous conditions of BUD No. 788-1-30:

1. This BUD is only applicable to the stockpile of previously produced CMA on the ORB site. No additional CMA may be produced or imported under this determination. No CMA may be used off-site, or in areas outside of the site development area depicted by Roux Associates, without specific Department approval.

2. All cold-mix asphalt not used in accordance with this determination must be disposed of in accordance with all applicable Part 360 Series regulations.

3. The thickness of the subbase layer that will consist of the CMA material must correspond to thicknesses specified in site development plans or project specifications and may be placed up to 24 inches in thickness provided the following are met:

    a. CMA must meet engineering properties needed for the subbase or foundation material for future development or construction, prior to and upon placement and compaction.

b. All deleterious material must be removed before placement;
c. Material is placed in four to six-inch lifts and compacted;
d. Material will be under a pavement or foundation; and
e. Material will be above the seasonal high water table and will not be in contact with any surface water body.

4. A report must be sent to the Department annually as noted in BUD Condition 7 and at the end of the project stating the actual quantity of CMA used and how much, if any, was sent for disposal. Quantities should be displayed in tons. This report should be sent to:

Syed Rahman, P.E.
Regional Materials Management Engineer
NYSDEC Region 1
50 Circle Road
Stony Brook, NY 11790-3409
Syed.Rahman@dec.ny.gov

Kathleen Prather, P.E.
Bureau of Solid Waste Management
Division of Materials Management
NYSDEC
625 Broadway, 9th Floor
Albany, NY 12233-7260
Kathleen.Prather@dec.ny.gov

Jared Donaldson
Bureau A
Division of Environmental Remediation
NYSDEC
625 Broadway, 12th Floor
Albany, NY 12233-7015
Jared.Donaldson@dec.ny.gov

Electronic submissions are acceptable and preferred.

5. The Department reserves the right to modify, suspend, or revoke this BUD at any time, upon notice and opportunity to be heard, if it finds pursuant to 6 NYCRR Part 360.12(d)(5) any of the following: that one or more factors serving as the basis for this BUD is incorrect or no longer valid; or the Department finds there has been a violation of the conditions of this BUD; or if necessary to prevent adverse impacts to the public health or the environment or to control nuisances.

6. This determination does not relieve Arcadia Realty Trust or its contractors from responsibility to comply with applicable local, state or federal requirements.

7. Pursuant to 6 NYCRR 360.12(d)(7), this BUD will expire five years from the date of this letter or April 7, 2026. A renewal may be granted upon written request and justification.

Please contact me if you have any questions regarding this determination.

Sincerely,



Kathleen A. Prather, P.E.
Chief, Solid Waste Recovery and Medical
Waste Section
Bureau of Solid Waste Management

Ec: S. Rahman
J. Donaldson

From:	Corcoran, Bob (DEC)
To:	Jeffrey Wills
Subject:	FW: Moving on-site soil: Former Fairchild Republic Aircraft Site 1-52-004
Date:	Thursday, August 4, 2016 11:14:09 AM
Attachments:	image001.gif image002.gif image003.jpg image004.jpg image005.jpg image006.jpg image007.jpg image008.jpg

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Hi Jeff,

See Kathy's response to your question, below.

Bob

Robert Corcoran, P.E.
Environmental Engineer 2, Division of Environmental Remediation

New York State Department of Environmental Conservation
625 Broadway, Albany, NY 12233-7015
P: 518-402-9658| F: 518-402-9627| bob.corcoran@dec.ny.gov
www.dec.ny.gov

From: Prather, Kathleen A (DEC)
Sent: Thursday, August 04, 2016 11:08 AM
To: Corcoran, Bob (DEC) <bob.corcoran@dec.ny.gov>
Cc: Swartwout, John (DEC) <john.swartwout@dec.ny.gov>
Subject: RE: Moving on-site soil: Former Fairchild Republic Aircraft Site 1-52-004

Bob –
The condition regarding the thickness of the asphalt-stabilized base material (CMA) was intended to ensure a legitimate beneficial use of the CMA in its intended function. That being said, since the objective is to keep the materials within the same site, increasing the thickness is approved provided the following:

- CMA meets engineering properties needed for the subbase or foundation material for future development or construction, prior to and upon placement and compaction (no deleterious materials; strength met upon compaction, etc.)
- Material placed in lifts as described in the BUD; will be under a pavement or foundation; and meet other BUD conditions.
- Material will be above the seasonal high water table and will not be in contact with any surface water body.

If the above are met, the thickness of CMA from on-site stockpiles may be increased up to 24 inches. Please contact me if you have further questions.

Kathy Prather

Kathleen A. Prather, P.E.
Environmental Engineer, Division of Materials Management

New York State Department of Environmental Conservation
625 Broadway, Albany, NY 12233-7253
P: 518-402-8678 | F: 518-402-9024 | kathleen.prather@dec.ny.gov

www.dec.ny.gov | | |

From: Corcoran, Bob (DEC)
Sent: Tuesday, August 02, 2016 11:01 AM
To: Prather, Kathleen A (DEC) <kathleen.prather@dec.ny.gov>
Cc: Swartwout, John (DEC) <john.swartwout@dec.ny.gov>
Subject: FW: Moving on-site soil: Former Fairchild Republic Aircraft Site 1-52-004

Hi Kathy,
The attached BUD (item #3) states that the subbase layer below the CMA may not exceed 1-foot in thickness. They expect to have some extra material and would like install the layer to 2-feet thickness (see email below). Can you please provide a decision on this?

Thank you.

Robert Corcoran, P.E.
Environmental Engineer 2, Division of Environmental Remediation

New York State Department of Environmental Conservation
625 Broadway, Albany, NY 12233-7015
P: 518-402-9658| F: 518-402-9627| bob.corcoran@dec.ny.gov
www.dec.ny.gov

From: Jeffrey Wills [mailto:jwills@rouxinc.com]
Sent: Tuesday, August 02, 2016 10:55 AM
To: Corcoran, Bob (DEC) <bob.corcoran@dec.ny.gov>
Subject: FW: Moving on-site soil: Former Fairchild Republic Aircraft Site 1-52-004

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Bob,

I had a meeting with the Acadia team on Monday to go over site construction/environmental requirement logistics. We are trying to reuse all of the current soil stockpiles. As per comment 3. in the approved BUD, "the BUD material in no case may exceed one (1) foot in thickness". Is it possible to get some relief on this and have the BUD material installed up to two (2) feet in thickness? We would like to eliminate handling this material multiple times and moving it around the site as much

as possible, and this would greatly help with the design and timing of this project. All other BUD requirements will be adhered to.

Regards,

Jeff Wills | Senior Hydrogeologist | ROUX ASSOCIATES, INC.
209 Shafter Street | Islandia, New York 11749
Main: 631.232.2600 | Direct: 631.630.2366
Email: jwills@rouxinc.com | Website: http://www.rouxinc.com



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From: Prather, Kathleen A (DEC) [mailto:kathleen.prather@dec.ny.gov]
Sent: Tuesday, March 29, 2016 12:29 PM
To: Jeffrey Wills
Cc: Swartwout, John (DEC); Joe Duminuco; Corcoran, Bob (DEC)
Subject: RE: Moving on-site soil: Former Fairchild Republic Aircraft Site 1-52-004

To: Jeff Wills, Roux Associates Inc.

Mr. Wills:

Greetings – to confirm Bob's notes below, and on review of your August 5, 2015 letter to John Swagerty of Acadia Realty Trust, Acadia is herein approved to use stockpiles of asphalt-emulsion-treated petroleum-contaminated soil ("cold-mix asphalt" or CMA) that are located on the Fairchild site, for legitimate pavement or pavement system components (e.g., stabilized subbase) for upcoming construction on the site development area as depicted on Figure 2 of your August 2015 letter.

The existing CMA stockpiles do not require environmental (chemical contaminant) analysis. Reuse of the CMA should follow the conditions of the original BUD No.788-1-30 (attached), and must also have the approval of site development architects/engineers in this use. As stated in the attached BUD letter, any CMA that cannot be used as stated in

the BUD must be disposed off-site. A report must be sent to DEC annually as noted in BUD Condition 7 **and at the end of the project** stating the actual quantity of CMA used and how much, if any, was sent for disposal. This report should be sent to:

1. Syed Rahman, P.E.
   Regional Materials Management Engineer
   NYSDEC Region 1
   50 Circle Road
   Stony Brook, NY 11790-3409
   Syed.Rahman@dec.ny.gov

2. Myself (contact information below)

3. Bob Corcoran, DER.

Electronic submissions are acceptable and preferred.

Recognizing this BUD had a time limit that has expired (along with several extensions) this electronic mail will confirm that the BUD is still valid for Acadia Republic Farmingdale, LLC's, use and this determination will continue to be valid for five years from the date of this email, or March 29, 2021.

Please contact me if you have any questions regarding BUD No. 788-1-30.

Sincerely,
Kathy Prather

Kathleen A. Prather, P.E.
Environmental Engineer, Division of Materials Management

New York State Department of Environmental Conservation
625 Broadway, Albany, NY 12233-7253
P: 518-402-8678 | F: 518-402-9024 | kathleen.prather@dec.ny.gov

www.dec.ny.gov |

From: Corcoran, Bob (DEC)
Sent: Thursday, March 24, 2016 2:39 PM
To: Jeffrey Wills
Cc: Swartwout, John (DEC); Joe Duminuco; Prather, Kathleen A (DEC)
Subject: Moving on-site soil

Jeff,
I've got some clarity on your options for moving on-site soils around, and will summarize them here:

1) The stockpiled concrete nuggets can be crushed on-site and used as fill both on the site-

proper and on the adjacent off-site property.

2) The former BUD pile material can be reBUDded for use as parking lot sub base material provided testing indicates that it still meets the specs for such use. We think resurrecting the old BUD is the appropriate step here. A case-specific BUD would allow for use of this material in the both the site and non-site portion of the development.

3) The remaining soil stockpiles will require a separate BUD for reuse as off-site fill. Moving soil from the site to the non-site property poses a problem because the non-site property does not fall under the jurisdiction of the EE. You can't bring contaminated soil to an uncontrolled property.

4) This soil must be tested according to DER-10 Section 5.4 – Recommended number of soil samples for soil imported to or exported from a site. The levels must not exceed the lower of the protection of groundwater or RESIDENTIAL use SCOs.

5) Exceptions to #4 can be made for SVOCs slightly exceeding SCOs provided the soil is going to be placed under a parking lot or building. Also, if you can document that the non-site property has similar levels of contamination to the site, an exception can be made since you would not be contaminating a clean area.

6) No PCBs can be moved off-site.

7) DEC prefers all analytical testing is done prior to submission of the BUD application (attached).

We can discuss further whenever you like.

Bob

Robert Corcoran, P.E.
Environmental Engineer 2, Division of Environmental Remediation

New York State Department of Environmental Conservation
625 Broadway, Albany, NY 12233-7015
P: 518-402-9658| F: 518-402-9627| bob.corcoran@dec.ny.gov
www.dec.ny.gov

APPENDIX E

Vapor Barrier Specifications

LIQUID BOOT®

SPRAY-APPLIED VAPOR BARRIER

DESCRIPTION

LIQUID BOOT® is a seamless, spray-applied, water-based membrane containing no VOCs, which provides a barrier against vapor intrusion into structures. LIQUID BOOT® is installed under slab and on below grade vertical walls as a vapor barrier to minimize vapor and nuisance water migration into buildings. LIQUID BOOT® spray-application directly to penetrations, footings, grade beams, pile caps and other irregular surfaces, provides for a fully-adhered gas vapor barrier system.

APPLICATIONS

LIQUID BOOT® is used as an underslab and below-grade vertical wall gas vapor barrier, used to minimize vapor and nuisance water (non-hydrostatic conditions) migration into buildings. LIQUID BOOT® is ideal for methane migration control. LIQUID BOOT® is also NSF® certified for use as a potable water liner in concrete water reservoirs and tanks greater than 300,000 gallons to protect the concrete from water seepage.

BENEFITS

- Spray-application provides excellent sealing of penetrations, eliminating the need for mechanical fastening
- Seamless, monolithic membrane eliminates seaming-related membrane failures
- Unique formulation provides superior protection from methane gases and water vapor
- Fully adhered system reduces risk of gas migration
- Protection from methane gas, VOCs, chlorinated solvents and other contaminates

INSTALLATION

Protect all adjacent areas not to receive gas vapor barrier. Ambient temperature shall be within manufacturer's specifications. All plumbing, electrical, mechanical and structural items to be under or passing through the gas vapor barrier shall be secured in their proper positions and appropriately protected prior to membrane application. Gas vapor barrier shall be installed before placement of rein-forcing steel. Expansion joints must be filled with a conventional waterproof expansion joint material. Surface preparation shall be per manufacturer's specification. A minimum thickness of 60 dry mils, unless specified otherwise.

LIMITED WARRANTY

CETCO warrants its products to be free of defects. This warranty only applies when the product is applied by Approved Applicators trained by CETCO. As factors which affect the result obtained from this product, including weather, equipment, construction, workmanship and other variables are all beyond CETCO's control, we warrant only that the material herein conforms to our product specifications. Under this warranty we will replace at no charge any product proved to be defective within 12 months of manufacture, provided it has been applied in accordance with our written directions for uses we recommend as suitable for this product. This warranty is in lieu of any and all other warranties expressed or implied (including any implied warranty of merchantability or fitness for a particular use), and the Manufacturer shall have no further liability of any kind including liability for consequential or incidental damages resulting from any defects or any delays caused by replacement or otherwise. This warranty shall become valid only when the product has been paid for in full.



In addition to superior chemical resistance performance, LIQUID BOOT® spray-application effectively seals penetrations, footings, grade beams and other irregular surfaces that are considered critical vapor intrusion pathways.

EQUIPMENT

- COMPRESSOR: Minimum output of 155–185 cubic feet per minute (CFM)
- PUMPS: For "A" drum, an air-powered piston pump of 4:1 ratio (suggested model: Graco, 4:1 Bulldog). For "B" drum, an air-powered diaphragm pump (0–100 psi)
- HOSES: For "A" drum, ½" wire hose with a solvent resistant core (for diesel cleaning flush), hose rated for 500 psi minimum. For "B" drum, a 3/8" fluid hose rated at only 300 psi may be used.
- SPRAY WAND: Only the spray wand sold by CETCO is approved for the application of LIQUID BOOT®.
- SPRAY TIPS: Replacement tips can be purchased separately from CETCO.

PACKAGING

LIQUID BOOT® is available in the following packaging options:

- 55 Gallon Drum
- 275 Gallon Tote

LIQUID BOOT®

SPRAY-APPLIED VAPOR BARRIER

TESTING DATA

CHEMICAL & PHYSICAL PROPERTIES		
CHEMICAL PROPERTY	TEST METHOD	RESULT
Benzene Diffusion Test	Tested at 43,000 ppm	2.90 x 10^{-11} m^2/day
Diesel (1000 mg/l), Ethylbenzene (1000 mg/l), Naphthalene (5000 mg/l) and Acetone (500 mg/l) Exposure for 7 days	ASTM D543	Less than 1% weight change; Less than 10% tensile strength change
Methane Permeability	ASTM 1434-82	Passed[1]
Microorganism Resistance	ASTM D4068-88	Passed[1]
Oil Resistance	ASTM D543-87	Passed[1]
PCE Diffusion Coeffcient	Tested at 120 mg/L	1.32 x 10^{-13} m^2/sec
Radon Permeability	Tested by US Dept. of Energy	Zero permeability to Radon (222Rn)
TCE Diffusion Coefficient	Tested at 524 mg/L	9.07 x 10^{-13} m^2/sec
PHYSICAL PROPERTY	TEST METHOD	RESULT
Accelerated Weathering and Ultraviolet Exposure	ASTM D822	No adverse effect after 500 hours
Bonded Seam Strength Tests	ASTM D6392	Passed[1]
Dead Load Seam Strength	City of Los Angeles	Passed[1]
Elongation	ASTM D412	1,332% Ø reinforcement, 90% recovery
Environmental Stress-Cracking	ASTM D1693-78	Passed[1]
Freeze-Thaw Resistance (100 Cycles)	ASTM A742	Meets criteria. Ø spalling or disbondment
Heat Aging	ASTM D4068-88	Passed[1]
Hydrostatic Head Resistance	ASTM D751	Tested to 138 feet or 60 psi
Soil Burial	ASTM E154-88	Passed[1]
Tensile Strength	ASTM D412	58 psi without reinforcement
Water Vapor Permeance	ASTM E96	0.069 perms

Notes:

[1] Passes all Los Angeles City and County Methane criteria.

[2] Typical value based upon historical data.

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VI-20™ GEOMEMBRANE

HIGH-PERFORMANCE VAPOR INTRUSION BARRIER

DESCRIPTION

VI-20 is a 7-layer co-extruded geomembrane made using high quality virgin-grade polyethylene and EVOH resins that provide unmatched impact strength as well as superior resistance to VOC vapor transmission. EVOH technology serves as a highly resilient underslab and vertical wall barrier designed to restrict methane, radon and other harmful chemicals.

APPLICATION

VI-20 is a 20-mil, high performance polyethylene-EVOH copolymer geomembrane, specially designed for use as a VOC barrier when used in conjunction with LIQUID BOOT® spray-applied vapor intrusion membrane to minimize vapor intrusion and nuisance water (non-hydrostatic conditions) migration into buildings. VI-20 is ideal for applications with chlorinated solvents, BTEX and other PAHs.

BENEFITS

- Polyethylene layers provide excellent chemical resistance and physical properties
- EVOH barrier technology provides superior protection against diffusion of chemicals when compared to typical HDPE geomembranes
- Manufactured at ISO 9001:2008 certified plant

INSTALLATION

For use as a component of the LIQUID BOOT® Plus system. See installation guide for more information.



PACKAGING

- Panel Dimensions: 10 ft x 150 ft (3 m x 45.7 m) Rolls
- Nominal Weight: 160 lbs

VI-20 PROPERTIES

MATERIAL PROPERTY	TEST METHOD	TYPICAL VALUE
Color	-	Green
Membrane Thickness	ASTM D5199	20 mil (0.51 mm)
Water Vapor Retarder Classification	ASTM E1745	Class A, B, and C
Tensile Strength[1]	ASTM E154 Section 9	58 lb-f/in (102 N/cm)
Impact Resistance	ASTM D1709, Method B	3010 g
Water Vapor Transmission Rate[2]	ASTM E96, Procedure B	0.0040 grains/hr*ft^2 (0.0028 g/hr*m^2)
Benzene Permeance	See Note 3	1.13 x 10^{-10} m^2/s
Toluene Permeance	See Note 3	1.57 x 10^{-10} m^2/s
Ethylbenzene Permeance	See Note 3	1.23 x 10^{-10} m^2/s
m & p-Xylenes Permeance	See Note 3	1.17 x 10^{-10} m^2/s
o-Xylene Permeance	See Note 3	1.10 x 10^{-10} m^2/s
Perchloroethylene (PCE) Permeance	See Note 4	7.22 x 10^{-11} m^2/s
Trichloroethylene (TCE) Permeance	See Note 4	7.66 x 10^{-11} m^2/s
Radon Difussion Coefficient	K124/02/95	<1.1 x 10^{-13} m^2/s
Methane Permeance[2]	ASTM D1434	Gas Transmission Rate (GTR) 0.32 mL/m^2*day*atm

Notes:

[1] Results are an average of machine and cross machine direction.

[2] Typical value based upon historical data.

[3] McWaters and Rowe, "Permeation of Volatile Organic Compounds through EVOH Thin Film Membranes and LLDPE/EVOH/LLDPE Geomembranes", *Journal of Geotechnical and Geoenvironmental Engineering*, September 2015.

[4] Battista and Rowe, "Evaluation of Diffusion of PCE and TCE Through High Performance Geomembranes", Queens University, February 2018.

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FORM: TDS_VI-20_GEOMEMBRANE_AM_EN_202007_V4

APPENDIX F

Site-Specific Health and Safety Plan and
Community Air Monitoring Plan

Site-specific Health and Safety Plan (HASP)

Fairchild Republic Aircraft; Old Sump Site
(aka: Old Recharge Basin)
Broad Hollow Rd. and East Carmans Rd.
East Farmingdale, New York 11735

June 27, 2025

Prepared for:

Acadia Republic Farmingdale, LLC

Prepared by:

Roux Environmental Engineering and Geology, D.P.C.
209 Shafter Street
Islandia, New York 11749

2422.0001Y111/CV

Environmental Consulting
& Management
+1.800.322.ROUX
rouxinc.com

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Site-Specific Emergency Information

Emergency Phone Numbers

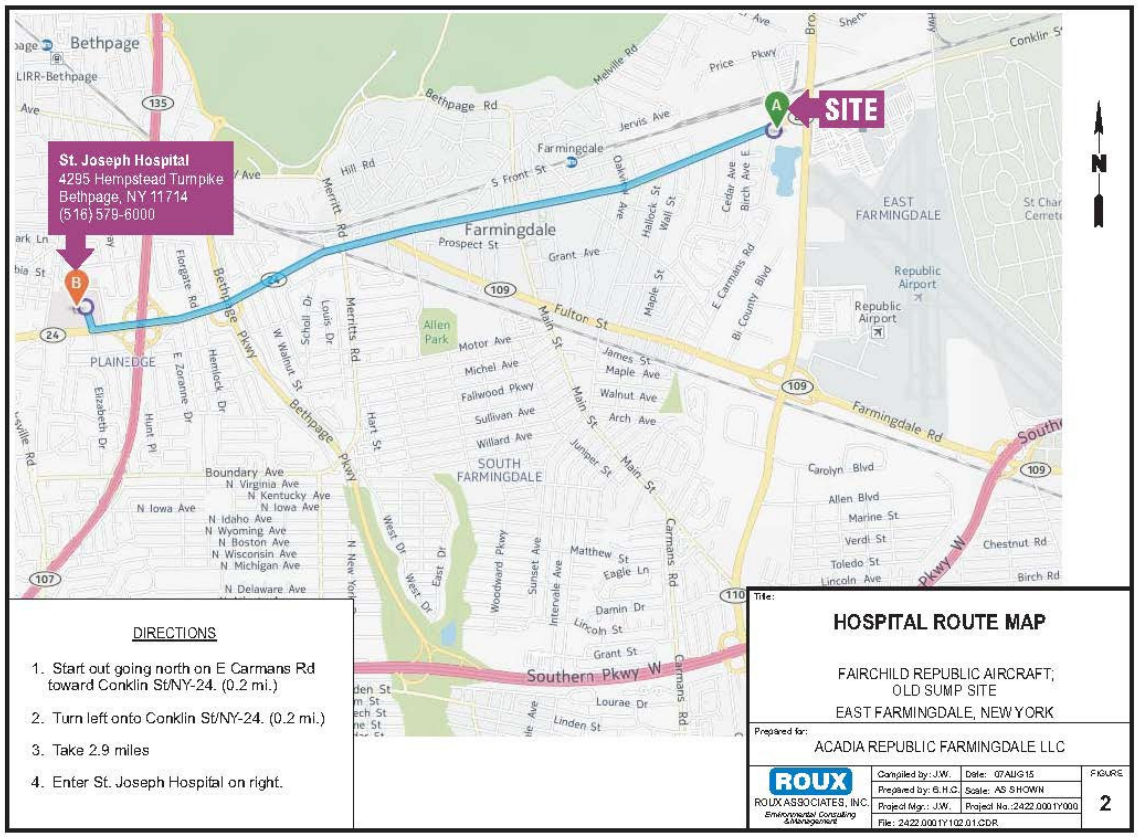
Most emergency services can be obtained by calling 911. Where 911 service is not available, use the telephone numbers provided in the below table. The following is a master emergency phone list for use by the project management personnel. A more condensed version of the emergency numbers listed below will be posted throughout project work areas. Emergencies encountered on the site will be responded to by a combination of off-site emergency services and on-site personnel.

Emergency Contact Information			
Site Personnel			
Title	**Contact**		**Telephone**
Operations Manager (OM)	Jeff Wills		(631) 630-2366
Project Principal (PP)	Charlie McGuckin		(631) 630-2346
Project Manager (PM)	David Kaiser		(631) 630-2365
Site Supervisor (SS)	Marilyn Villacres		(347) 209-8522
Site Health and Site Safety Officer (SHSO)	Marilyn Villacres		(347) 209-8522
Office Health and Safety Manager (OHSM)	Nevin Pahlad		(631) 630-2426
Corporate Health and Safety Director (CHSD)	Brian Hobbs, CIH, CSP		(631) 807-0193
WorkCare, Inc.	Occupational Health Care Management Provider		(888) 449-7787
Client Emergency Contact	Josh Bissinger		(914) 288-3390
Outside Assistance			
Agency	**Contact**	**Telephone**	**Address/Location**
Ambulance/emergency medical services (EMS)	8th Precinct	911	299 Hicksville Road, Bethpage, NY 11714
Police	8th Precinct	**911 / (516) 573-6800**	299 Hicksville Road, Bethpage, NY 11714
Fire	East Farmingdale Vol. Fire Company	(631) 249-0474	930 Conklin Street, E. Farmingdale, NY 11735
Site Address	Broad Hollow Road and East Carmans Road, East Farmingdale, New York 11735		

St Joseph Hospital – 4295 Hempstead Tpke, Bethpage, NY 11714

Starting at E. Carmans Road toward Conklin Street/NY-24

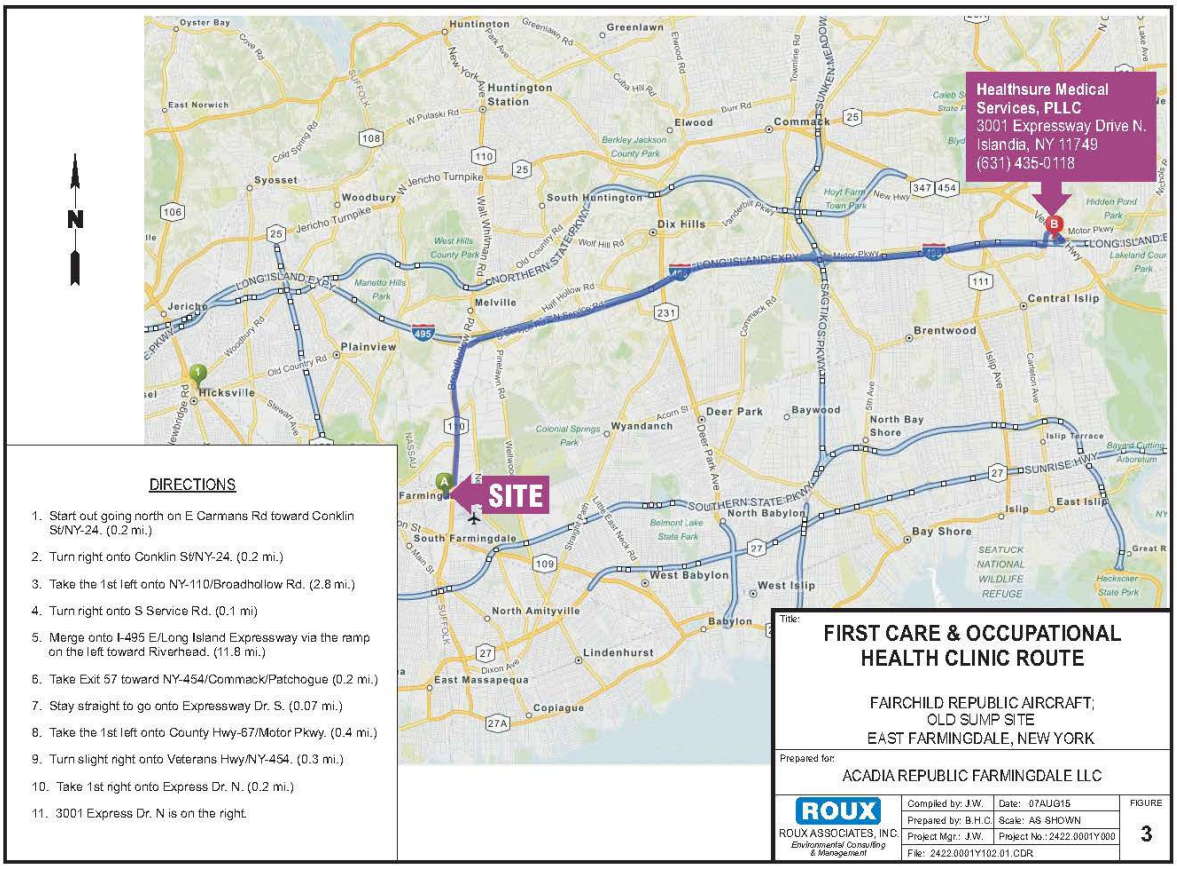
- Turn left onto Conklin Street/NY-24 (0.2 miles)
- Take 2.9 miles
- Enter St. Joseph Hosital on right



Health Sure Urgent Care – 3001 Express Drive N, Islandia, NY 11749

Starting at 48-55 36th St, Long Island City, NY 11101

- Take 35th St to Queens Blvd (0.5 mi)
- Continue on Queens Blvd to 42nd Rd (0.6 mi)
- Continue on 42nd Rd to Queens Plaza S (0.2 mi)
- Turn right onto Queens Plaza S
- Destination will be on the right



1. Introduction

This Site-specific Health and Safety Plan (HASP) has been prepared by Roux Environmental Engineering and Geology, D.P.C. (Roux) for use during the sampling and remedial activities being performed by Roux at the Acadia Republic Aircraft; Old Sump Site located between Broad Hollow Road and East Carmans Road, East Farmingdale, New York (Site; **Figure 1**). This HASP was prepared in general accordance with the requirements of the Occupational Safety and Health Administration (OSHA) standards promulgated at 29 CFR 1910.120 and 29 CFR 1926.65, both commonly referred to as the Hazardous Waste Operations and Emergency Response (HAZWOPER) Standard. In accordance with the HAZWOPER Standard, this Site-specific HASP was prepared to address the safety and health hazards associated with the sampling and remedial activities being performed at the Site by Roux and to provide requirements and procedures for the protection of Roux employees, subcontractor personnel, government oversight personnel, Site personnel, and the general public. It also addresses client- and Site-specific requirements for health and safety. Additionally, subcontractors may be required to submit their own HASP as it relates to their specific work activities and will be kept onsite during such work.

Implementation of this HASP is the joint responsibility of the Project Manager (PM), the Site Health and Safety Officer (SHSO), and all field staff, with assistance from the Project Principal (PP), Office Health and Safety Manager (OHSM), and Corporate Health and Safety Director (CHSD). The PM for this project is David Kaiser. The Site Supervisor (SS) is Marilyn Villacres and Site Health and Safety Officer (SHSO) is Marilyn Villacres.

This HASP will be introduced to, reviewed, and signed off on by all Roux personnel through a formal training session prior to commencing work. A copy of the HASP will be kept at the Site at all times. The Roux SHSO or PM will be responsible for posting any changes, amendments, memos, etc. to the HASP. Any revisions to this HASP will be signed by appropriate personnel, which can include Roux's PP, CHSD, and SS. Any changes will be announced to all workers at the next safety meeting.

1.1 Roles and Responsibilities

Overall Roles and Responsibilities (R&Rs) of Roux personnel are provided in Roux's Policies and Procedures Manual. Only those R&Rs specific to HASP requirements are listed below.

Project Manager (PM)

The PM has responsibility and authority to direct all work operations. The PM coordinates safety and health functions with the Site Health and Safety Officer (SHSO), has the authority to oversee and monitor the performance of the SHSO, and bears ultimate responsibility for the proper implementation of this HASP. The specific duties of the PM are:

- Preparing and coordinating the Site work plan;
- Providing Site supervisor(s) with work assignments and overseeing their performance; Coordinating safety and health efforts with the SSHO;
- Ensuring effective emergency response through coordination with the Emergency Response Coordinator (ERC); and
- Serving as primary Site liaison with public agencies and officials and Site contractors.

Site Health and Safety Officer (SHSO)

The SHSO has the full responsibility and authority to develop and implement this HASP and to verify compliance. The SHSO reports to the Project Manager. The SHSO is on Site or readily accessible to the Site during all work operations and has the authority to halt Site work if unsafe conditions are detected. The specific responsibilities of the SHSO include:

- Managing the safety and health functions on this Site;
- Serving as the Site's point of contact for safety and health matters;
- Ensuring Site monitoring, worker training, and effective selection and use of PPE;
- Assessing Site conditions for unsafe acts and conditions and providing corrective action;
- Assisting the preparation and review of this HASP;
- Maintaining effective safety and health records as described in this HASP; and
- Coordinating with the SS and others as necessary for safety and health efforts.

Site Supervisor (SS)

The Site Supervisor (SS) is responsible for field operations and reports to the Project Manager (PM). The SS ensures the implementation of the HASP requirements and procedures in the field. The specific responsibilities of the Site Supervisor include:

- Executing the work plan and schedule as detailed by the PM;
- Coordination with the SHSO on safety and health; and
- Ensuring Site work compliance with the requirements of this HASP.

Employees

All Roux employees are responsible for reading and following all provisions of the Corporate Health and Safety Manual, including this HASP. Employees report to the SS at the project Site. Each employee is also responsible for the following:

- Wearing all appropriate PPE as outlined within this HASP;
- Attending all safety meetings;
- Inspecting tools and equipment prior to use, and taking any defective tools or equipment out of service;
- Appropriately documenting field events as they occur within a logbook or equivalent;
- Properly operating machinery and/or equipment only if trained to do so;
- Stopping work operations if unsafe conditions exist;
- Identifying and mitigating hazards when observed;
- Reporting all incidents and near misses to the Roux SHSO and SS immediately; and
- Knowing where emergency equipment is located (e.g., first aid kit, fire extinguisher).

Subcontractors and Visitors

Subcontractors and visitors are responsible for complying with the same health and safety requirements. It is the responsibility of all to make sure subcontractors and visitors comply and uphold the HASP. Subcontractors and visitors have the following additional responsibilities:

- Designating a qualified safety representative for the project that can make the necessary changes in work practices, as necessary;
- Attending all safety meetings while participating in Roux Site work activities;
- Reporting all incidents and near misses to Roux SHSO and SS immediately;
- Conducting initial and periodic equipment inspections in accordance with manufacturer and regulatory guidelines; and
- Providing copies of all Safety Data Sheets (SDS) to Roux SHSO for materials brought to the Site.

2. Background

Relevant background information is provided below, including a general description of the Site; a brief review of the Site's history with respect to hazardous material use, handling, and/or storage; and a review of known and potential releases of hazardous substances at the Site.

2.1 Site Description

The Site is located in East Farmingdale, Suffolk County, New York and is identified as Section 049.00 Block 02.00 and Lots 007.000, 008.000, 010.000, 011.000 and 014.000 on the Town of Babylon Tax Map.

2.2 Site History

The Site is the location of a former sand mining operation for Colonial Sand & Gravel Company that was later converted to a storm water recharge basin and wastewater/cooling water repository. The basin, also known as the Old Recharge Basin (ORB), was used by New York State Department of Transportation (NYSDOT) to collect storm water runoff, and by Fairchild Republic Corporation (Fairchild) for runoff and disposal of up to 2 million gallons per day of non-contact cooling water and treated waste water from the Fairchild Main Plant Site (Site No. 152130). These discharges were regulated under a New York State issued State Pollution Discharge Elimination System (SPDES) permit. Fairchild stopped discharging to the basin in 1983 when it constructed a new recharge basin on the east side of Route 110. The Fairchild Main Plant Site produced sludge from metal precipitation from alodine process, anodizing, chemical milling and wash water from paint spray booths. The Suffolk County Department of Health Services (SCDHS) expressed concerns about the discharges entering the ORB and these concerns, along with variants from the SPDES permit, led to a Notice of Violation (NOV). The NOV trigged environmental investigations of the Site that began in 1982. On August 11, 1982, Fairchild entered into a Consent Agreement with SCDHS to investigate the ORB, which resulted in the Site becoming listed on the Registry of Inactive Hazardous Waste Disposal Sites as Class 2 in August 1989. Extensive investigations were completed at the Site under the direction of the NYSDEC and with input from the SCDHS that characterized the soil, sediment and groundwater.

2.3 Known and Potential Releases of Hazardous Substances at the Site

Based on previous environmental activities completed at the Site by others, Investigation results indicate that semivolatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs) and metals (including chromium and lead) are present in soil and tetrachloroethene (PCE) is present in groundwater at the Site.

3. Scope of Work

In general, the scope of work will include the following task(s):

- Soil excavation oversight;
- Collection on post-excavation soil samples;
- Collection of post-construction sub-slab soil vapor and indoor air samples.
    - Installation of sub-slab vapor pins within the newly installed Site buildings' concrete slabs.

Sampling techniques will be implanted for soil and sub-slab soil vapor/indoor air sampling.

- Decommissioning of four existing groundwater monitoring wells in accordance with NYSDEC CP-43.

Non-routine activities that may be performed by Roux personnel include the following:

- None.

If there are any changes with the scope a revision of the HASP will be required to address any new hazards.

4. Site Control

This Site control program is designed to reduce the spread of hazardous substances from contaminated areas to clean areas, to identify and isolate contaminated areas of the Site, to facilitate emergency evacuation and medical care, to prevent unauthorized entry to the Site, and to deter vandalism and theft.

4.1 Site Map

A map of this Site, showing Site boundaries, designated work zones, and points of entry and exit is provided in Figure 2.

4.2 Site Access

Access to the work areas at the Site is restricted to reduce the potential for exposure to its safety and health hazards. During hours of Site operation, Site entry and exit is authorized only at the points identified in Figure 2. Entry and exit at these points is controlled by the following: Site entrance gate. When the Site is not operating, access to the Site is controlled by the following: locking the entrance gate.

4.3 Buddy System

While working in the Exclusion Zone, Site workers use the buddy system. The buddy system means that personnel work in pairs and stay in close visual contact to be able to observe one another and summon rapid assistance in case of an emergency. The responsibilities of workers using the buddy system include:

- Remaining in close visual contact with partner;
- Providing partner with assistance as needed or requested;
- Observing partner for signs of heat stress, chemical overexposure or other difficulties;
- Periodically checking the integrity of partner's PPE; and
- Notifying the SS or other Site personnel if emergency assistance is needed.

4.4 Site Communications

The following communication equipment is used to support on-site communication: cell phones.

As applicable, hand signals will be used according to the following:

Hand Signals

SIGNAL	MEANING
Hand gripping throat	Out of air; I cannot breathe
Grip partner's wrist	Leave area immediately
Hands on top of head	Need assistance
Thumbs up	I am all right; okay
Thumbs down	No; negative

A current list of emergency contact numbers is included in the Site-Specific Emergency Information at the beginning of this HASP.

4.5 Site Work Zones

This Site is divided into three (3) major zones, described below. These zones are characterized by the likely presence or absence of biological, chemical, or physical hazards and the activities performed within them. Zone boundaries are clearly marked at all times and the flow of personnel among the zones is controlled. The Site is monitored for changing conditions that may warrant adjustment of zone boundaries. Zone boundaries are adjusted as necessary to protect personnel and clean areas. Whenever boundaries are adjusted, zone markings are also changed and workers are immediately notified of the change.

Exclusion Zone

The area where contamination exists is the Exclusion Zone (EZ). All areas where excavation and handling of contaminated materials take place are considered part of the EZ. This zone will be clearly delineated by chain link fencing, caution tape, cones or other effective barriers, as necessary. Safety tape may be used as a secondary delineation within the EZ. The zone delineation markings may be opened in areas for varying lengths of time to accommodate equipment operation or specific construction activities. The SHSO may establish more than one EZ where different levels of protection may be employed or where different hazards exist. Personnel are not allowed in the EZ without:

- A buddy (co-worker);
- Required minimum level PPE;
- Medical authorization;
- Training certification; and
- Requirement to be in the zone.

Contamination Reduction Zone

A Contamination Reduction Zone (CRZ) is established between the exclusion zone and the support zone. The CRZ contains the Contamination Reduction Corridor (CRC) and provides an area for decontamination of personnel and equipment. The CRZ will be used for general Site entry and egress in addition to access for heavy equipment and emergency support services. Personnel are not allowed in the CRZ without:

- A buddy (co-worker);
- Appropriate PPE;
- Medical authorization;
- Training certification; and
- Requirement to be in the zone.

Support Zone

The Support Zone (SZ) is an uncontaminated area that will be the field support area for the Site operations. The SZ will be determined before the start of work Appropriate sanitary facilities and safety equipment will be located in this zone. Potentially contaminated personnel or materials are not allowed in this zone. The only exception will be appropriately packaged/decontaminated and labeled samples.

5. Job Hazard Evaluation

Roux's work at the Site is expected to entail a variety of physical, chemical, and biological hazards, all of which must be sufficiently managed to allow the work to be performed safely. Some of the hazards are Site-specific (i.e., they are associated with the nature, physical characteristics, and/or routine operation of the Site itself), while others are activity-specific (i.e., they are associated with [or arise from] the particular activity being performed). The various hazards can be grouped into the following categories:

- **Caught/Crushed** – the potential to become caught in, under, between, or by an object or parts of an object, such as equipment with parts that open and close or move up and down ("pinch points") or equipment that rotates, and the accompanying potential to have body parts cut, mangled, or crushed thereby.
- **Contact** – the potential to be struck by or against moving or stationary objects that can cause physical injury, such as heavy machinery, overhead piping, moving vehicles, falling objects, and equipment (including tools and hand-held equipment) or infrastructure with the ability to cut or impale.
- **Energy Sources** – the potential for bodily harm associated with energy sources, most notably electricity, but also including latent energy sources such as compressed air and equipment under tension (which when released could cause injurious contact or a fall).
- **Ergonomics** – the potential for musculoskeletal injury associated with lifting/carrying, pushing/pulling, bending, reaching, and other physical activity attributable to poor body position/mechanics, repetitive motion, and/or vibration.
- **Exposure** – the potential for injury/illness due to physical, chemical, or biological exposures in the work environment, including, but not limited to, temperature extremes, solar radiation, and noise (physical), chemical splashes and hazardous atmospheres (chemical), and animal/insect bites and poisonous plants (biological).
- **Falls** – the potential to slip or trip and thus fall or drop a load, resulting in bodily injury to oneself or others.

The foregoing is intended to provide Roux employees with a general awareness of the hazards involved with Site work. A more detailed review of the potential hazards associated with each specific activity planned for the Site (or on-going activity, as the case may be) is provided in the activity-specific Job Safety Analysis (JSA) forms in **Appendix A**. As can be seen in the JSA forms, the hazards are identified by category per the above, and specific measures designed to mitigate/manage those hazards are also identified. In preparing the JSA forms, all categories of hazards were considered, and all anticipated potential hazards were identified to the extent possible based on the experience of the personnel preparing and reviewing the JSA forms. However, there is always the possibility for an unanticipated hazard to arise, potentially as condition change over the course of the workday. Roux personnel must maintain a continual awareness of potential hazards in the work zone, regardless of whether the hazard is identified in the JSA form. Particular attention should be paid to hazards associated with exposure to hazardous substances (see **Table 1** for a listing of the hazardous substances most likely to be encountered in environmental media at the Site) and to Site personnel being located "in the line of fire" with respect to moving equipment, pinch points, and latent energy (e.g., being located or having body parts located within the swing radius of an excavator, between two sections of pipe being connected, below a piece of suspended equipment, or adjacent to a compressed air line).

5.1 Hazard Communication and Overall Site Information Program

The information in the JSAs and SDSs is made available to all employees and subcontractors who could be affected by it prior to the time they begin their work activities.

Modifications to JSAs are communicated during routine pre-work briefings, and periodically updated as needed in the HASP. SDSs will be maintained by the SHSO/SS for new chemicals brought on-site as needed. Copies of SDSs can be found in **Appendix B**.

5.2 Noise

Noise is associated with the operation of heavy equipment, power tools, pumps, and generators. Noise is also a potential hazard when working near operating equipment such as excavators, drill rigs or pole drivers. High noise (i.e., < 85 dBA) operations may be evaluated by the SHSO utilizing a type 2 handheld sound level meter (SLM) operating on the "A"-weighted scale with slow response because this scale most closely resembles human response to noise and complies with OSHA 29 CFR 1910.95. Hearing protection is required in areas with noise exposure greater than 85 dBA. Double hearing protection (ear plugs and earmuffs) should be donned in areas where the noise exposure is more than 95 dBA. Noise exposure will be controlled by hearing protection as described above or by maintaining set-backs from high-noise equipment, as warranted. Personnel handling heavy equipment and using power tools that produce noise levels exceeding those described levels above are required by OSHA 29 CFR 1910.95 to wear the appropriate Noise Reduction Rating (NRR) level of hearing protection. Appropriate hearing protection will be evaluated by the SHSO as necessary in consultation with the OHSM and CHSD.

5.3 Slip, Trip, and Fall Hazards

Slip, trip, and fall hazards may include, but are not limited to, general slip and trip hazards associated with uneven ground, possible debris, wet grass, and equipment. Prior to work, walking paths will be assessed for solid footings, any ground penetrations that may cause a tripping hazard will be appropriately marked, and other areas will be noted and discussed with the field team.

Personnel shall be aware of their surroundings and footings at all time, and all accommodations should be made for proper housekeeping and organized equipment placement at the Site, where possible, to help prevent any slip, trip, and fall-related incidents. All tools and materials should be appropriately stored when not in use and placed in appropriate storage containers.

5.4 Biological Hazards

Biological hazards that may potentially be present at a Site, include poisonous plants, insects (ticks, spiders, bees), animals (snakes, dogs), etc. Information on biological hazards can be found within Roux's Biological Hazard Awareness Management Program located within Roux's Corporate Health and Safety Manual. There is also potential for transmission and/or exposure to SARS-CoV-2, the virus that causes COVID-19. Prior to beginning work, on-Site protocols shall be established by the project team, including subcontractors, in accordance with federal, state, county, city, and/or other guidance, as applicable.

6. Emergency Response Plan

This emergency response plan details actions to be taken in the event of Site emergencies. The PM and SHSO is responsible for the implementation of emergency response procedures onsite. The SHSO/PM provides specific direction for emergency action based upon information available regarding the incident and response capabilities and initiates emergency procedures and notification of appropriate authorities. In the event of an emergency, Site personnel are evacuated and do not participate in emergency response activities, response is facilitated through external emergency services.

6.1 Emergency Response

The SHSO, after investigating the incident and relevant information, shall determine the level of response required for containment, rescue and medical care. Limited on-site emergency response activities could occur therefore the SHSO is responsible for notifying external emergency response agencies. The SHSO provides relevant information to the responding organizations, including, but not limited to, the hazards associated with the emergency incident, potential containment problems, and missing Site personnel.

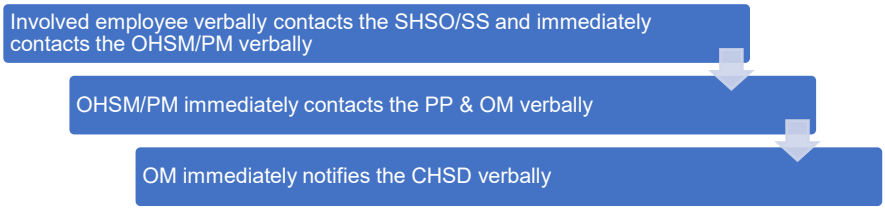
6.2 Emergency Alerting and Evacuation

If evacuation notice is given, Site workers leave the worksite, if possible, by way of the nearest exit. Appropriate primary and alternate evacuation routes and assembly areas have been identified and are shown on the Site Plan with Emergency Muster Area (**Figure 2**). The routes and assembly area will be determined by conditions at the time of the evacuation based on wind direction, the location of the hazard source, and other factors as determined by SHSO/PM.

Personnel exiting the Site gather at a designated assembly point. To determine that everyone has successfully exited the Site, personnel will be accounted for at the assembly point. If any worker cannot be accounted for, notification is given to the SHSO, PM, and any arriving response authorities so that appropriate action can be initiated. Subcontractors on this Site have coordinated their emergency response plans to ensure that these plans are compatible and potential emergencies are recognized, alarm systems are clearly understood, and evacuation routes are accessible to all personnel relying upon them.

6.3 Emergency Medical Treatment and First Aid

In the event of a work-related injury or illness, employees are required to follow the procedures outlined below. All work-place injury and illness situations require Roux's Project and Corporate Management Team to be notified when an injury/illness incident occurs, and communication with the contracted Occupational Health Care Management Provider, WorkCare, Inc., is initiated, as necessary. The Injury/Illness Notification Flowchart is provided below and within Roux's Incident Investigation and Reporting program included within Roux's Corporate Health and Safety Manual.



If on-Site personnel require any medical treatment, the following steps will be taken:

a. Notify Roux's Project and Corporate Management Team for any work-related injury and/or illness occurrence, and communicate with the contracted Occupational Health Care Management Provider, WorkCare, immediately following the notifications provided above.

b. Based on discussions with the Project Team, Corporate Management and the WorkCare evaluation, if medical attention beyond onsite first aid is warranted, transport the injured / ill person (IP) to the Urgent Care Center, or notify the Fire Department or Ambulance Emergency service and request an ambulance or transport the victim to the hospital, and continue communications with Corporate Management Team. An Urgent Care/Hospital Route map with location to CityMD Long Island City Urgent Care/Lenox Hill Hospital is included as **Figure 3**.

c. Decontaminate to the extent possible prior to administration of first aid or movement to medical or emergency facilities.

d. First aid medical support will be provided by onsite personnel trained and certified in First Aid, Cardio Pulmonary Resuscitation (CPR), Automatic External Defibrillation (AED), and Blood-Borne Pathogens (BBP) Awareness, until relieved by emergency medical services (EMS).

e. The SHSO and PM will perform a Loss Investigation (LI) and the Project Team will complete the final Loss Report. If a Roux employee is involved in a vehicular incident, the employee must also complete the Acord Automobile Loss Notice.

7. Environmental Conditions and Response

7.1 Adverse Weather Conditions

In the event of adverse weather conditions, the SHSO or project principal will determine if work can continue without jeopardizing the health and safety of field workers. Some of the items related to adverse weather conditions to be considered prior to determining if work should continue include:

- Potential for heat stress and heat-related injuries;
- Potential for cold stress and cold-related injuries;
- Treacherous weather-related conditions. If wind speed is greater than 15 mph averaged over a 15-minute period or wind gusts over 25 mph, earthmoving operations will be ceased;
- Limited visibility; and
- Electrical storm potential.

Site activities will be limited to daylight hours and acceptable weather conditions. Inclement working conditions may include heavy rain, fog, high winds, and lightning. The SHSO and/or PM shall observe daily weather reports and evacuate, if necessary, in case of inclement weather conditions.

7.2 Electrical Storm Guidelines

In the event that lightning and/or thunder are observed while working onsite, all onsite activities shall stop and personnel shall seek proper shelter (e.g., substantial building, enclosed vehicle, etc.). Work shall not resume until the threat of lighting has subsided and no lightning or thunder has been observed for 30 minutes. If the possibility of lightning is forecast for the day, advise the onsite personnel on the risks and proper procedure at the pre-work safety briefing. Continuously monitor for changing weather conditions and allow enough time to properly stop work if lightning is forecast.

7.3 Environmental Stressors, Heat Stress, Heat Exhaustion, and Heat Stroke

It is the employer's responsibility to monitor weather forecasts and ambient air temperatures, both prior to the work shift and during the shift. The National Oceanic and Atmospheric Administration records average minimum/maximum temperatures of 28 to 85 degrees Fahrenheit during the year in Long Island City, Queens, New York.

To prevent potential heat illness, the following strategies will be implemented:

- Adjusting personnel work/rest intervals;
- Monitoring for symptoms of heat illness;
- Providing shaded rest areas;
- Providing cool potable water so that each employee has access to at least one quart per hour for the entire shift, free of charge;
- Allowing for employees to acclimatize to the weather conditions and work demands;
- Observe workers during a heat wave (i.e., when the temperature is at least 80oF, and 10 degrees hotter than the average temperature of the five preceding days); and
- Implementing high heat procedures when the temperature reaches 95oF.

Roux's Heat Illness Prevention Plan is implemented when the when ambient temperatures exceed 80oF. Roux's Heat Illness Prevention Program can be found within **Appendix C**. Additional information regarding heat illnesses is provided below. This can include, but is not limited to, access to shade that is sufficient in size to fit all workers who are on break; a car with air conditioning is acceptable, too. Preventative cool-down breaks shall be allowed at any time, and anyone taking such a break will be monitored for heat illness symptoms and not required to return to work until all symptoms (if present) of heat illness have disappeared. If necessary, first aid will be offered, but if symptoms are severe, emergency response procedures will be implemented per Section 6.3. Anyone who has shown symptoms of severe heat illness will not be sent home without being offered first aid or medical treatment.

High heat procedures must be implemented when temperatures reach 95oF. These procedures include:

- Ensuring that effective communication by voice, observation, or electronic means is maintained so that employees at the work site can contact a supervisor when necessary. An electronic device, such as a cell phone or text messaging device, may be used for this purpose only if the reception in the area is reliable.
- Observing employees for alertness and signs or symptoms of heat illness. The employer shall ensure effective employee observation/monitoring by implementing one or more of the following:
    - Supervisor or designee observation of 20 or fewer employees;
    - Mandatory buddy system; and
    - Regular communication with sole employee such as by radio or cellular phone, or other effective means of observation.
- Designating one or more employees on each worksite as authorized to call for emergency medical services and allowing other employees to call for emergency services when no designated employee is available.
- Encouraging employees throughout the work shift to drink plenty of water.
- A review of the high heat procedures during the daily tailgate meeting and remind employees of their right to take a cool-down rest when necessary.

7.3.1 Heat Stress

Heat stress is the body's response to excessive heat and can be a significant potential hazard. The risk of heat stress can be increased with heavy physical activity and/or the use of personal protective equipment in hot, humid weather environments. There are also personal risk factors that can contribute to the risk of suffering from heat stress, such as obesity, water intake, alcohol and caffeine consumption, pregnancy, age, medication, etc. Heat illness includes heat cramps, heat exhaustion, heat syncope, and heat stroke.

7.3.2 Heat Cramps

Heat cramps may be brought on by prolonged exposure to heat. As an individual sweats, water and salts are lost by the body resulting in painful muscle cramps, typically in the legs.

First aid treatment includes, but is not limited to, shade, rest, and fluid replacement. Typically, the individual should recover within one-half hour while being monitored constantly. If the individual has not improved substantially within 30 minutes and the body temperature has not decreased, the individual should be transported to a hospital for medical attention.

Per Roux's Heat Illness Prevention Plan, employees shall have access to potable drinking water that is fresh, pure, suitably cool, free of charge and in sufficient quantities. Access to shade shall be present when temperatures exceed 80 degrees Fahrenheit and shall be available when temperatures do not exceed 80 degrees Fahrenheit.

7.3.3 Heat Exhaustion

Heat exhaustion may occur in an individual who has been exposed to excessive heat while working or exercising. The circulatory system of the individual fails as blood collects near the skin to rid the body of excess heat through transference. The signs and symptoms of heat exhaustion are as follows:

- Rapid and shallow breathing;
- Weak pulse;
- Cold and clammy skin with heavy perspiration;
- Skin appears pale;
- Fatigue and weakness;
- Dizziness; and
- Elevated body temperature.

First aid treatment includes, but is not limited to, cooling the victim, elevating the feet, and replacing fluids.

If the individual is not substantially improved within 30 minutes and the body temperature has not decreased, the individual should be transported to the hospital for medical attention.

7.3.4 Heat Stroke

Heat stroke occurs when an individual is exposed to excessive heat and stops sweating. This condition is classified as a MEDICAL EMERGENCY requiring immediate cooling of the victim and transport to a medical facility. The signs and symptoms of heat stroke are as follows:

- Dry, hot, red skin;
- Body temperature approaching or above 105oF;
- Confusion, altered mental state, slurred speech;
- Seizures;
- Large (dilated) pupils; and
- Loss of consciousness – the individual may go into a coma.

First aid treatment requires immediate cooling and transportation to a medical facility. Heat stress is a significant hazard if any type of protective equipment (semi-permeable or impermeable) that prevents evaporative cooling when worn in hot weather environments.

7.4 Cold Stress

Cold stress is a danger at low temperatures and when the wind-chill factor is low. Prevention of cold-related illnesses is a function of whole-body protection. Adequate insulating clothing must be used when the air temperature is below 60°F. A work/rest regimen will be initiated when ambient temperatures and protective

clothing cause a stressful situation. In addition, reduced work periods followed by rest in a warm area may be necessary in extreme conditions. The signs and symptoms of cold stress include the following:

- Severe shivering;
- Abnormal behavior;
- Slowing;
- Weakness;
- Stumbling or repeated falling;
- Inability to walk;
- Collapse; and/or
- Unconsciousness.

First aid requires removing the victim from the cold environment and seeking medical attention immediately. Also, prevent further body heat loss by covering the victim lightly with blankets. Do not cover the victim's face. If the victim is still conscious, administer hot drinks and encourage activity such as walking, wrapped in a blanket.

8. Safety Procedures

This section of the HASP presents the specific safety procedures to be implemented during Roux's activities at the Site in order to protect the health and safety of various on-site personnel. Minimum OSHA-mandated procedures are presented first, followed by client- and Site-specific procedures. Lastly, activity-specific procedures are discussed. These Site and activity-specific procedures supplement the general safety procedures included in Roux's Corporate Health and Safety Manual, which also must be followed in their entirely.

8.1 Training

At a minimum, Site personnel who will perform work in areas where there exists the potential for toxic exposure will be health and safety-trained prior to performing work onsite per OSHA 29 CFR 1910.120(e) and 29 CFR 1926.65(e). More specifically, all Roux, subcontractor, and other personnel engaged in sampling and remedial activities at the Site and who are exposed or potentially exposed to hazardous substances, health hazards, or safety hazards must have received at a minimum the 40 hour initial HAZWOPER training consistent with the requirements of 29CFR 1910.120(e)(3)(i) training and a minimum of 3 days' actual field experience under the direct supervision of a trained experienced supervisor, plus 8 hours of refresher training on an annual basis. Depending on tasks performed, less training may be permitted. Evidence of such training must be maintained at the Site at all times. Furthermore, all on-Site management and supervisory personnel directly responsible for or who supervise the employees engaged in Site remedial operations, must have received an additional 8 hours of specialized training at the time of job assignment on topics including, but not limited to, the employer's safety and health program and the associated employee training program, personal protective equipment program, spill containment program, and health hazard monitoring procedure and techniques, plus 8 hours of refresher training on an annual basis. Additionally, all workers who will be required to don a respirator will be properly trained on their employer's Respiratory Protection Program, which also includes being medically cleared to wear a respirator and passed a fit test, at least initially prior to use, and then annually thereafter in accordance with 29 CFR 1910.134, Respiratory Protection.

Roux personnel training records are maintained in a corporate database with records available upon request from either the OHSM/SHSO/CHSD or Human Resources Department.

8.2 Site-Specific Safety Briefings for Visitors

A site-specific briefing is provided to all site visitors who enter this site beyond the site entry point. For visitors, the site-specific briefing provides information about site hazards, the site lay-out including work zones and places of refuge, the emergency alarm system and emergency evacuation procedures, and other pertinent safety and health requirements as appropriate.

8.3 HASP Information and Site-Specific Briefings for Workers

Site personnel review this HASP and are provided a Site-specific tailgate briefing prior to the commencement of work to ensure employees are familiar with this HASP and the information and requirements it contains, as well as the relevant JSAs included in **Appendix A**. Additional briefings are provided as necessary to notify employees of any changes to this HASP as a result of information gathered during on-going Site characterization and analysis of changing conditions. Conditions for which we

schedule additional briefings include, but are not limited to: changes in site conditions, changes in the work schedule/plan, newly discovered hazards, and incidents occurring during Site work.

8.4 Medical Surveillance

The medical surveillance section of the Health and Safety Plan describes how worker health status is monitored at this site. Medical surveillance is used when there is the potential for worker exposure to hazardous substance at levels above OSHA Permissible Exposure Limits (PEL) or other published limits. The purpose of a medical surveillance program is to medically monitor worker health to ensure that personnel are not adversely affected by site hazards. The provisions for medical surveillance at this site are based on the site characterization and job hazard analysis found in Section 4 of this HASP and are consistent with OSHA requirements in 29 CFR 1910.120(f) as applicable.

8.4.1 Site Medical Surveillance Program

Medical surveillance requirements are based on a worker's potential for exposure as determined by the site characterization and job hazard analysis documented in Section 4 and JSAs within **Appendix A** of this HASP and in compliance with the requirements of 29 CFR 1910.120(f)(2). Based on site information and use of direct reading instruments, limited use of respirators (less than 30 days per year), and the absence of an employee-staffed HAZMAT team, a limited medical surveillance program is required and implemented at this site. The medical surveillance program provides that:

1. Workers assigned to tasks requiring the use of respirators receive medical examinations in accordance with 29 CFR 1910.134(e) to ensure they are physically capable to perform the work and use the equipment, and
2. If a worker is injured, becomes ill, or develops signs or symptoms of possible over-exposure to hazardous substance or health hazards, medical examinations are provided to that worker as soon as possible after the occurrence and as required by the attending physician.
3. These medical examinations and procedures are performed by or under the supervision of a licensed physician and are provided to workers free of cost, without loss of pay, and at a reasonable time and place. In addition, the need to implement a more comprehensive medical surveillance program will be re-evaluated after any apparent over-exposure.

8.4.2 Medical Recordkeeping Procedures

Medical recordkeeping procedures are consistent with the requirements of 29 CFR 1910.1020 and are described in the company's overall safety and health program. A copy of that program is available at our Islandia, New York office.

The following items are maintained in worker medical records:

- Respirator fit test and selection;
- Physician's medical opinion of fitness for duty (pre-placement, periodic, termination);
- Physician's medical opinion of fitness for respirator protection (pre-placement, periodic); and
- Exposure monitoring results.

8.4.3 Program Review

The medical program is reviewed to ensure its effectiveness. The Corporate Health and Safety Manager, in coordination with the Human Resources Director, is responsible for this review. At minimum, this review consists of:

- Review of accident and injury records and medical records to determine whether the causes of accidents and illness were promptly investigated and whether corrective measures were taken wherever possible;
- Evaluation of the appropriateness of required medical tests based on site exposures; and
- Review of emergency treatment procedures and emergency contacts list to ensure they were site specific, effective, and current.

8.5 Personnel Protection

Site safety and health hazards are eliminated or reduced to the greatest extent possible through engineering controls and work practices. Where hazards are still present, a combination of engineering controls, work practices and PPE are used to protect employees. Appropriate personal protective equipment (PPE) shall be worn by Site personnel when there is a potential exposure to chemical, biological or physical hazards (e.g., falling objects, flying particles, sharp edges, electricity, and noise), as determined by the SHSO. The level of personal protection, type and kind of equipment selected will depend on the hazardous conditions and in some cases cost, availability, compatibility with other equipment, and performance. An accurate assessment of all these factors will be made before work can be safely executed.

Roux maintains a comprehensive written PPE program that addresses proper PPE selection, use, maintenance, storage, fit and inspection. Roux's PPE program can be found within **Appendix D**. PPE to be used at the Site will meet the appropriate American National Standards Institute (ANSI) standards and the following OSHA (General/Construction Industry) standards for minimum PPE requirements.

The minimum level of PPE for entry onto the Site is Level D. The following equipment shall be worn:

- Work uniform (long pants, sleeved shirt);
- Hard hat;
- Steel or composite toe work boots (must comply with American Society for Testing and Materials [ASTM]) F 2412-05, Standard Test Methods for Foot Protection and ASTM F 2413-05, Standard Specification for Performance Requirements for Foot Protection);
- Safety Glasses (must comply with one of the following ANSI/ISEA Z87.1-2010, ANSI Z87.1-2003, ANSI Z87.1-2003);
- Boot Covers (as needed);
- Hearing protection (as needed);
- High visibility clothing (shirt/vest); and
- Hand protection (e.g., minimum cut resistance meeting ANSI 105-2000 Level 2).

Note that jewelry shall be removed or appropriately secured to prevent it from becoming caught in rotating equipment or unexpectedly snagged on a fixed object (e.g., wrist watches, bracelets, rings, chains and necklaces, open earrings). Do not wear loose clothing and all shoulder-length hair should be tied back.

Site specific PPE ensembles and materials are identified within task specific JSAs located within **Appendix A**, and any upgrades or downgrades of the level of protection (i.e., not specified in the JSA) must be approved by the PP and immediately communicated to all Roux personnel and subcontractors as applicable. PPE is used in accordance with manufacturer's recommendations.

8.5.1 Additional Personal Protection

As outlined above the minimum PPE for entry onto the Site is modified Level D. Outlined below are the requirements for Level C and B PPE.

EPA Level C Protection

Personal Protective Equipment:

- Full-face, air-purifying, cartridge-equipped respirator* (Mine Safety and Health Administration/ National Institute of Occupational Safety and Health [MSHA/ NIOSH] specifically approved for protection from organic vapors or particulates);
- Chemical-resistant clothing (coverall; hooded, two-piece chemical splash suit; chemical-resistant hood and apron; disposable chemical-resistant coveralls);
- Cotton coveralls;
- Gloves (outer), chemical-resistant, nitriles;
- Gloves (inner), cut resistant (with minimum blade cut-rating of ANSI 105-2000 Level 2);
- Boots (inner), chemical-resistant, steel (or composite) toe and including task-specific boot requirements as consistent with ASTM F2413-11;
- Boots (outer), chemical-resistant (disposable);
- Hard hat;
- Hearing protection (as needed); and
- Escape mask (as needed).

*Cartridges in use will be changed out based on their End of Service Life Indicator. If organic vapor (OV) cartridges are worn for benzene exposures above 1 ppm, the cartridge shall be removed from service at the end of the calculated service life or before the next shift, whichever is sooner. For other contaminants present a cartridge change out schedule will be provided based off 3M Select & Service Life Software or in consultation with the CHSD; worst case assumptions will be made to provide a conservative estimate on cartridge change out. If multiple contaminants are present at varying degrees, the work must cease operation, as cartridges in use may not cover all contaminants present. Screening will be carried out during work activities as specified in Section 8.6 Air Monitoring Plan. Organic vapors adsorbed on an organic vapor cartridge can migrate through the carbon bed without airflow. Desorption of the contaminant after partial use of the chemical cartridge can occur after a short period (hours) without use (e.g., overnight). This is most significant for the most volatile and poorly retained organic vapors (e.g., boiling point < 65 degrees Celsius [°C]). For organic vapors with a boiling point less than 65 degrees C, it is recommended that the organic vapor cartridge never be used longer than one shift, even if the estimated service life is greater than 8 hours, and the cartridge is used for only a short time during the shift.

Criteria for Selection-Level C:

Meeting any of these criteria warrants use of Level C protection.

- Airborne hazards are known to be present but are unlikely to exceed protection factors provided by air purifying respirators.
- Continuous total organic vapor readings in the breathing zone register between 50 ppm and to less than 100 ppm on a PID (such as a MiniRAE 3000 or other comparable instrument), and chemical specific (e.g., benzene/vinyl chloride/formaldehyde) readings utilizing colorimetric indicator tubes (e.g., Dräeger or Sensidyne) are undetectable.
- See the Combustible Gases table for decisions based on LEL within Section 8.5. Air Monitoring Plan.

- Measured air concentrations of known organic vapors will be reduced by the respirator to at or below one half of the PEL, and the individual and combined compound concentrations are within the service limit of the respirator cartridge.
- Atmospheric contaminant concentrations do not exceed Immediately Dangerous to Life and Health (IDLH) concentrations.
- Atmospheric contaminants, liquid splashes, or other direct contact will not adversely affect the small area of skin left unprotected by chemical-resistant clothing.
- Job functions have been determined not to require self-contained breathing apparatus.

Notes: 1. Benzene and or other specific compounds may also be monitored initially and periodically in the breathing zone utilizing activated sampling devices approved for use based on lower occupational exposure limits.

2. Modifications of Level C will be used to increase or decrease the level of skin protection during activities that increase or preclude, respectively, the degree of contact with chemical hazards. Modifications for increased protection may include, but are not limited to, the use of chemical resistant coveralls (e.g., Tyveks) and cut and chemical resistant gloves. Any modifications to Level C will require approval of the SHSO, and PM in consultation with the CHSD.

EPA Level B Protection (Contact the OHSM and/or CHSD)

Personal Protection Equipment:

- Pressure-demand, self-contained breathing apparatus (MSHA/NIOSH approved);
- Chemical-resistant clothing (overall and long-sleeved jacket; coveralls; hooded, one or two-piece chemical-splash suit; disposable chemical-resistant coveralls);
- Cotton coveralls;
- Chemical-resistant gloves (outer) nitriles;
- Gloves (inner), cut-resistant (with minimum blade cut rating of ANSI Level 2);
- Boots (inner), chemical-resistant, steel (or composite) toe, and task-specific boot requirements as consistent with ASTM F2413-11;
- Boots (outer), chemical-resistant, (disposable);
- Hard hat;
- Hearing protection (as needed); and
- 2-way radio communications (intrinsically safe).

Criteria for Selection-Level B:

- Meeting any one of these criteria warrants use of Level B protection.
- PID instrument (such as a MiniRAE 3000 or other comparable instrument) readings in the breathing zone are greater than 50 ppm and less than 100 ppm and benzene is detectable utilizing colorimetric indicator tubes (e.g., Dräeger or Sensidyne).
- Airborne hazards are known to be present but are not identified or quantified.
- The type(s) and atmospheric concentration(s) of toxic substance(s) have been identified and require the highest level of respiratory protection, but a lower level of skin and eye protection. These would-be atmospheres:
    - With IDLH concentrations;
    - Exceeding limits of protection afforded by a full-face, air-purifying respirator; or
    - Containing substances requiring supplied-air PPE, but substances and/or concentrations do not represent a serious skin hazard.

- The atmosphere contains less than 19.5% oxygen.

- Site operations make it highly unlikely that the small, unprotected area of the head or neck will be contacted by splashes of extremely hazardous substances.
- If work is performed in an enclosed space.

Note that jewelry shall be removed or appropriately secured to prevent it from becoming caught in rotating equipment or unexpectedly snagged on a fixed object. (e.g., wrist watches bracelets, rings, chains and necklaces, open earrings). Do not wear loose clothing and all shoulder length hair should be tied back.

Site-specific PPE ensembles and materials are identified within task specific JSAs located within **Appendix A**, and any upgrades or downgrades of the level of protection (i.e., not specified in the JSA) must be immediately communicated to all Roux personnel and subcontractors, as applicable. PPE is used in accordance with manufacturer's recommendations.

8.5.2 Hearing Conservation

Hearing protection is made available when noise exposures equal or exceed an 8-hour time-weighted average sound level of 85 dBA. Hearing protection is required when the 8-hour time weighted average sound level > 85 dBA, or when noise levels exceed 140 dBA at any point or exceeds 115 dBA for at least 15 minutes. Where noise exposure meets or exceeds this level, noise is listed as a physical hazard in the JSA for the tasks/operation, and hearing protection is included as one of the control measures (PPE).

8.6 Monitoring

An air monitoring program is important to the safety of on- and off-Site personnel, and the surrounding area. A preliminary survey, to establish background conditions in the immediate sampling area, may be made prior to the initiation of Site work including, but not limited to, monitoring wind direction (e.g., wind socks) and approximate temperature during all invasive Site activities. This survey will be conducted with the appropriate pre-calibrated air monitoring instrument(s), as warranted by the field activity. Once this survey has been complete, any changes in the type of PPE will be determined and relayed to those working on Site.

Community air monitoring plan (CAMP) will be implemented at the Site during all ground intrusive activities. CAMP is provided in **Appendix G**. CAMP results will be submitted to the NYSDEC and NYSDOH in daily reports while ground-intrusive and soil handing activities are taking place. Additionally, the NYSDEC and NYSDOH will be notified of monitoring results which exceed the action levels set by the CAMP, including the duration and actions taken in response to any such exceedance. These notifications will be provided to the NYSDEC and NYSDOH as soon as possible, within one business day.

Work zone air monitoring will be performed to verify that the proper level of PPE is used, and to determine if increased protection or work stoppage is required. The following equipment shall be used to monitor conditions:

- A Photoionization Detector (PID) with a lamp energy of 10.6 eV will be used to provide direct readings of organic vapor concentrations during intrusive activities to determine that personnel protection is adequate. Concentrations shall be recorded during intrusive activities with the potential to encounter contaminant vapors.
- Colorimetric detection tubes shall be used based on PID action levels to qualitatively identify possible contaminants as applicable.

- A pre-calibrated multi-gas meter with combustible Lower Explosive Limit (LEL), oxygen (O2), carbon monoxide (CO), and hydrogen sulfide (H2S) sensors shall be used to monitor the potential for oxygen-deficient atmospheres, explosive concentrations of organic vapors, and toxic gases during intrusive operations as applicable. The calibration for this device will be performed using a known gas composition calibration mixture.

Personal exposure monitoring utilizing activated charcoal tubes may be considered based on whether or not the area sample results are at or above half of the PEL. The decision to perform the monitoring will be made by, and under the control of, the CHSD.

Below are monitoring action levels for Site-specific chemicals of concern. In the event PID readings above the thresholds identified below are sustained for 5 minutes in the breathing zone, worker protection will require upgrading following notification to the OHSM and applicable parties.

8.6.1 Action Levels for Air Monitoring

PPE can remain at Level D if breathing zone VOC concentrations are less than 5 ppm and benzene is non detect. Personnel are required to evacuate the Site when breathing zone VOC readings exceed 25 ppm.

The following tables include summaries of the air monitoring, work practices, and action levels for the expected contaminants. The action levels to initiate testing with colorimetric tubes for airborne volatiles is 1 ppm (PID reading) and is based on the Permissible Exposure Limit (PEL) for benzene (1 ppm). The colorimetric tubes are used to confirm the presence or absence of specific constituents, and they do not provide a measured concentration.

PPE can remain at Level D if breathing zone VOC concentrations are less than 5 ppm and specific compounds, such as benzene, vinyl chloride, or formaldehyde, is non-detect. Personnel are required to evacuate the Site when breathing zone VOC readings exceed 25 ppm.

The following tables include summaries of the air monitoring, work practices, and action levels for the expected contaminants.

Air Monitoring Summary and Action Levels Organic Vapors	
PID Reading in Breathing Zone (ppm)	**Action**
0-1 ppm above background	Continue monitoring
>1-5 ppm sustained 60 seconds	Continue monitoring; if applicable initiate additional collection of benzene/vinyl chloride/formaldehyde using colorimetric tubes.
<5 ppm and no presence of benzene/vinyl chloride/formaldehyde	Continue Monitoring, ventilate space
≥ 5 ppm - ≤ 25 ppm and no presence of benzene/vinyl chloride/formaldehyde	Ventilate space until PID reads < 5 ppm. If < 5 ppm cannot be achieved, upgrade to Level C[1].
≥ 25 ppm	Ventilate space and evacuate area. Consult with CHSD.

Background concentrations should be established at the beginning of each work day. It may be necessary to re-establish background concentrations and ambient conditions vary through the day.

1 Measured air concentrations of known organic vapors will be reduced by the respirator to one half of the PEL or lower, and the individual and combined compound concentrations shall be within the service limit of the respirator cartridge.

Air Monitoring Summary and Action Levels Oxygen	
O_2 Reading in Breathing Zone (%)[1]	**Action**
20.9% O_2	Oxygen level normal
< 19.5% O_2	Oxygen deficient Interrupt task/Evacuate area
>23.5% O_2	Oxygen enriched Interrupt task/Evacuate area

1. Action levels based on USEPA Standard Operating Safety Guides; Table 5-1

Air Monitoring Summary and Action Levels Carbon Monoxide	
CO Reading in Breathing Zone (ppm)[1]	**Action**
<12.5 ppm	Inspect exhaust system for leaks or other sources of CO. Monitor initially and every 15 minutes during use of CO-generating equipment.
12.5-25 ppm	Ventilate area. Monitor continuously and record measurements. Contact PM.
>25 ppm	Cease Field Operations. Ventilate area.

1. Based upon the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV) of 25 ppm as an 8-hour time weighted average (TWA) and OSHA's Permissible Exposure Limit (PEL) of 50 ppm as an 8-hour TWA concentration.

Air Monitoring Summary and Action Levels Combustible Gases	
Lower Explosive Limit (LEL) Reading	**Action**
< 4% LEL	Site activities will continue with normal monitoring
4% – 20% LEL	Stop work until levels dissipate to <4% LEL
> 20% LEL	Potential explosion hazard. Halt all site activities, research source of release, aerate work area, suppress source.
Air Monitoring Summary and Action Levels Hydrogen Sulfide	
Hydrogen Sulfide (H_2S) Reading	**Action**
<10 ppm	Site activities will continue with normal monitoring
≥10 ppm	Stop work until levels dissipate to <10 ppm; use mechanical ventilation if possible. Consult with CHSD if unable to reduce concentrations below 10 ppm.

8.6.2 Air Monitoring Equipment and Calibration

A PID calibrated to an appropriate calibration mixture will be used to detect organic vapors in and around the work areas. Monitoring will be conducted in and around all work areas and at the workers breathing zone before activities commence to establish a background level, then at 15-minute intervals throughout

the day. All equipment will be calibrated according to the manufacturer's recommendation. A calibration log will be maintained and will include the name of the person who performed the calibration, the date and time calibrated, and the instrument reading at the time of calibration. A manual bellows pump or equivalent with colorimetric tubes for specific compounds will be utilized to determine the course of action related to upgrading or downgrading the level of respiratory protection, as applicable.

If air monitoring data indicate safe levels of potentially harmful constituents at consistent intervals (5-minute intervals), then monitoring can be conducted less frequently (every 30 minutes). This determination will be made by the onsite SHSO. Monitoring data, including background readings and calibration records, will be documented. Work to be performed on-Site will conform to Roux's Standard Operating Procedures (SOPs). Conformance with these guidelines as well as the guidelines described in this HASP will aid in mitigating the physical and chemical hazards mentioned throughout this HASP.

8.7 Tailgate Safety Meetings

A designated Site worker will provide daily safety briefings (e.g., tailgate meetings) including, but not limited to, the following scenarios:

- When new operations are to be conducted;
- Whenever changes in work practices must be implemented; and
- When new conditions are identified and/or information becomes available.

Daily safety briefings shall be recorded on the Roux Daily Tailgate Health and Safety Meeting Log/Daily Site Safety Checklist, and all completed forms will become a part of the project file.

8.8 Spill Containment

Spill containment equipment and procedures should, at a minimum, meet the requirements of the facility's Spill Prevention, Control and Countermeasure Plan, if applicable. Otherwise, spill containment equipment and procedures must be considered depending on the task, including, but not limited to, chemical/product transfer points and handling.

8.8.1 Initial Spill Notification and Response

Any worker who discovers a hazardous substance spill will immediately notify the SHSO. The worker will, to his/her best ability, report the hazardous substance involved, the location of the spill, the estimated quantity of material spilled, the direction/flow of the spill material, related fire/explosion incidents, and any associated injuries without compromising their own safety.

8.8.2 Spill Evaluation and Response

The SHSO is responsible for evaluating spills and determining the appropriate response. When this evaluation is being made, the spill area will be isolated and demarcated to the extent possible. If necessary to protect nearby community members, notification of the appropriate authorities is made by the PM as appropriate. On-Site response is limited to small spills (e.g., <10 gallons); large spills require external emergency responders who will be contacted by the SHSO.

8.9 Decontamination

The decontamination section of the HASP describes how personnel and equipment are decontaminated when they leave the Exclusion Zone. This section also describes how residual waste from decontamination processes is disposed. The site decontamination procedures are designed to achieve an orderly, controlled removal or neutralization of contaminants that may accumulate on personnel or equipment. These procedures minimize worker contact with contaminants and protect against the transfer of contaminants to clean areas of the site and off-site. They also extend the useful life of PPE by reducing the amount of time that contaminants contact and can permeate PPE surfaces. Decontamination is facilitated within the CRZ at this site, if applicable.

8.9.1 Decontamination Procedures for Personnel and PPE

The following are general decontamination procedures established and implemented at this site.

1. Decontamination is required for all workers exiting a contaminated area. Personnel may re-enter the SZ only after undergoing the decontamination procedures described below in the next section.
2. Protective clothing is decontaminated, cleaned, laundered, maintained and/or replaced as needed to ensure its effectiveness.
3. PPE used at this site that requires maintenance or parts replacement is decontaminated prior to repairs, or
4. PPE used at this site is decontaminated or prepared for disposal on the premises. Personnel who handle contaminated equipment have been trained in the proper means to do so to avoid hazardous exposure.
5. This site uses an off-site laundry for decontamination of PPE. The site has informed that facility of the hazards associated with contaminated PPE from this site.
6. The site requires and trains workers that if their permeable clothing is splashed or becomes wetted with a hazardous substance, they will immediately exit the work zone, perform applicable decontamination procedures, shower, and change into uncontaminated clothing.
7. Procedures for disposal of decontamination waste meet applicable local, State, and Federal regulations.

8.9.2 Decontamination Procedures for Equipment

All tools, equipment, and machinery from the EZ or CRZ are decontaminated in the CRZ prior to removal to the SZ. Equipment decontamination procedures are designed to minimize the potential for hazardous skin or inhalation exposure and to avoid cross-contamination and chemical incompatibilities.

General Equipment Decontamination Procedures:

1. Decontamination is required for all equipment exiting a contaminated area. Equipment may re-enter the SZ only after undergoing the equipment decontamination procedures.
2. Vehicles that travel regularly between the contaminated and clean areas of the site are carefully decontaminated each time they exit the EZ and the effectiveness of that decontamination is monitored to reduce the likelihood that contamination will be spread to other parts of the site.
3. Particular attention is given to decontaminating tires, scoops, and other parts of heavy equipment that are directly exposed to contaminants and contaminated soil.
4. Procedures for disposal of decontamination waste shall meet applicable local, State, and Federal regulations.

The following items may be used to decontaminate equipment:

- Fresh water rinse;
- Non-phosphorus detergent wash;
- Acetone rinse;
- Distilled water rinse; and
- A steam cleaner or pressure washer (heavy equipment only).

8.9.3 Monitoring the Effectiveness of Decontamination Procedures

Visual examination and sampling are used to evaluate the effectiveness of decontamination procedures. Visual examination is used to ensure that procedures are implemented as described and that they appear to control the spread of contaminants under changing site conditions. Visual examination is also used to inspect for signs of residual contamination or for contaminant permeation of PPE.

Personnel who work in contaminated areas of the site, either the Contamination Reduction Zone (CRZ) or the Exclusion Zone, are trained in the principles and practices of decontamination described in this section of the HASP and in related SOPs. If site procedures are changed as a result of inspection and monitoring, all affected employees are notified of these changes.

8.10 Confined Space Entry

Confined space entry is not anticipated to be performed at this Site.

The following is a list of the safety requirements for confined space entry at the Site:

- **ROUX PERSONNEL ARE NOT AUTHORIZED TO ENTER AN OSHA PERMIT REQUIRED CONFINED SPACE;**
- Currently the scope of work **DOES NOT** require personnel to enter permitted confined space for this project; and
- Any changes to the field activities that may necessitate confined space entry will be reported to the Project Principal and OHSM.

Confined space is defined as any space, depression, or enclosure that:

- Has limited opening for entry and egress;
- Is large enough for and employee to enter and perform assigned work; and
- Is not intended for continuous occupancy.

A permit required confined space is one that meets the definition of a confined space and has one or more of the following characteristics:

- May contain or produce life-threatening atmospheres due to oxygen deficiency the presence of toxic, flammable, or corrosive contaminants;
- Contains a material that has the potential for engulfment;
- Has an internal configuration that may cause an entrant to be trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a smaller cross-section; and
- Contains any other serious safety or health hazards.

Although Roux personnel will not perform confined space entry, it is expected that subcontractors performing cleaning and mitigation and/or remedial measures activities may be required to enter structures that are considered to be a permit required confined space. Permitting of the confined space as well as hazard mitigation for entry will be completed by the subcontractor in accordance with 29 CFR 1910.146 or 1926.1201-1213 and/or applicable local/client requirements.

8.11 Client and Site-Specific

In addition to the OSHA-specific procedures discussed above, there may be client and site-specific safety procedures that must be adhered to during the performance of remedial activities at the Site.

8.12 Unusual or Significant Risks

Field activities that appear to have unusual or significant risks that cannot be adequately managed with existing risk tools such as LPS, HASPs, traffic safety plans, work permits, design and O&M practices, equipment HAZOPS or other safety tools must be referred to the CHSD to help with the assessment and management of the associated potential safety risks. Examples include the use of explosives for demolition, use of firearms to control wildlife, rappelling, demolition over water, diving, etc.

8.13 Activity-Specific Hazards

In addition to the general hazards discussed above, there are activity-specific hazards associated with each work activity planned for the Site. An activity-specific JSA has been completed for each of the activities planned for the Site. JSAs are provided in **Appendix A**. In the event that new work activities or tasks are planned, JSAs will be developed and implemented prior to performing the new activities. In the absence of a JSA, the personnel performing work must prepare a field JSA and receive clearance from a designated competent safety official prior to performing any task with significant risk. In emergency situations where time is critical, Last Minute Risk Assessments (LMRAs) will be utilized to identify the task, associated hazards and mitigative actions to take. For lower risk activities (as deemed by the discretion of a Competent Person) where a JSA is determined to not be needed, the individual(s) conducting the activities must perform LMRAs prior to and during the work.

8.13.1 Electrical and Other Utility Assessment and Accommodations

Roux shall perform a site walk to identify any potential overhead electrical or utility lines. All applicable guidelines will be followed in the vicinity of overhead power and utility lines (see Section 8.13.3 below).

Roux has also reviewed previous Site Phase II Report prepared by others in which interior ground penetrating radar was completed at the Site in April 2024 to identify potential hazards; the review revealed no underground hazards are known to exist in the vicinity of the areas of the Site pertinent to this HASP.

8.13.2 Subsurface Work

Subsurface work activities will require adherence to Roux's Corporate Subsurface Utility Clearance Management program found within **Appendix E**.

8.13.2.1 Excavations and Trenching

Trenching and excavation work activities carried out by Roux and their subcontractors shall comply with applicable OSHA standards (i.e., 29 CFR 1926.650-652). Regional Notification Centers (i.e., Underground

Services Alert) shall be notified at least two working days prior to the start of any digging or excavation work per state requirements (i.e., 811-One Call). Personnel responsible for excavation activities will be trained in their job responsibilities. Additionally, for trenches 4 feet or deeper, where employees will enter, the trench needs to have a stairway, ladder or other safe means of egress, and located so that employees do not have to travel farther than 25 feet horizontally. Where employees will enter trenches greater than 5 feet deep, the trench must have some type of protective system or sloped sidewalls appropriately to prevent cave-ins.

The SHSO or other responsible Roux personnel will be present on-Site during all Roux contracted excavation and backfill operations and will supplement health and safety monitoring conducted by Subcontractor air quality screening to ensure that appropriate levels of protection and safety procedures are utilized. The proximity of chemical, water, sewer, and electrical lines will be identified by Roux and/or their subcontractor before any subsurface activity or sampling is attempted. Prior to any excavation activities, trees, shrubbery, and other objects that can potentially pose as a hazard during excavation should be supported or removed from the excavation area. The following safe work practices will be implemented during this task.

- The proximity of chemical, water, sewer, and electrical lines will be identified by a facility representative prior to beginning any subsurface activity.
- At the start of every day, a competent person will inspect excavations to evaluate if the area is stable and safe to enter. Inspections will be conducted as needed throughout the excavation operations. If deemed necessary, a competent person may also conduct inspections after rainfall or any other event that can potentially affect the integrity of the excavation. Employees will not enter excavations where water has accumulated until protective measures have been implemented.
- Prior to entering excavations greater than 4 feet in depth, air monitoring for oxygen and hazardous atmospheres must be conducted to assure atmospheric conditions are within normal levels described in Section 8.6. Continuous air monitoring with a standard multi-gas detector (O2, LEL%, CO, H2S) shall be used during the course of work within an excavation; if action limits are reached workers shall safely exit the excavation. Upgrades to worker protection should be evaluated with the SHSO and PP in consultation with the CHSD. Emergency rescue equipment, such as breathing apparatuses and safety harnesses connected to an extraction device, will be readily available in the event of hazardous atmospheric conditions.
- While earthmoving, stay out of the excavator's delineated heavy equipment exclusion zone and away from the excavation sides where there is potential for cave in (within excavations that are 6 feet or more in depth, a delineated perimeter 6 feet away from the excavated edge is required).
- During loading and unloading operations, stand away from haul trucks and other vehicles to avoid contact with any falling loads.
- Traffic cones, caution tape, or other barriers will be set up around the perimeter of the excavation when employees are working along the excavation edge and for any excavation that will be left open overnight or unattended for more than two days.

Maximum Allowable Slopes

Soil or Rock Type	Maximum Allowable Slopes (H:V)[1] for Excavations Less Than 20 Feet Deep[3]
Stable Rock	Vertical (90°)
Type A[2]	$^{3}/_{4}$: 1 (53°)

Maximum Allowable Slopes

Soil or Rock Type	Maximum Allowable Slopes (H:V)[1] for Excavations Less Than 20 Feet Deep[3]
Type B	1 : 1 (45°)
Type C	1 1/2 : 1 (34°)

29 CFR 1926 Subpart P Appendix B Sloping and Benching Table B-1

Notes:

[1] Numbers shown in parentheses next to maximum allowable slopes are angles expressed in degrees from the horizontal. Angles have been rounded off.

[2] A short-term maximum allowable slope of 1/2H : 1V (63°) is allowed in excavations in Type A soil that are 12 feet (3.67 meters) or less in depth. Short-term maximum allowable slopes for excavations greater than 12 feet (3.67 meters) in depth shall be 3/4H : 1V (53°).

[3] Sloping or benching for excavations greater than 20 feet deep shall be designed and stamped by a registered professional engineer.

Proper stockpiling (i.e., 2 feet minimum distance from the excavation edge), containment, transport, storage, and disposal practices will be utilized and is dependent upon the potential type and amount of waste generated during operations. The location of safety equipment and evacuation procedures will be established prior to initiation of operations according to this HASP.

8.13.3 Heavy Equipment

Use of heavy equipment at the Site will require adherence to Roux's Corporate Heavy Equipment Exclusion Zone Management Program found within **Appendix F**. Additionally, operation of the drill rig/other heavy equipment will maintain clearances from overhead power lines in accordance with 29 CFR 1926.1408 Table A Minimum Clearance Distances provided below.

Minimum Required Clearances for Energized Overhead Power Lines

Nominal System Voltage of Power Line (K V)	Minimum Required Clearance (feet)
0-50	10
51-100	12
101-200	15
201-300	20
301-500	25
501-750	35
751-1000	45

1 kilovolt (KV) = 1,000 volts

8.14 Traffic Control

If Site operations encroach upon public streets or highways and a hazard exists to Site personnel because of traffic conditions, a traffic control plan will be implemented in accordance with the United States Department of Transportation's (DOT's) "Manual on Uniform Traffic Control Devices."

8.15 Sanitation

Sanitation facilities will be provided in accordance with the sanitation standards (29 CFR 1910.141, 29 CFR 1926.51 and 29 CFR 1928.110). Sanitation facilities will be maintained and kept in good conditions at all times.

9. Field Team Review

Each person performing work at or visiting this site shall sign this section after site-specific training is completed and before being permitted to access the CRZ or Exclusion Zone.

I have read and understand this Site-Specific Health and Safety Plan. I will comply with the provision contained therein.

Site/Project: Broad Hollow Road and E Carmans Road, East Farmingdale, NY

Name & Company	Signature	Date

10. Approvals

By their signature, the undersigned certify that this HASP is approved and will be utilized at the 48-55 36th Street Site.

Marilyn Villacres – Site Health and Safety Officer	Date
Nevin Pahlad – Office Health and Safety Manager	Date
David Kaiser – Project Manager	Date
Jeff Wills – Project Principal	Date

TABLES

1. Toxicological Properties of Hazardous Substances Present at the Site

Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at the Site.

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
ORGANOCHLORINE PESTICIDES (OCP)									
DDT	50-29-3	TWA 1 mg/m3	TWA 0.5 mg/m3	TWA 1 mg/m3	500 mg/m3	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin; paresthesia tongue, lips, face; tremor; anxiety, dizziness, confusion, malaise (vague feeling of discomfort), headache, lassitude (weakness, exhaustion); convulsions; paresis hands; vomiting; [potential occupational carcinogen]	Eyes, skin, central nervous system, kidneys, liver, peripheral nervous system	White, odorless and tasteless, very stable, water-insoluble, synthetic BP: 260°F Fl.Pt. = 162-171°F LEL: NA UEL: NA
Aldrin	309-00-2	TWA 0.1 mg/m3	TWA 0.25 mg/m3	TWA 0.25 mg/m3	25 mg/m3	Inhalation, ingestion, skin and/or eye contact	headache, dizziness; nausea, vomiting, malaise (vague feeling of discomfort); myoclonic jerks of limbs; clonic, tonic convulsions; coma; hematuria (blood in the urine), azotemia; [potential occupational carcinogen]	Developmemntal, Endocrine, Liver, Immune System, Nervous System,	Colorless to dark-brown crystalline solid with a mild chemical odor. BP: 293°F Fl.Pt. = 150°F LEL: NA UEL: NA
Lindane (gamma-BHC)	58-89-9	TWA 0.5 mg/m3	TWA 0.5 mg/m3	TWA 0.5 mg/m3	50 mg/m3	Inhalation, ingestion, skin and/or eye contact	irritation eyes, skin, nose, throat; headache; nausea; clonic convulsions; resp difficulty; cyanosis; aplastic anemia; muscle spasm; In Animals: liver, kidney damage	Eyes, skin, respiratory system, central nervous system, blood, liver, kidneys	White to yellow, crystalline powder with a slight, musty odor. BP: 614°F Fl.Pt. = 150°F LEL: NA UEL: NA
Dieldrin	860-57-1□	TWA 0.1 mg/m3	TWA 0.25 mg/m3	TWA 0.25 mg/m3	25 mg/m3	Inhalation, ingestion, skin and/or eye contact	headache, dizziness; nausea, vomiting, malaise (vague feeling of discomfort), sweating; myoclonic limb jerks; clonic, tonic convulsions; coma; ; In Animals: liver, kidney damage [potential occupational carcinogen]	Developmemntal, Endocrine, Liver, Immune System, Nervous System,	Colorless to light-tan crystals with a mild, chemical odor. BP: NA (Decomposes) Fl.Pt. = NA LEL: NA UEL: NA
VOLATILE ORGANIC COMPOUNDS (VOCs)									
1,1,1-Trichloroethane	71-55-6	TWA 350 ppm STEL 450 ppm	C 350 ppm (1900 mg/m^3) [15-minute]	TWA 350 ppm (1900 mg/m^3)	700 ppm	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin; headache, lassitude (weakness, exhaustion), central nervous system depression, poor equilibrium; dermatitis; cardiac arrhythmias; liver damage	Eyes, skin, central nervous system, cardiovascular system, liver	Colorless liquid with a mild, chloroform-like odor. BP: 165°F Fl.Pt. = NA LEL: 7.5% UEL: 12.5% Combustible Liquid, but burns with difficulty
1,1,2,2-Tetrachloroethane	79-34-5	TWA 1 ppm [skin]	Ca TWA 1 ppm (7 mg/m^3) [skin]	TWA 5 ppm (35 mg/m^3) [skin]	Ca [100 ppm]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Nausea, vomiting, abdominal pain; tremor fingers; jaundice, hepatitis, liver tenderness; dermatitis; leukocytosis (increased blood leukocytes); kidney damage; [potential occupational carcinogen]	Skin, liver, kidneys, central nervous system, gastrointestinal tract	Colorless to pale-yellow liquid with a pungent, chloroform-like odor BP: 296°F Fl.Pt. = NA LEL: NA UEL: NA Noncombustible Liquid
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	TWA 1000 ppm STEL 1250 ppm	TWA 1000 ppm (7600 mg/m3) ST 1250 ppm (9500 mg/m3)	TWA 1000 ppm (7600 mg/m3)	2000 ppm	Inhalation, ingestion, skin and/or eye contact	Irritation skin, throat, drowsiness, dermatitis; central nervous system depression; In Animals: cardiac arrhythmias, narcosis	Skin, heart, central nervous system, cardiovascular system	Colorless to water-white liquid with an odor like carbon tetrachloride at high concentrations. [Note: A gas above 118°F.] BP: 118°F Fl.Pt. = NA LEL: NA UEL: NA
1,1,2-Trichloroethane	79-00-5	TWA 10 ppm [skin]	Ca TWA 10 ppm (45 mg/m3) [skin]	TWA 10 ppm (45 mg/m3) [skin]	Ca [100 ppm]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, nose; central nervous system depression; liver, kidney damage; dermatitis; [potential occupational carcinogen]	Eyes, respiratory system, central nervous system, liver, kidneys	Colorless liquid with a sweet, chloroform-like odor BP: 237°F Fl.Pt. = NA LEL: 6% UEL: 15.5% Combustible Liquid, forms dense soot
1,1-Dichloroethane	75-34-3	TWA 100 ppm	TWA 100 ppm (400 mg/m^3)	TWA 100 ppm (400 mg/m^3)	3,000 ppm	Inhalation, ingestion, skin and/or eye contact	Irritation skin; central nervous system depression; liver, kidney, lung damage	Skin, liver, kidneys, lungs, central nervous system	Colorless, oily liquid with a chloroform-like odor. BP: 135°F Fl.Pt. = 2°F LEL: 5.4% UEL: 11.4% Class IB Flammable Liquid Fl.P. below 73°F and BP at or above 100°F.

Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at the Site.

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
1,1-Dichloroethene	75-35-4	TWA 5 ppm	Ca	None	Ca	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, throat; dizziness, headache, nausea, dyspnea (breathing difficulty); liver, kidney disturbance; pneumonitis; [potential occupational carcinogen]	Eyes, skin, respiratory system, central nervous system, liver, kidneys	Colorless liquid or gas (above 89°F) with a mild, sweet, chloroform-like odor BP: 89°F Fl.Pt. = -2°F LEL: 6.5% UEL: 15.5% Class IA Flammable Liquid: Fl.P. below 73°F and BP below 100°F
1,2,3-Trichlorobenzene	87-61-6	Cameo Chemicals Source https://cameochemicals.noaa.gov/chemical/10051	NA	NA	NA	Inhalation, skin absorption, ingestion, skin and/or eye contact	Inhalation may cause irritation of respiratory tract. Irritating to the eyes. May redden skin on contact. Ingestion may cause liver damage.	Skin, eyes, respiratory tract, liver	A white solid with a sharp chlorobenzene odor. Insoluble in water and denser than water. Hence sinks in water Fl.Pt. = 234.9°F
1,2,4-Trichlorobenzene	120-82-1	C 5 ppm	C 5 ppm (40 mg/m3)	None	N.D.	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation eyes, skin, mucous membrane; In Animals: liver, kidney damage; possible teratogenic effects	Eyes, skin, respiratory system, liver, reproductive system	Colorless liquid or crystalline solid (below 63°F) with an aromatic odor BP: 416°F Fl.Pt. = 222°F LEL (302°F): 2.5% UEL (302°F): 6.6% Class IIIB Combustible Liquid: Fl.P. at or above 200°F. Combustible Solid
1,2-Dibromo-3-chloropropane	96-12-8	NA	Ca	TWA 0.001 ppm	Ca	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat; drowsiness; nausea, vomiting; pulmonary edema; liver, kidney injury; sterility; [potential occupational carcinogen]	Eyes, skin, respiratory system, central nervous system, liver, kidneys, spleen, reproductive system, digestive system	Dense yellow or amber liquid with a pungent odor at high concentrations. [pesticide] [Note: A solid below 43°F.] BP: 384°F Fl.Pt. = (oc) 170°F LEL: NA UEL: NA Class IIIA Combustible Liquid: Fl.P. at or above 140°F and below 200°F.
1,2-Dibromoethane	106-93-4	None listed Skin	Ca TWA 0.045 ppm C 0.13 ppm [15-minute]	TWA 20 ppm C 30 ppm 50 ppm [5-minute maximum peak]	Ca [100 ppm]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, respiratory system; dermatitis with vesiculation; liver, heart, spleen, kidney damage; reproductive effects; [potential occupational carcinogen]	Eyes, skin, respiratory system, liver, kidneys, reproductive system	Colorless liquid or solid (below 50°F) with a sweet odor. [fumigant] BP: 268°F Fl.Pt. = 50°F LEL: NA UEL: NA Noncombustible Liquid
1,2-Dichlorobenzene	95-50-1	TWA 25 ppm STEL 50 ppm	C 50 ppm (300 mg/m3)	C 50 ppm (300 mg/m3)	200 ppm	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, nose; liver, kidney damage; skin blisters	Eyes, skin, respiratory system, liver, kidneys	Colorless to pale-yellow liquid with a pleasant, aromatic odor. [herbicide] BP: 357°F Fl.Pt. = 1°F LEL: 2.2% UEL: 9.2% Class IIIA Combustible Liquid: Fl.P. at or above 140°F and below 200°F.
1,2-Dichloroethane	107-06-2	TWA 10 ppm	Ca TWA 1 ppm (4 mg/m3) ST 2 ppm (8 mg/m3)	TWA 50 ppm C 100 ppm 200 ppm [5-minute maximum peak in any 3 hours]	Ca [50 ppm]	Inhalation, ingestion, skin absorption, skin and/or eye contact	Irritation eyes, corneal opacity; central nervous system depression; nausea, vomiting; dermatitis; liver, kidney, cardiovascular system damage; [potential occupational carcinogen]	Eyes, skin, kidneys, liver, central nervous system, cardiovascular system	Colorless liquid with a pleasant, chloroform-like odor. [Note: Decomposes slowly, becomes acidic & darkens in color.] BP: 182°F Fl.Pt. = 56°F LEL: 6.2% UEL: 16% Class IB Flammable Liquid Fl.P. below 73°F and BP at or above 100°F.
1,2-Dichloropropane	78-87-5	TWA 10 ppm Dermal Sensitizer (DSEN)	Ca	TWA 75 ppm (350 mg/m3)	Ca [400 ppm]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, respiratory system; drowsiness, dizziness; liver, kidney damage; In Animals: central nervous system depression; [potential occupational carcinogen]	Eyes, skin, respiratory system, liver, kidneys, central nervous system	Colorless liquid with a chloroform-like odor. [pesticide] BP: 206°F Fl.Pt. = 60°F LEL: 3.4% UEL: 14.5% Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.
1,3-Dichlorobenzene	541-73-1	https://cameochemicals.noaa.gov/chemical/8514				Inhalation, skin absorption, ingestion, skin and/or eye contact	INHALATION: Causes headache, drousiness, unsteadiness. Irritating to mucous membranes. EYES: Severe irritation. SKIN: Severe irritation. INGESTION: Irritation of gastric mucosa, nausea, vomiting, diarrhea, abdominal cramps and cyanosis.		Colorless liquid. Sinks in water. BP: 343°F Fl.Pt. = 146°F LEL: 2.02% UEL: 9.2%
1,4-Dichlorobenzene	106-46-7	TWA 10 ppm	Ca	TWA 75 ppm (450 mg/m3)	Ca [150 ppm]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Eye irritation, swelling periorbital (situated around the eye); profuse rhinitis; headache, anorexia, nausea, vomiting; weight loss, jaundice, cirrhosis; In Animals: liver, kidney injury; [potential occupational carcinogen]	Liver, respiratory system, eyes, kidneys, skin	Colorless or white crystalline solid with a mothball-like odor. [insecticide] BP: 345°F Fl.Pt. = 150°F LEL: 2.5% UEL: NA Combustible Solid, but may take some effort to ignite.

Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at the Site.

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
1,4-Dioxane	123-91-1	TWA 20 ppm [skin]	Ca C 1 ppm (3.6 mg/m3) [30-minute]	TWA 100 ppm (360 mg/m3) [skin]	Ca [500 ppm]	Inhalation, skin absorption, ingestion, skin and/or eye contact	irritation eyes, skin, nose, throat; drowsiness, headache; nausea, vomiting; liver damage; kidney failure; [potential occupational carcinogen]	Eyes, skin, respiratory system, liver, kidneys	Colorless liquid or solid (below 53°F) with a mild, ether-like odor. BP: 214°F Fl.Pt. = 55°F LEL: 2.0% UEL: 22% Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F
2-Butanone	78-93-3	TWA 200 ppm STEL 300 ppm	TWA 200 ppm (590 mg/m3) ST 300 ppm (885 mg/m3)	TWA 200 ppm (590 mg/m3)	3000 ppm	inhalation, ingestion, skin and/or eye contact	irritation eyes, skin, nose; headache; dizziness; vomiting; dermatitis	Eyes, skin, respiratory system, central nervous system	Colorless liquid with a moderately sharp, fragrant, mint- or acetone-like odor BP: 175°F Fl.Pt. = 16°F LEL (200°F): 1.4% UEL (200°F): 11.4% Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F
2-Hexanone	591-78-6	TWA 5 ppm STEL 10 ppm [skin]	TWA 1 ppm (4 mg/m3)	TWA 100 ppm (410 mg/m3)	1600 ppm	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, nose; peripheral neuropathy: lassitude (weakness, exhaustion), paresthesia; dermatitis; headache, drowsiness	Eyes, skin, respiratory system, central nervous system, peripheral nervous system	Colorless liquid with an acetone-like odor BP: 262°F Fl.Pt. = 77°F LEL: NA UEL: 8.0% Class IC Flammable Liquid: Fl.P. at or above 73°F and below 100°F
4-Methyl-2-pentanone	108-10-1	TWA 20 ppm STEL 75 ppm	TWA 50 ppm (205 mg/m3) ST 75 ppm (300 mg/m3)	TWA 100 ppm (410 mg/m3)	500 ppm	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, mucous membrane; headache, narcosis, coma; dermatitis; In Animals: liver, kidney damage	Eyes, skin, respiratory system, central nervous system, liver, kidneys	Colorless liquid with a pleasant odor BP: 242°F Fl.Pt. = 64°F LEL (200°F): 1.2% UEL (200°F): 8.0% Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F
Acetone	67-64-1	TWA 250 ppm STEL 500 ppm	TWA 250 ppm (590 mg/m^3)	TWA 1000 ppm (2400 mg/m^3)	2500 ppm [10% LEL]	Inhalation, ingestion, skin and/or eye contact	irritation eyes, nose, throat; headache, dizziness, central nervous system depression; dermatitis	Eyes, skin, respiratory system, central nervous system	Colorless liquid with a fragrant, mint-like odor BP: 133°F Fl.Pt. = 0°F LEL: 12.8% UEL: 2.5% Class IB Flammable liquid: Fl.P. below 73°F and BP at or above 100°F.
Benzene	71-43-2	TWA 0.5 ppm STEL 2.5 ppm	Ca TWA 0.1 ppm ST 1 ppm	TWA 1 ppm ST 5 ppm	Ca [500 ppm]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, respiratory system; dizziness; headache, nausea, staggered gait; anorexia, lassitude (weakness, exhaustion); dermatitis; bone marrow depression; [potential occupational carcinogen]	Eyes, skin, respiratory system, blood, central nervous system, bone marrow	Colorless to light yellow liquid with an aromatic odor [Note: Solid below 42 °F] BP: 176°F Fl.Pt. = 12°F LEL: 1.2% UEL: 7.8% Class IB Flammable liquid. Fl.P. below 73°F and BP at or above 100°F.
Bromochloromethane	74-97-5	TWA 200 ppm	TWA 200 ppm (1050 mg/m3)	TWA 200 ppm (1050 mg/m3)	2000 ppm	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, throat; confusion, dizziness, central nervous system depression; pulmonary edema	Eyes, skin, respiratory system, liver, kidneys, central nervous system	Colorless to pale-yellow liquid with a chloroform-like odor. [Note: May be used as a fire extinguishing agent.] BP: 155°F Fl.Pt. = NA LEL: NA UEL: NA Noncombustible Liquid
Bromodichloromethane	75-27-4	https://cameochemicals.noaa.gov/chemical/16064				Inhalation, ingestion, skin and/or eye contact	Symptoms of exposure to this compound may include irritation of the skin, eyes, mucous membranes and respiratory tract. It may also cause narcosis. Other symptoms may include nausea, dizziness and headache.	Liver and kidney damage. Central nervous system effects may also occur.	Clear colorless liquid BP: 189°F Fl.Pt. = NA LEL: NA UEL: NA
Bromoform	75-25-2	TWA 0.5 ppm	TWA 0.5 ppm (5 mg/m3) [skin]	TWA 0.5 ppm (5 mg/m3) [skin]	850 ppm	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, respiratory system; central nervous system depression; liver, kidney damage	Eyes, skin, respiratory system, central nervous system, liver, kidneys	Colorless to yellow liquid with a chloroform-like odor. [Note: A solid below 47°F.] BP: 301°F Fl.Pt. = NA LEL: NA UEL: NA Noncombustible Liquid
Bromomethane	74-83-9	TWA 1 ppm [skin]	Ca	C 20 ppm (80 mg/m3) [skin]	Ca [250 ppm]	Inhalation, skin absorption (liquid), skin and/or eye contact (liquid)	Irritation eyes, skin, respiratory system; muscle weak, incoordination, visual disturbance, dizziness; nausea, vomiting, headache; malaise (vague feeling of discomfort); hand tremor; convulsions; dyspnea (breathing difficulty); skin vesiculation; liquid: frostbite; [potential occupational carcinogen]	Eyes, skin, respiratory system, central nervous system	Colorless gas with a chloroform-like odor at high concentrations. [Note: A liquid below 38°F. Shipped as a liquefied compressed gas.] BP: 38°F Fl.Pt. = NA (Gas) LEL: 10% UEL: 16.0% Flammable Gas, but only in presence of a high energy ignition source.

Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at the Site.

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Carbon disulfide	75-15-0	TWA 1 ppm [skin]	TWA 1 ppm (3 mg/m3) ST 10 ppm (30 mg/m3) [skin]	TWA 20 ppm C 30 ppm 100 ppm (30-minute maximum peak)	500 ppm	Inhalation, skin absorption, ingestion, skin and/or eye contact	Dizziness, headache, poor sleep, lassitude (weakness, exhaustion), anxiety, anorexia, weight loss; psychosis; polyneuropathy; Parkinson-like syndrome; ocular changes; coronary heart disease; gastritis; kidney, liver injury; eye, skin burns; dermatitis; reproductive effects	Central nervous system, peripheral nervous system, cardiovascular system, eyes, kidneys, liver, skin, reproductive system	Colorless to faint-yellow liquid with a sweet ether-like odor. [Note: Reagent grades are foul smelling.] BP: 116°F Fl.Pt. = -22°F LEL: 1.3% UEL: 50.0% Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.
Carbon tetrachloride	56-23-5	TWA 5 ppm STEL 10 ppm [skin]	Ca ST 2 ppm (12.6 mg/m3) [60-minute]	TWA 10 ppm C 25 ppm 200 ppm (5-minute maximum peak in any 4 hours)	Ca [200 ppm]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; central nervous system depression; nausea, vomiting; liver, kidney injury; drowsiness, dizziness, incoordination; [potential occupational carcinogen]	Central nervous system, eyes, lungs, liver, kidneys, skin	Colorless liquid with a characteristic ether-like odor BP: 170°F Fl.Pt. = NA LEL: NA UEL: NA Noncombustible Liquid
Chlorobenzene	108-90-7	TWA 10 ppm	NA	TWA 75 ppm (350 mg/m3)	1000 ppm	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose; drowsiness, incoordination; central nervous system depression; In Animals: liver, lung, kidney injury	Eyes, skin, respiratory system, central nervous system, liver	Colorless liquid with an almond-like odor BP: 270°F Fl.Pt. = 82°F LEL: 1.3% UEL: 9.6% Class IC Flammable Liquid: Fl.P. at or above 73°F and below 100°F.
Chloroethane	75-00-3	TWA 100 ppm [skin]	Handle with caution in the workplace	TWA 1000 ppm (2600 mg/m3)	3800 ppm [10%LEL]	Inhalation, skin absorption (liquid), ingestion (liquid), skin and/or eye contact	Incoordination, inebriation; abdominal cramps; cardiac arrhythmias, cardiac arrest; liver, kidney damage	Liver, kidneys, respiratory system, cardiovascular system, central nervous system	Colorless gas or liquid (below 54°F) with a pungent, ether-like odor. [Note: Shipped as a liquefied compressed gas.] BP: 54°F Fl.Pt. = NA (gas), -58°F (liquid) LEL: 3.8% UEL: 15.4% Flammable Gas
Chloroform	67-66-3	TWA 10 ppm	Ca ST 2 ppm (9.78 mg/m3) [60-minute]	C 50 ppm (240 mg/m3)	Ca [500 ppm]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; dizziness, mental dullness, nausea, confusion; headache, lassitude (weakness, exhaustion); anesthesia; enlarged liver; [potential occupational carcinogen]	Liver, kidneys, heart, eyes, skin, central nervous system	Colorless liquid with a pleasant odor BP: 143°F Fl.Pt. = -82°F LEL: NA UEL: NA Noncombustible Liquid
Chloromethane	74-87-3	TWA 50 ppm STEL 100 ppm	Ca	TWA 100 ppm C 200 ppm 300 ppm (5-minute maximum peak in any 3 hours)	Ca [2000 ppm]	Inhalation, skin and/or eye contact (liquid)	Dizziness, nausea, vomiting; visual disturbance, stagger, slurred speech, convulsions, coma; liver, kidney damage; liquid: frostbite; reproductive, teratogenic effects; [potential occupational carcinogen]	Central nervous system, liver, kidneys, reproductive system	Colorless gas with a faint, sweet odor which is not noticeable at dangerous concentrations. [Note: Shipped as a liquefied compressed gas.] BP: -12°F Fl.Pt. = NA (Gas) LEL: 8.1% UEL: 17.4% Flammable Gas
cis-1,2-Dichloroethene	156-59-2	TWA 200 ppm (All isomers)	TWA 200 ppm (790 mg/m3)	TWA 200 ppm (790 mg/m3)	1000 ppm	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, respiratory system; central nervous system depression	Eyes, respiratory system, central nervous system	Colorless liquid (usually a mixture of the cis & trans isomers) with a slightly acrid, chloroform-like odor. BP: 118-140°F Fl.Pt. = 36-39°F LEL: 5.6% UEL: 12.8% Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F
cis-1,3-Dichloropropene	10061-01-5	https://cameochemicals.noaa.gov/chemical/20168				Inhalation, ingestion, skin and/or eye contact	Symptoms of exposure to this compound may include local irritation of the eyes skin and respiratory tract; dermatitis, gasping, coughing, substernal pain, extreme respiratory distress, lacrimation, central nervous system depression, skin irritation, acute gastrointestinal distress with pulmonary congestion and edema. It also may cause injury to the liver, kidneys and heart.	Skin, eyes, mucous membranes, liver, kidney, heart	Colorless to amber liquid with a sweetish odor. BP: 219.7°F Fl.Pt. = NA LEL: NA UEL: NA
Cyclohexane	110-82-7	TWA 100 ppm	TWA 300 ppm (1050 mg/m3)	TWA 300 ppm (1050 mg/m3)	1300 ppm [10%LEL]	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, respiratory system; drowsiness; dermatitis; narcosis, coma	Eyes, skin, respiratory system, central nervous system	Colorless liquid with a sweet, chloroform-like odor. [Note: A solid below 44°F.] BP: 177°F Fl.Pt. = 0°F LEL: 1.3% UEL: 8.0% Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.
Dibromochloromethane	124-48-1	https://cameochemicals.noaa.gov/chemical/16183				Inhalation, ingestion, skin and/or eye contact	Symptoms of exposure to this compound may include irritation of the skin, eyes, mucous membranes and upper respiratory tract. It may also cause fatigue. Other symptoms may include central nervous system effects, lung and cornea irritation and liver and kidney damage. Prolonged exposure can cause nausea, dizziness, headache and narcosis.	Skin, eyes, mucous membranes, upper respiratory tract	Clear colorless to yellow-orange liquid BP: 246-248°F Fl.Pt. = Greater than 200°F LEL: NA UEL: NA

Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at the Site.

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Dichlorodifluoromethane	75-71-8	TWA 1000 ppm	TWA 1000 ppm (4950 mg/m3)	TWA 1000 ppm (4950 mg/m3)	15,000 ppm	Inhalation, skin and/or eye contact (liquid)	Dizziness, tremor, asphyxia, unconsciousness, cardiac arrhythmias, cardiac arrest; liquid: frostbite	Cardiovascular system, peripheral nervous system	Colorless gas with an ether-like odor at extremely high concentrations. [Note: Shipped as a liquefied compressed gas.] BP: -22°F Fl.Pt. = NA LEL: NA UEL: NA Nonflammable Gas
Ethyl benzene	100-41-4	TWA 20 ppm	TWA 100 ppm (435 mg/m^3) ST 125 ppm (545 mg/m^3)	TWA 100 ppm (435 mg/m^3)	800 ppm [10%LEL]	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, mucous membrane; headache; dermatitis; narcosis, coma	Eyes, skin, respiratory system, central nervous system	Colorless liquid with an aromatic odor. BP: 277°F Fl.Pt. = 55°F LEL: 0.8% UEL: 6.7% Class IB Flammable Liquid below 73°F and BP at or above 100°F
Isopropyl benzene	98-82-8	TWA 5 ppm	TWA 50 ppm (245 mg/m3) [skin]	TWA 50 ppm (245 mg/m3) [skin]	900 ppm [10%LEL]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, mucous membrane; dermatitis; headache, narcosis, coma	Eyes, skin, respiratory system, central nervous system	Colorless liquid with a sharp, penetrating, aromatic odor BP: 306°F Fl.Pt. = 96°F LEL: 0.9% UEL: 6.5% Class IC Flammable Liquid: Fl.P. at or above 73°F and below 100°F
Methyl Acetate	79-20-9	TWA 200 ppm STEL 250 ppm	TWA 200 ppm (610 mg/m3) ST 250 ppm (760 mg/m3)	TWA 200 ppm (610 mg/m3)	3100 ppm [10%LEL]	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat; headache, drowsiness; optic nerve atrophy; chest tightness; In Animals: narcosis	Eyes, skin, respiratory system, central nervous system	Colorless liquid with a fragrant, fruity odor BP: 135°F Fl.Pt. = 14°F LEL: 3.1% UEL: 16% Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.
Methylcyclohexane	108-87-2	TWA 400 ppm	TWA 400 ppm (1600 mg/m3)	TWA 500 ppm (2000 mg/m3)	1200 ppm [LEL]	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat; dizziness, drowsiness; In Animals: narcosis	Eyes, skin, respiratory system, central nervous system	Colorless liquid with a faint, benzene-like odor BP: 214°F Fl.Pt. = 25°F LEL: 1.2% UEL: 6.7% Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.
Methylene chloride	75-09-2	TWA 50 ppm [skin] STEL 100 ppm	Ca	[1910.1052] TWA 25 ppm ST 125 ppm	Ca [2300 ppm]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; lassitude (weakness, exhaustion), drowsiness, dizziness; numb, tingle limbs; nausea; [potential occupational carcinogen]	Eyes, skin, cardiovascular system, central nervous system	Colorless liquid with a chloroform-like odor. [Note: A gas above 104°F.] BP: 104°F Fl.Pt. = NA LEL: 13% UEL: 23% Combustible Liquid
Methyl-t-butyl ether	1634-04-4	TWA 50 ppm	NA	NA	NA	Inhalation, skin absorption, ingestion, skin and/or eye contact	May cause dizziness or suffocation. Contact may irritate or burn eyes or skin. May be harmful if swallowed.	Eyes, skin	A colorless liquid with a distinctive anesthetic-like odor. BP: 131°F Fl.Pt. = -14°F LEL: NA UEL: NA
o-Xylene	95-47-6	TWA 20 ppm (All isomers)	TWA 100 ppm (435 mg/m3) ST 150 ppm (655 mg/m3)	TWA 100 ppm (435 mg/m3)	900 ppm	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait; corneal vacuolization; anorexia, nausea, vomiting, abdominal pain; dermatitis	Eyes, skin, respiratory system, central nervous system, gastrointestinal tract, blood, liver, kidneys	Colorless liquid with an aromatic odor BP: 292°F Fl.Pt. = 90°F LEL: 0.9% UEL: 6.7% Class IC Flammable Liquid: Fl.P. at or above 73°F and below 100°F
Styrene	100-42-5	TWA 10 ppm STEL 20 ppm OTO (ototoxicant)	TWA 50 ppm (215 mg/m3) ST 100 ppm (425 mg/m3)	TWA 100 ppm C 200 ppm 600 ppm (5-minute maximum peak in any 3 hours)	700 ppm	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, nose, respiratory system; headache, lassitude (weakness, exhaustion), dizziness, confusion, malaise (vague feeling of discomfort), drowsiness, unsteady gait; narcosis; defatting dermatitis; possible liver injury; reproductive effects	Eyes, skin, respiratory system, central nervous system, liver, reproductive system	Colorless to yellow, oily liquid with a sweet, floral odor BP: 293°F Fl.Pt. = 88°F LEL: 0.9% UEL: 6.8% Class IC Flammable Liquid: Fl.P. at or above 73°F and below 100°F
Tetrachloroethene	127-18-4	TWA 25 ppm STEL 100 ppm	Ca Minimize workplace exposure concentrations	TWA 100 ppm C 200 ppm (for 5 minutes in any 3-hour period), with a maximum peak of 300 ppm	Ca [150 ppm]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat, respiratory system; nausea; flush face, neck; dizziness, incoordination; headache, drowsiness; skin erythema (skin redness); liver damage; [potential occupational carcinogen]	Eyes, skin, respiratory system, liver, kidneys, central nervous system	Colorless liquid with a mild, chloroform-like odor BP: 250°F Fl.Pt. = NA LEL: NA UEL: NA Noncombustible Liquid, but decomposes in a fire to hydrogen chloride and phosgene

Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at the Site.

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Sodium Hydroxide	1310-73-2	Ceiling 2 mg/m^3	C 2 mg/m^3	TWA 2 mg/m^3	10 mg/m^3	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, mucous membrane; pneumonitis; eye, skin burns; temporary loss of hair	Eyes, skin, respiratory system	Colorless to white, odorless solid (flakes, beads, granular form). BP: 2534°F Fl.Pt. = NA LEL: NA UEL: NA Noncombustible Solid, but when in contact with water may generate sufficient heat to ignite combustible materials.
Sulfuric Acid	7664-93-9	TWA 0.2 mg/m^3 (as thoracic particulate mass)	TWA 1 mg/m^3	TWA 1 mg/m^3	15 mg/m^3	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat; pulmonary edema, bronchitis; emphysema; conjunctivitis; stomatis; dental erosion; eye, skin burns; dermatitis	Eyes, skin, respiratory system, teeth	Colorless to dark-brown, oily, odorless liquid.[Note: Pure compound is a solid below 51°F. Often used in an aqueous solution.] BP = 554°F Fl.Pt. = NA LEL = NA UEL = NA Noncombustible Liquid, but capable of igniting finely divided combustible materials.
trans-1,2-Dichloroethene	156-60-5	200 ppm (All isomers)	TWA 200 ppm (790 mg/m3)	TWA 200 ppm (790 mg/m3)	1000 ppm	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, respiratory system; central nervous system depression	Eyes, respiratory system, central nervous system	Colorless liquid (usually a mixture of the cis & trans isomers) with a slightly acrid, chloroform-like odor. BP: 118-140°F Fl.P: 36-39°F LEL: 5.6% UEL: 12.8% Class IB Flammable Liquid Fl.P. below 73°F and BP at or above 100°F.
trans-1,3-Dichloropropene	10061-02-6	https://cameochemicals.noaa.gov/chemical/18110				Inhalation, ingestion, skin and/or eye contact	Symptoms of exposure to this compound may include local irritation of the eyes skin and respiratory tract, dermatitis, gasping, coughing, substernal pain, extreme respiratory distress, lacrimation, central nervous system depression, acute gastrointestinal distress with pulmonary congestion and edema. It may also cause injury to the liver, kidneys and heart	Skin, eyes, mucous membranes, liver, kidney, heart	A clear colorless liquid with chloroform odor BP: 234°F Fl.P: NA LEL: NA UEL: NA
Toluene	108-88-3	TWA 20 ppm (ototoxicant)	TWA 100 ppm (375 mg/m^3) ST 150 ppm (560 mg/m^3)	TWA 200 ppm C 300 ppm 500 ppm (10-minute maximum peak)	500 ppm	Inhalation, skin absorption, ingestion, skin and/or eye contact	irritation eyes, nose; lassitude (weakness, exhaustion), confusion, euphoria, dizziness, headache; dilated pupils, lacrimation (discharge of tears); anxiety, muscle fatigue, insomnia; paresthesia; dermatitis; liver, kidney damage	Eyes, skin, respiratory system, central nervous system, liver, kidneys	Colorless liquid with a sweet, pungent, benzene-like odor. BP: 232°F Fl.P: 40°F LEL: 1.1% UEL: 7.1% Class IB Flammable Liquid Fl.P. below 73°F and BP at or above 100°F.
Trichloroethene (TCE)	79-01-6	TWA 10 ppm STEL 25 ppm	Ca	TWA 100 ppm C 200 ppm 300 ppm (5-minute maximum peak in any 2 hours)	Ca [1000 ppm]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; headache, visual disturbance, lassitude (weakness, exhaustion), dizziness, tremor, drowsiness, nausea, vomiting; dermatitis; cardiac arrhythmias, paresthesia; liver injury; [potential occupational carcinogen]	Eyes, skin, respiratory system, heart, liver, kidneys, central nervous system	Colorless liquid (unless dyed blue) with a chloroform-like odor. BP: 189°F Fl.Pt. = NA LEL(77°F): 8.0% UEL(77°F): 10.5% Combustible Liquid, but burns with difficulty.
Trichlorofluoromethane	75-69-4	STEL C 1000 ppm	C 1000 ppm (5600 mg/m3)	TWA 1000 ppm (5600 mg/m3)	2000 ppm	Inhalation, ingestion, skin and/or eye contact	Incoordination, tremor; dermatitis; cardiac arrhythmias, cardiac arrest; asphyxia; liquid: frostbite	Skin, respiratory system, cardiovascular system	Colorless to water-white, nearly odorless liquid or gas (above 75°F) BP: 75°F Fl.P: NA LEL: NA UEL: NA Noncombustible Liquid Nonflammable Gas
Vinyl Chloride (chloroethylene)	75-01-4	TWA 1 ppm	Ca	TWA 1 ppm C 5 ppm [15-minute]	Ca (ND)	Inhalation, skin and/or eye contact (liquid)	Lassitude (weakness, exhaustion); abdominal pain, gastrointestinal bleeding; enlarged liver; pallor or cyanosis of extremities; liquid: frostbite; [potential occupational carcinogen]	Liver, central nervous system, blood, respiratory system, lymphatic system	Colorless gas or liquid (below 7°F) with a pleasant odor at high concentrations.[Note: Shipped as a liquefied compressed gas.] BP: 7°F Fl.Pt. = NA (Gas) LEL: 3.6% UEL: 33.0% Flammable Gas
Xylene (m, o & p isomers)	108-38-3, 95-47-6, 106-42-3	TWA 20 ppm	NA	NA	NA	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait; corneal vacuolization; anorexia, nausea, vomiting, abdominal pain; dermatitis	Eyes, skin, respiratory system, central nervous system, gastrointestinal tract, blood, liver, kidneys	Colorless liquid with an aromatic odor BP: 282°F, 292°F, 281°F Fl. Pt. 82°F, 90°F, 81°F LEL: 1.1%, 0.9%, 1.1% UEL: 7.0%, 6.7%, 7.0% Class IC Flammable Liquid at or above 73°F and below 100°F.
Zinc Oxide (dust)	7440-66-6	TWA 2 mg/m3 (repsirable) STEL 10 mg/m^3 (respirable)	TWA 5 mg/m^3 C 15 mg/m^3	TWA 15 mg/m^3 (total dust) TWA 5 mg/m^3 (resp dust) TWA 5 mg/m^3 (fume)	500 mg/m^3	Inhalation	Metal fume fever: chills, muscle ache, nausea, fever, dry throat, cough; lassitude (weakness, exhaustion); metallic taste; headache; blurred vision; low back pain; vomiting; malaise (vague feeling of discomfort); chest tightness; dyspnea (breathing difficulty), rales, decreased pulmonary function	Respiratory system	White, odorless solid. BP: NA Fl.Pt. = NA LEL: NA UEL: NA Noncombustible Solid

Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at the Site.

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)									
2-Chloronaphthalene	91-58-7	https://cameochemicals.noaa.gov/chemical/16185				Inhalation, ingestion, skin and/or eye contact	Chloracne, cysts, headache, fatigue, vertigo, anorexia and jaundice		Monoclinic plates or off-white crystalline powder BP: NA Fl.Pt. = NA LEL: NA UEL: NA
2-Methylnaphthalene	91-57-6	TWA 0.5 ppm TLV-SL 3 mg/100 cm2 [skin]	https://cameochemicals.noaa.gov/chemical/20668			Inhalation, ingestion, skin and/or eye contact	Headaches, nausea, vomiting, diarrhea, anemia, jaundice, euphoria, dermatitis, visual disturbances, convulsions and comatose	Skin, eyes, mucous membranes and upper respiratory tract	White crystalline solid Combustible solid BP: 466-468 ° F Fl.Pt. = 208 ° F LEL: NA UEL: NA
Acenaphthene	83-32-9	https://cameochemicals.noaa.gov/chemical/10358				Inhalation, ingestion, skin and/or eye contact	Irritation of the skin, eyes, mucous membranes and upper respiratory tract, vomiting	Skin, eyes, mucous membranes and upper respiratory tract	White needles BP: 534 ° F Fl.Pt. = NA LEL: 0.6% UEL: NA
Acenaphthylene	208-96-8	https://cameochemicals.noaa.gov/chemical/16157				Inhalation, ingestion, skin and/or eye contact			Colorless crystalline solid BP: 509 to 527 ° F at 760 mm Hg Fl.Pt. = NA LEL: NA UEL: NA
Anthracene (as coal tar pitch volatiles)	120-12-7	TWA 0.2 mg/m3 (as Benzene solubles)	Ca TWA 0.1 mg/m3 (cyclohexane-extractable fraction)	TWA 0.2 mg/m3 (benzene-soluble fraction) [1910.1002]	Ca [80 mg/m3]	Inhalation, skin and/or eye contact	Dermatitis, bronchitis, [potential occupational carcinogen]	Respiratory system, skin, bladder, kidneys	Black or dark-brown amorphous residue BP: NA Fl.Pt. = NA LEL: NA UEL: NA Combustible Solids
Benzo[a]anthracene	56-55-3	https://cameochemicals.noaa.gov/chemical/16171				Inhalation, injestion, skin and/or eye contact			Colorless leaflets or plates or coarse gold powder with a greenish-yellow fluorescence. May reasonably be expected to be a carcinogen. BP: 815° F at 760 mm Hg Fl.Pt. = NA LEL: NA UEL: NA
Benzo[a]pyrene (as coal tar pitch volatiles)	50-32-8	TWA 0.2 mg/m3 (as Benzene solubles)	Ca TWA 0.1 mg/m3 (cyclohexane-extractable fraction)	TWA 0.2 mg/m3 (benzene-soluble fraction) [1910.1002]	Ca [80 mg/m3]	Inhalation, skin and/or eye contact	Dermatitis, bronchitis, [potential occupational carcinogen]	Respiratory system, skin, bladder, kidneys	Black or dark-brown amorphous residue BP: NA Fl.Pt. = NA LEL: NA UEL: NA Combustible Solids
Benzo[b]fluoranthene	205-99-2	None listed	https://cameochemicals.noaa.gov/chemical/16172			Inhalation, injestion, skin and/or eye contact			Needles or yellow fluffy powder BP: NA Fl.Pt. = NA LEL: NA UEL: NA
Benzo[g,h,i]perylene	191-24-2	https://cameochemicals.noaa.gov/chemical/16174				Inhalation, injestion, skin and/or eye contact	Inhalation of material may be harmful. Contact may cause burns to skin and eyes. Inhalation of Asbestos dust may have a damaging effect on the lungs. Fire may produce irritating, corrosive and/or toxic gases. Some liquids produce vapors that may cause dizziness or suffocation. Runoff from fire control may cause pollution.	Lungs, skin, eyes	Colorless to white crystalline solid. Water insoluble. BP: NA Fl.Pt. = NA LEL: NA UEL: NA
Benzo[k]fluoranthene	207-08-9	https://cameochemicals.noaa.gov/chemical/16173				Inhalation, injestion, skin and/or eye contact	When heated to decomposition this compound emits acrid smoke and irritating fumes.		Pale yellow needles or yellow crystalline solid BP: 896° F Fl.Pt. = NA LEL: NA UEL: NA
Chrysene (as coal tar pitch volatiles	218-01-9	TWA 0.2 mg/m3 (as Benzene solubles)	Ca TWA 0.1 mg/m3 (cyclohexane-extractable fraction)	TWA 0.2 mg/m3 (benzene-soluble fraction) [1910.1002]	Ca [80 mg/m3]	Inhalation, skin and/or eye contact	Dermatitis, bronchitis, [potential occupational carcinogen]	Respiratory system, skin, bladder, kidneys	Black or dark-brown amorphous residue BP: NA Fl.Pt. = NA LEL: NA UEL: NA Combustible Solids
Dibenzo(a,h)anthracene	53-70-3	https://cameochemicals.noaa.gov/chemical/16192				Inhalation, injestion, skin and/or eye contact	Symptoms of exposure to this compound may include irritation. This compound is harmful if swallowed or inhaled. It may cause irritation. When heated to decomposition it emits acrid smoke, irritating fumes and toxic fumes of carbon monoxide and carbon dioxide.	Lungs	White crystals or pale yellow solid. Sublimes BP: 975° F Fl.Pt. = NA LEL: NA UEL: NA

Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at the Site.

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Fluoranthene	206-44-0	https://cameochemicals.noaa.gov/chemical/16213				Inhalation, injestion, skin and/or eye contact	When heated to decomposition this compound emits acrid smoke and fumes.		Light yellow fine crystals BP: 482° F Fl.Pt. = NA LEL: NA UEL: NA
Fluorene	86-73-7	https://cameochemicals.noaa.gov/chemical/16214				Inhalation, injestion, skin and/or eye contact			White leaflets. Sublimes easily under a vacuum. Fluorescent when impure. BP: 563° F Fl.Pt. = NA LEL: NA UEL: NA
Indeno[1,2,3-cd]pyrene	193-39-5	https://cameochemicals.noaa.gov/chemical/16218				Inhalation, injestion, skin and/or eye contact			Yellow crystals BP: 997° F Fl.Pt. = NA LEL: NA UEL: NA
Naphthalene	91-20-3	TWA 10 ppm [skin]	TWA 10 ppm (50 mg/m3) ST 15 ppm (75 mg/m3)	TWA 10 ppm (50 mg/m3)	250 ppm	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes; headache, confusion, excitement, malaise (vague feeling of discomfort); nausea, vomiting, abdominal pain; irritation bladder; profuse sweating; jaundice; hematuria (blood in the urine), renal shutdown; dermatitis, optical neuritis, corneal damage	Eyes, skin, blood, liver, kidneys, central nervous system	Colorless to brown solid with an odor of mothballs. [Note: Shipped as a molten solid.] BP: 424°F Fl.P: 174°F LEL: 0.9% UEL: 5.9% Combustible Solid, but will take some effort to ignite
Phenanthrene	85-01-8	https://cameochemicals.noaa.gov/chemical/16236				Inhalation, injestion, skin and/or eye contact	Symptoms following exposure to this compound may include skin sensitization, dermatitis, bronchitis, cough, dyspnea, respiratory neoplasm, kidney neoplasm, skin irritation, and respiratory irritation.	Skin, respiratory tract	Colorless monoclinic crystals with a faint aromatic odor. Solutions exhibit a blue fluorescence. BP: 642° F Fl.Pt. = 340° F LEL: NA UEL: NA
Pyrene (see coal tar pitch volatiles)	129-00-0	TWA 0.2 mg/m3 (as Benzene solubles)	Ca TWA 0.1 mg/m3 (cyclohexane-extractable fraction)	TWA 0.2 mg/m3 (benzene-soluble fraction) [1910.1002]	Ca [80 mg/m3]	Inhalation, skin and/or eye contact	Dermatitis, bronchitis, [potential occupational carcinogen]	Respiratory system, skin, bladder, kidneys	Black or dark-brown amorphous residue BP: NA Fl.Pt. = NA LEL: NA UEL: NA Combustible Solids
METALS									
Aluminum	7429-90-5	TWA 1 mg/m3	TWA 10 mg/m^3 (total) TWA 5 mg/m^3 (resp)	TWA 15 mg/m^3 (total) TWA 5 mg/m^3 (resp)	N.D.	Inhalation, skin and/or eye contact	Irritation eyes, skin, respiratory system	Eyes, skin, respiratory system	Silvery-white, malleable, ductile, odorless metal BP: 4221°F Fl.Pt. = NA LEL: NA UEL: NA Combustible Solid, finely divided dust is easily ignited; may cause explosions.
Antimony	7440-36-0	TWA 0.5 mg/m3 (as Sb)	TWA 0.5 mg/m3 [*Note: The REL also applies to other antimony compounds (as Sb).]	TWA 0.5 mg/m3 [*Note: The PEL also applies to other antimony compounds (as Sb).]	50 mg/m3 (as Sb)	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat, mouth; cough; dizziness; headache; nausea, vomiting, diarrhea; stomach cramps; insomnia; anorexia; unable to smell properly	Eyes, skin, respiratory system, cardiovascular system	Silver-white, lustrous, hard, brittle solid; scale-like crystals; or a dark-gray, lustrous powder BP: 2975°F Fl.Pt. = NA LEL: NA UEL: NA Noncombustible Solid in bulk form, but a moderate explosion hazard in the form of dust when exposed to flame.
Arsenic	7440-38-2	TWA 0.01 mg/m3	Ca C 0.002 mg/m3 [15-minute]	[1910.1018] TWA 0.010 mg/m3	Ca [5 mg/m3 (as As)]	Inhalation, skin absorption, skin and/or eye contact, ingestion	Ulceration of nasal septum, dermatitis, gastrointestinal disturbances, peripheral neuropathy, resp irritation, hyperpigmentation of skin, [potential occupational carcinogen]	Liver, kidneys, skin, lungs, lymphatic system	Metal: Silver-gray or tin-white, brittle, odorless solid BP: Sublimes Fl.Pt. = NA LEL: NA UEL: NA Metal: Noncombustible Solid in bulk form, but a slight explosion hazard in the form of dust when exposed to flame
Barium	7440-39-3	TWA 0.5 mg/m3	0.5 mg Ba/m3 TWA	0.5 mg Ba/m3 TWA	50 mg Ba/m3	Inhalation, ingestion, skin and/or eye contact	Inhalation or contact with vapors, substance or decomposition products may cause severe injury or death. Contact may cause burns to skin, eyes, and mucous membranes. May be toxic by ingestion, inhalation and skin absorption. Used to make other chemicals.	Lungs, skin, eyes, and mucous membrane	A silver to white metallic solid BP: 1337°F Fl.Pt. = NA LEL: NA UEL: NA
Beryllium	7440-41-7	TWA 0.00005 mg/m^3	Ca C 0.0005 mg/m^3	TWA 0.002 mg/m^3 C 0.005 mg/m^3 0.025 mg/m3 [30-minute maximum peak]	Ca [4 mg/m^3 (as Be)]	Inhalation, skin and/or eye contact	Berylliosis (chronic exposure): anorexia, weight loss, lassitude (weakness, exhaustion), chest pain, cough, clubbing of fingers, cyanosis, pulmonary insufficiency; irritation eyes; dermatitis; [potential occupational carcinogen]	Eyes, skin, respiratory system	Hard, brittle, gray-white solid BP: 4532°F Fl.Pt. = NA LEL: NA UEL: NA Noncombustible Solid in bulk form, but a slight explosion hazard in the form of a powder or dust.

Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at the Site.

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Cadmium	7440-43-9	TWA 0.01 mg/m^3 total dust TWA 0.002 mg/m^3 (as Cd) respirable fraction	Ca	TWA 0.005 mg/m^3	Ca [9 mg/m3 (as Cd)]	Inhalation, ingestion	Pulmonary edema, dyspnea (breathing difficulty), cough, chest tightness, substernal (occurring beneath the sternum) pain; headache; chills, muscle aches; nausea, vomiting, diarrhea; anosmia (loss of the sense of smell), emphysema, proteinuria, mild anemia; [potential occupational carcinogen]	Respiratory system, kidneys, prostate, blood	Silver-white/blue tinged lustrous, odorless solid. BP: 1409°F Fl.Pt. = NA LEL: NA UEL: NA Noncombustible - will burn in powder form
Calcium	7440-70-2	https://cameochemicals.noaa.gov/chemical/309				Inhalation, ingestion, skin and/or eye contact	Contact with eyes or skin produces caustic burns.	Eyes, skin	A silvery, soft metal that turns grayish white on exposure to air. BP: 2714°F Fl.Pt. = NA LEL: NA UEL: NA
Chromium	7440-47-3	TWA 0.5 mg/m^3 (metal) TWA 0.003 mg/m^3 (water-soluble Cr III compounds) TWA 0.0002 mg/m^3 (water-soluble Cr VI compounds) STEL 0.0005 mg/m3 (water-soluble Cr VI compounds)	TWA 0.5 mg/m^3	TWA 1 mg/m^3	250 mg/m^3 (as Cr)	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin; lung fibrosis (histologic)	Eyes, skin, respiratory system	Blue-white to steel-gray, lustrous, brittle, hard, odorless solid. BP: 4788°F Fl.Pt. = NA LEL: NA UEL: NA Noncombustible - will burn in dust form if heated in a flame
Cobalt	7440-48-4	TWA 0.02 mg/m3 [DSEN] [RSEN]	TWA 0.05 mg/m3	TWA 0.1 mg/m3	20 mg/m3 (as Co)	Inhalation, ingestion, skin and/or eye contact	Cough, dyspnea (breathing difficulty), wheezing, decreased pulmonary function; weight loss; dermatitis; diffuse nodular fibrosis; resp hypersensitivity, asthma	Skin, respiratory system	Odorless, silver-gray to black solid BP: 5612°F Fl.Pt. = NA LEL: NA UEL: NA Noncombustible Solid in bulk form, but finely divided dust will burn at high temperatures.
Copper	7440-50-8	TWA 0.2 mg/m^3 (fume) TWA 1 mg/m3 (dusts and mists)	TWA 1 mg/m^3	TWA 1 mg/m^3	100 mg/m^3 (as Cu)	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, nose, pharynx; nasal septum perforation; metallic taste; dermatitis; In Animals: lung, liver, kidney damage; anemia	Eyes, skin, respiratory system, liver, kidneys (increased risk with Wilson's disease)	Reddish, lustrous, malleable, odorless solid. BP: 4703°F Fl.Pt. = NA LEL: NA UEL: NA Noncombustible - powdered form may ignite
Iron (as iron oxide)	7439-89-6	TWA 5 mg/m3 (respirable particulate mass)	TWA 1 mg/m^3	NA	NA	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, mucous membrane; abdominal pain, diarrhea, vomiting; possible liver damage	Eyes, skin, respiratory system, liver, gastrointestinal tract	Appearance and odor vary depending upon the specific soluble iron salt. BP: NA Fl.Pt. = NA LEL: NA UEL: NA Noncombustible Solids
Lead	7439-92-1	TWA 0.05 mg/m3	TWA (8-hour) 0.050 mg/m3	[1910.1025] TWA 0.050 mg/m3	100 mg/m3 (as Pb)	Inhalation, ingestion, skin and/or eye contact	Lassitude (weakness, exhaustion), insomnia; facial pallor; anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; paralysis wrist, ankles; encephalopathy; kidney disease; irritation eyes; hypertension	Eyes, gastrointestinal tract, central nervous system, kidneys, blood, gingival tissue	A heavy, ductile, soft, gray solid BP: 3164°F Fl.Pt. = NA LEL: NA UEL: NA Noncombustible Solid in bulk form
Magnesium	7439-95-4	https://cameochemicals.noaa.gov/chemical/6949				Eye and/or skin contact	Dust irritates eyes in same way as any foreign material. Penetration of skin by fragments of metal is likely to produce local irritation, blisters, and ulcers which may become infected.	Eyes	A light silvery metal BP: 1202°F Fl.Pt. = NA LEL: NA UEL: NA
Manganese	7439-96-5	TWA 0.02 mg/m3 [R] TWA 0.1 mg/m3 [I]	TWA 1 mg/m3 ST 3 mg/m3	C 5 mg/m3	500 mg/m3 (as Mn)	inhalation, ingestion	Manganism; asthenia, insomnia, mental confusion; metal fume fever: dry throat, cough, chest tightness, dyspnea (breathing difficulty), rales, flu-like fever; low-back pain; vomiting; malaise (vague feeling of discomfort); lassitude (weakness, exhaustion); kidney damage	respiratory system, central nervous system, blood, kidneys	A lustrous, brittle, silvery solid BP: 3564°F Fl.Pt. = NA LEL: NA UEL: NA Metal: Combustible Solid
Mercury	7439-97-6	TWA 0.1 mg/m3, as Hg Aryl compounds TWA 0.025 mg/m3 as Hg, inorganic forms including metallic mercury	Hg Vapor: TWA 0.05 mg/m3 [skin] Other: C 0.1 mg/m3 [skin]	TWA 0.1 mg/m3	10 mg/m3 (as Hg)	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; cough, chest pain, dyspnea (breathing difficulty), bronchitis, pneumonitis; tremor, insomnia, irritability, indecision, headache, lassitude (weakness, exhaustion); stomatitis, salivation; gastrointestinal disturbance, anorexia, weight loss; proteinuria	Eyes, skin, respiratory system, central nervous system, kidneys	Metal: Silver-white, heavy, odorless liquid. [Note: "Other" Hg compounds include all inorganic & aryl Hg compounds except (organo) alkyls.] BP: 674°F Fl.Pt. = NA LEL: NA UEL: NA Metal: Noncombustible Liquid

Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at the Site.

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Nickel	7440-02-0	TWA 1.5 mg/m^3 [elemental] TWA 0.1 mg/m^3 [soluble inorganic compound] TWA 0.2 mg/m^3 [insoluble inorganic compound] TWA 0.1 mg/m^3 [Nickel subsulfide]	Ca TWA 0.015 mg/m^3	TWA 1 mg/m^3	Ca [10 mg/m3 (as Ni)]	Inhalation, ingestion, skin and/or eye contact	Sensitization dermatitis, allergic asthma, pneumonitis; [potential occupational carcinogen]	Nasal cavities, lungs, skin	Lustrous, silvery, odorless solid. BP: 5139°F Fl.Pt. = NA LEL: NA UEL: NA Combustible Solid; nickel sponge catalyst may ignite spontaneously in air.
Potassium	9/7/7440	https://cameochemicals.noaa.gov/chemical/4289				Eye and/or skin contact	Will burn skin and eyes	Skin, eyes	Potassium is a soft silvery metal though normally grayish white due to oxidation BP: 1425°F Fl.Pt. = NA LEL: NA UEL: NA
Selenium	7782-49-2	TWA 0.2 mg/m3	TWA 0.2 mg/m3	TWA 0.2 mg/m3	1 mg/m3 (as Se)	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat; visual disturbance; headache; chills, fever; dyspnea (breathing difficulty), bronchitis; metallic taste, garlic breath, gastrointestinal disturbance; dermatitis; eye, skin burns; In Animals: anemia; liver necrosis, cirrhosis; kidney, spleen damage	Eyes, skin, respiratory system, liver, kidneys, blood, spleen	Amorphous or crystalline, red to gray solid. [Note: Occurs as an impurity in most sulfide ores.] BP: 1265°F Fl.Pt. = NA LEL: NA UEL: NA Combustible Solid
Silver	7440-22-4	TWA 0.1 mg/m3 [Metal, dust, and fume] TWA 0.01 mg/m3 [Soluble compounds, as Ag]	TWA 0.01 mg/m3	TWA 0.01 mg/m3	10 mg/m3 (as Ag)	Inhalation, ingestion, skin and/or eye contact	Blue-gray eyes, nasal septum, throat, skin; irritation, ulceration skin; gastrointestinal disturbance	Nasal septum, skin, eyes	Metal: White, lustrous solid BP: 3632°F Fl.Pt. = NA LEL: NA UEL: NA Metal: Noncombustible Solid, but flammable in form of dust or powder
Sodium	7440-23-5	https://cameochemicals.noaa.gov/chemical/7794				Skin contact	Severe burns caused by burning metal or by caustic soda formed by reaction with moisture on skin	Skin	A silvery soft metal that becomes grayish white upon exposure to air BP: 1621°F Fl.Pt. = NA LEL: NA UEL: NA
Thallium	7440-28-0	0.02 mg/m3 inhallable particulate matter	TWA 0.1 mg/m3 [skin]	TWA 0.1 mg/m3 [skin]	15 mg/m3 (as Tl)	Inhalation, skin absorption, ingestion, skin and/or eye contact	Nausea, diarrhea, abdominal pain, vomiting; ptosis, strabismus; peri neuritis, tremor; retrosternal (occurring behind the sternum) tightness, chest pain, pulmonary edema; convulsions, chorea, psychosis; liver, kidney damage; alopecia; paresthesia legs	Eyes, respiratory system, central nervous system, liver, kidneys, gastrointestinal tract, body hair	Appearance and odor vary depending upon the specific soluble thallium compound BP: NA Fl.Pt. = NA LEL: NA UEL: NA
Vanadium	7440-62-2	https://cameochemicals.noaa.gov/chemical/16147				Inhalation, skin absorption, ingestion, skin and/or eye contact	Highly toxic, may be fatal if inhaled, swallowed or absorbed through skin. Avoid any skin contact. Effects of contact or inhalation may be delayed. Fire may produce irritating, corrosive and/or toxic gases. Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution	Skin	Silvery-whitish powder BP: NA Fl.Pt. = NA LEL: NA UEL: NA
Zinc	7440-66-6	https://cameochemicals.noaa.gov/chemical/4814				Inhalation, skin absorption, ingestion, skin and/or eye contact	Inhalation or contact with vapors, substance or decomposition products may cause severe injury or death. May produce corrosive solutions on contact with water. Fire will produce irritating, corrosive and/or toxic gases. Runoff from fire control may cause pollution	Lungs	A grayish powder BP: NA Fl.Pt. = NA LEL: NA UEL: NA
PCBs									
PCBs (total)	11097-69-1, 53469-21-9	TWA 0.5 mg/m3 [skin] TWA 1 mg/m3 [skin]	Ca TWA 0.001 mg/m3 Ca TWA 0.001 mg/m3	TWA 0.5 mg/m3 [skin] TWA 1 mg/m3 [skin]	Ca [5 mg/m3] Ca [5 mg/m3]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, chloracne; liver damage; reproductive effects; [potential occupational carcinogen]	Skin, eyes, liver, reproductive system	Colorless to pale-yellow, viscous liquid or solid (below 50°F) with a mild, hydrocarbon odor BP: 689-734°F, 617-691°F Fl.Pt. = NA, NA LEL: NA UEL: NA Nonflammable Liquid, but exposure in a fire results in the formation of a black soot containing PCBs, polychlorinated dibenzofurans, and chlorinated dibenzo-p-dioxins.
Petroleum Hydrocarbons									
Gasoline	86290-81-5	TWA 300 ppm STEL 500 ppm	Ca	None	Ca [N.D.]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, mucous membrane; dermatitis; headache, lassitude (weakness, exhaustion), blurred vision, dizziness, slurred speech, confusion, convulsions; chemical pneumonitis (aspiration liquid); possible liver, kidney damage; [potential occupational carcinogen]	Eyes, skin, respiratory system, central nervous system, liver, kidneys	Clear liquid with a characteristic odor BP: 102°F Fl.Pt. = -45°F LEL: 1.4% UEL: 7.6%

Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at the Site.

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties

References

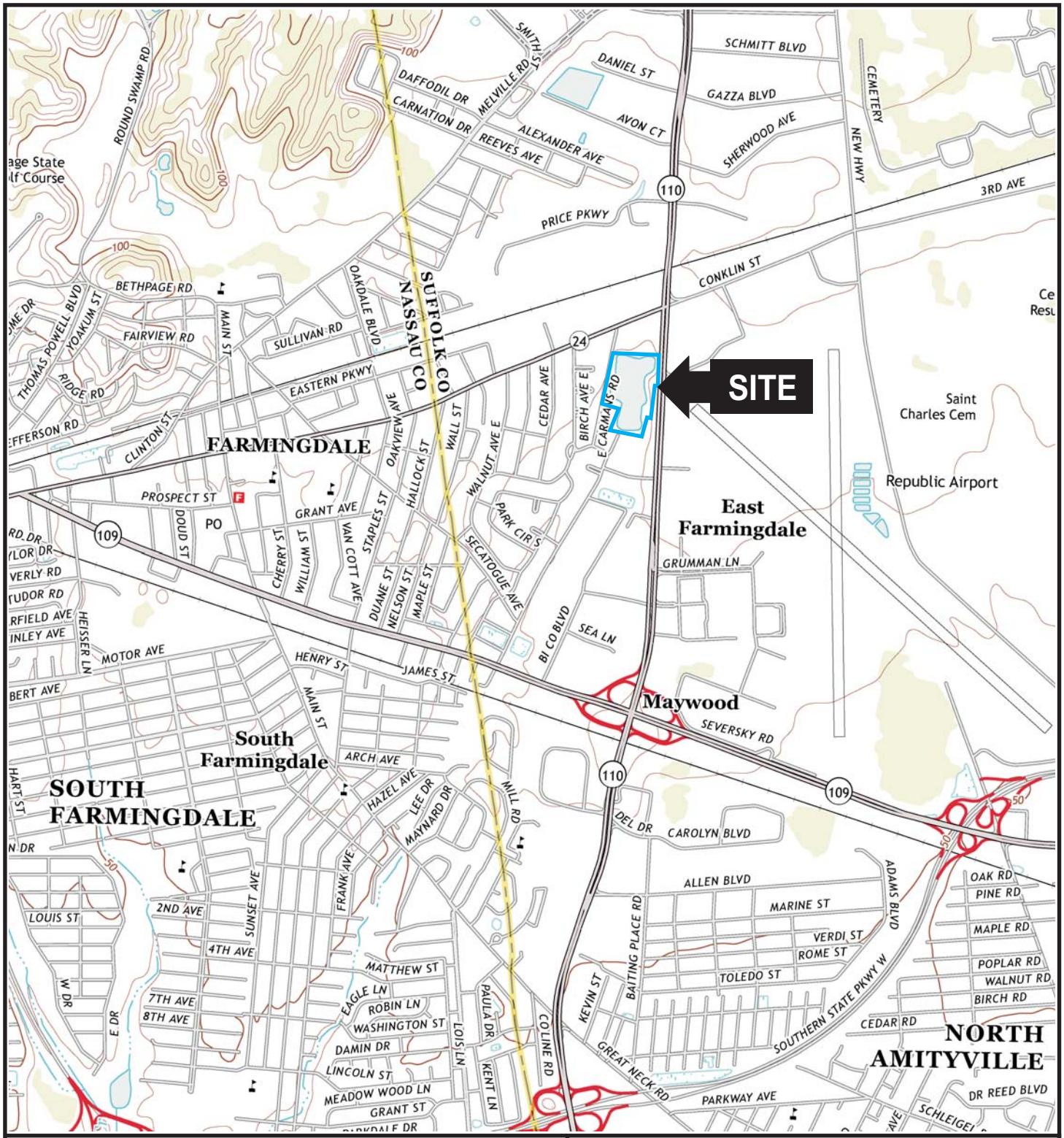
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Abbreviations:

ACGIH – American Conference of Governmental Industrial Hygienists.
BP – boiling point at 1 atmosphere, °F
C – Ceiling, is a concentration that should not be exceeded during and part of the working exposure.
Ca – Carcinogenic.
CAS# - Chemical Abstracts Service registry number which is unique for each chemical.
DSEN - Dermal Sensitization
Ft Pt. – Flash point
IDLH - Immediately Dangerous to Life and Health concentrations represent the maximum concentration from which, in the event of respirator failure, one could escape within 30 minutes without a respirator and without experiencing any escape-impairing or irreversible health effects.
LEL – Lower explosive (flammable) limit in air, % by volume (at room temperature)
mg/m^3 – Milligrams of substance per cubic meter of air
NIOSH - National Institute for Occupational Safety and Health.
OSHA – Occupational Safety and Health Administration
OTO - Ototoxicant
PEL - OSHA Permissible Exposure Limit (usually) a time weighted average concentration that must not be exceeded during any 8 hour work shift of a 40 hr work week.
ppm – parts per million
REL – NIOSH Recommended Limit indicated a time weighted average concentration that must not be exceeded during any 10 hour work shift of a 40 hr work week
RSEN - Respiratory Sensitization
SG - Specific Gravity
STEL – ACGIH Short-term exposure limit (ST)
TLV - ACGIH Threshold Limit Values (usually 8 hour time weighted average concentrations).
TWA – 8-hour, time-weighted average
UEL – Upper explosive (flammable) limit in air, % by volume (at room temperature)
VP - Vapor Pressure

FIGURES

1. Site Location Map
2. Site Plan with Emergency Muster Area
3. Routes to Urgent Care and Hospital



QUADRANGLE LOCATION



SOURCE:
USGS; 2013, AMITYVILLE, NY
7.5 Minute Topographic Quadrangle

N

0 2000’

Title:

SITE LOCATION MAP

FAIRCHILD REPUBLIC AIRPORT; OLD SUMP SITE
EAST FARMINGDALE, NEW YORK

Prepared for:

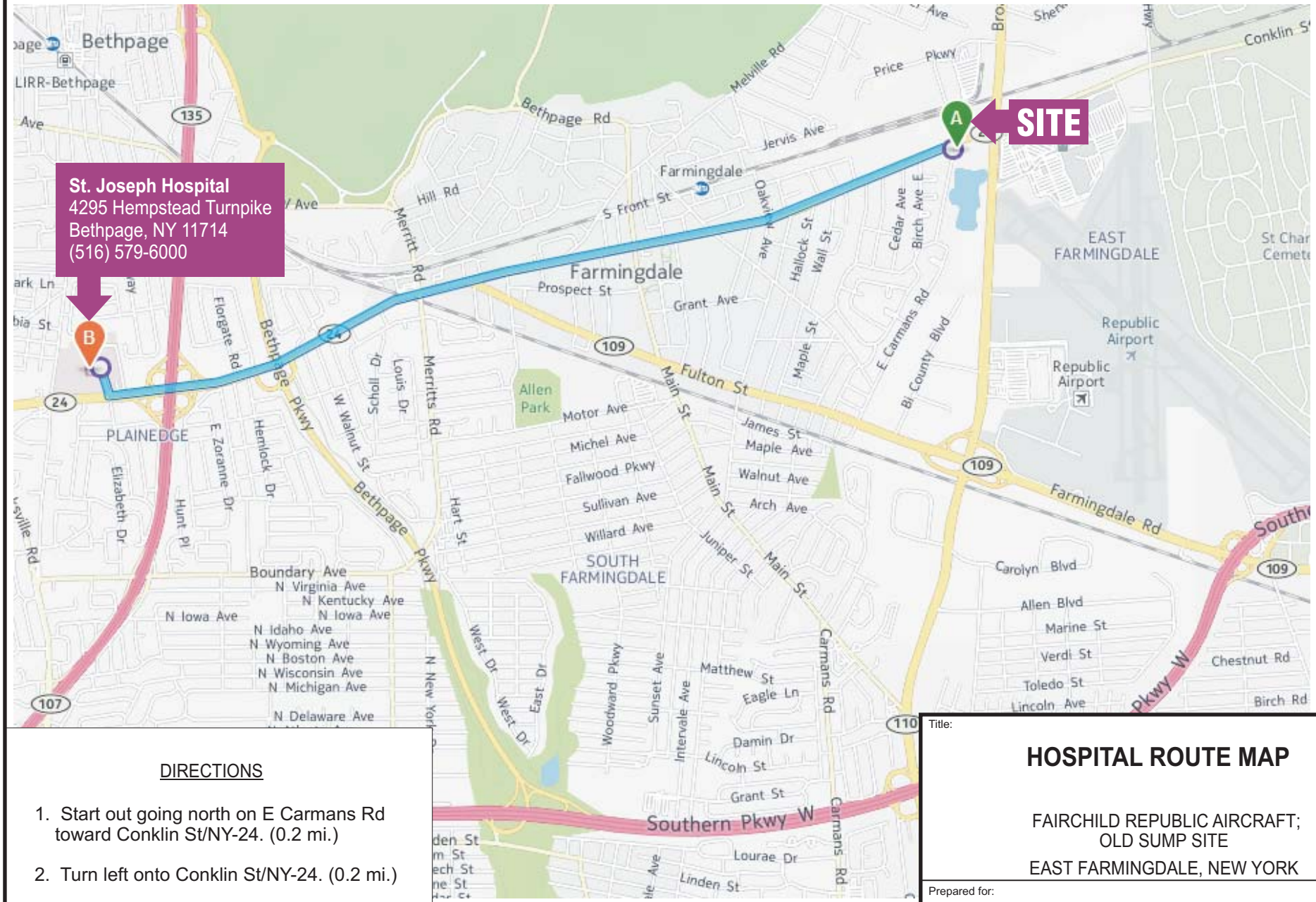
ACADIA REPUBLIC FARMINGDALE, LLC

ROUX

ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled by: J.W.	Date: 31JUL15	FIGURE
Prepared by: J.A.D.	Scale: AS SHOWN	1
Project Mgr.: J.W.	Project No.: 2422.0001Y000	
File: 2422.0001Y104.01.CDR		

V:\CAD\PROJECTS\2422\Y0001Y\104\2422.0001Y104.01.CDR



DIRECTIONS

1. Start out going north on E Carmans Rd toward Conklin St/NY-24. (0.2 mi.)
2. Turn left onto Conklin St/NY-24. (0.2 mi.)
3. Take 2.9 miles
4. Enter St. Joseph Hospital on right.

Title:

HOSPITAL ROUTE MAP

FAIRCHILD REPUBLIC AIRCRAFT;
OLD SUMP SITE

EAST FARMINGDALE, NEW YORK

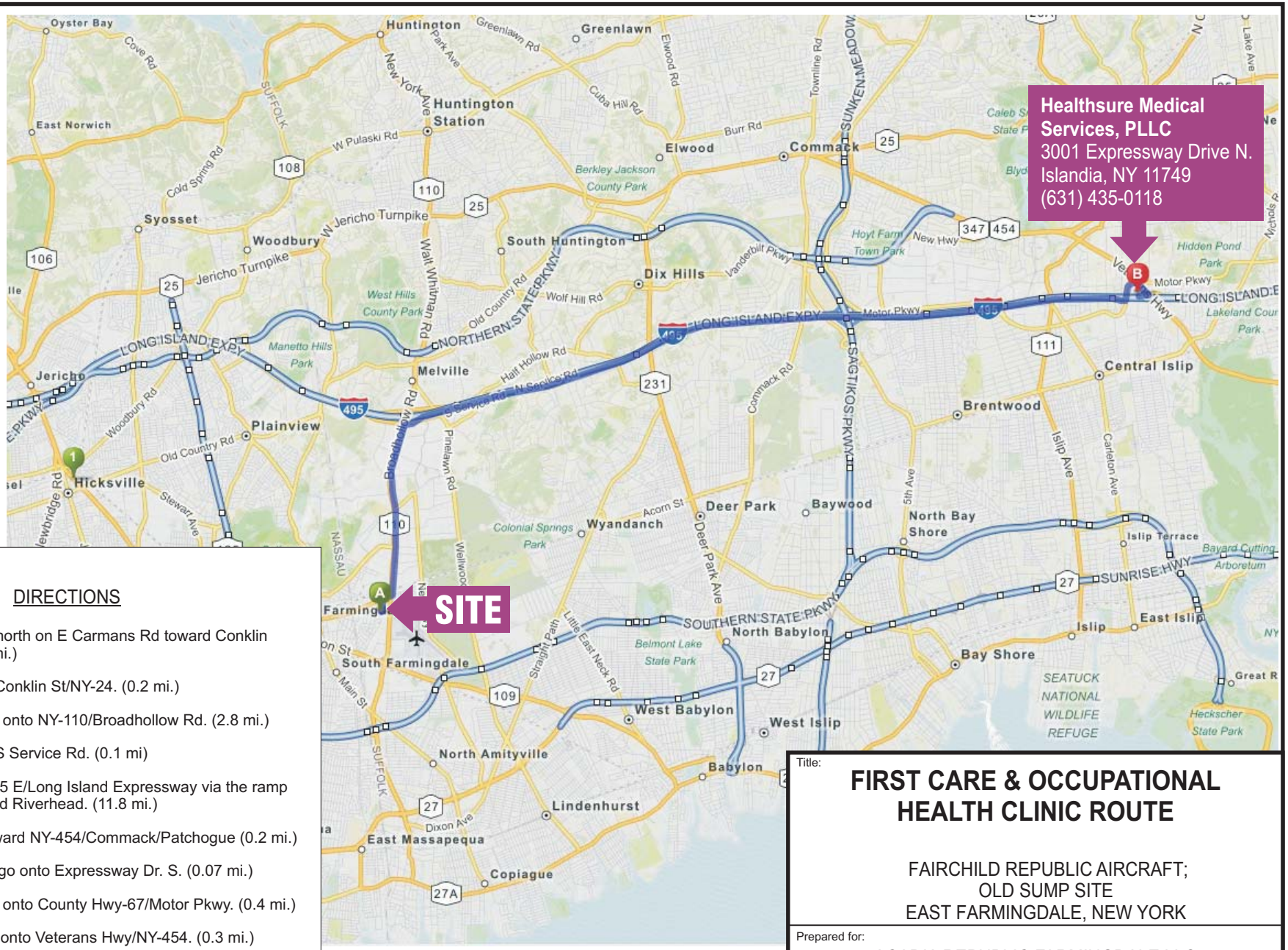
Prepared for:

ACADIA REPUBLIC FARMINGDALE LLC

ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled by: J.W.	Date: 07AUG15
Prepared by: B.H.C.	Scale: AS SHOWN
Project Mgr.: J.W.	Project No.: 2422.0001Y000
File: 2422.0001Y102.01.CDR	

FIGURE 2



DIRECTIONS

1. Start out going north on E Carmans Rd toward Conklin St/NY-24. (0.2 mi.)
2. Turn right onto Conklin St/NY-24. (0.2 mi.)
3. Take the 1st left onto NY-110/Broadhollow Rd. (2.8 mi.)
4. Turn right onto S Service Rd. (0.1 mi)
5. Merge onto I-495 E/Long Island Expressway via the ramp on the left toward Riverhead. (11.8 mi.)
6. Take Exit 57 toward NY-454/Commack/Patchogue (0.2 mi.)
7. Stay straight to go onto Expressway Dr. S. (0.07 mi.)
8. Take the 1st left onto County Hwy-67/Motor Pkwy. (0.4 mi.)
9. Turn slight right onto Veterans Hwy/NY-454. (0.3 mi.)
10. Take 1st right onto Express Dr. N. (0.2 mi.)
11. 3001 Express Dr. N is on the right.

Title:

FIRST CARE & OCCUPATIONAL HEALTH CLINIC ROUTE

FAIRCHILD REPUBLIC AIRCRAFT;
OLD SUMP SITE
EAST FARMINGDALE, NEW YORK

Prepared for:
ACADIA REPUBLIC FARMINGDALE LLC

ROUX
ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled by: J.W.	Date: 07AUG15
Prepared by: B.H.C.	Scale: AS SHOWN
Project Mgr.: J.W.	Project No.: 2422.0001Y000
File: 2422.0001Y102.01.CDR	

FIGURE
3

APPENDICES

A. Job Safety Analysis (JSA) Forms
B. Safety Data Sheets (SDSs) for Chemicals Used
C. Heat Illness Prevention Program
D. Personal Protective Equipment (PPE) Management Program
E. Subsurface Utility Clearance Management Program
F. Heavy Equipment Exclusion Zone Policy
G. Generic Community Air Monitoring Program

APPENDIX A

Job Safety Analysis (JSA) Forms

JOB SAFETY ANALYSIS	Cntrl. No. GEN-010	DATE: 10/2/2019	☐NEW ☒REVISED	PAGE 1 of 2

JSA TYPE CATEGORY	WORK TYPE	WORK ACTIVITY (Description)	
GENERIC	**Site Recon**	**Mobilization/Demobilization**	
DEVELOPMENT TEAM	**POSITION / TITLE**	**REVIEWED BY:**	**POSITION / TITLE**
Jeff Wills	Senior Hydrogeologist	Levi Curnutte	SHSM

REQUIRED AND / OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT

☐ LIFE VEST ☒ HARD HAT ☐ LIFELINE / BODY HARNESS ☒ SAFETY GLASSES	☐ GOGGLES ☐ FACE SHIELD ☒ HEARING PROTECTION (as needed) ☒ SAFETY SHOES: Steel Toe or composite toe	☐ AIR PURIFYING RESPIRATOR ☐ SUPPLIED RESPIRATOR ☒ PPE CLOTHING: Fluorescent reflective vest of high-visibility clothing; long sleeve shirt; long pants	☐ GLOVES: Leather, nitrile, and cut resistant (as needed) ☐ OTHER

REQUIRED AND / OR RECOMMENDED EQUIPMENT

Required Equipment:

Commitment to LPS – All personnel onsite will actively participate in SPSA performance by verbalizing SPSAs throughout the day.

EXCLUSION ZONE: A minimumexclusion zone of 10' will be maintained around moving equipment (if necessary)

Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
1. Mobilize/demobilize and establish work area	**1a. FALL:** Slip/trips/falls from obstructions, uneven terrain, weather conditions, heavy loads, and/or poor housekeeping.	1a. Use 3 points-of-contact/ensure secure footing when entering and exiting vehicle. 1a. Inspect walking path for uneven terrain, steep hills, obstructions, and/or weather-related hazards (i.e., ice, snow, and puddles) prior to mobilizing equipment. Use established pathways.Walk on stable/secure ground. 1a. Do not climb over stored materials/equipment; walk around. Practice good housekeeping; organize and store equipment neatly in one area. 1a. Wear boots with adequate treads. 1a. Delineate unsafe areas with 42" cones, caution tape and/or flagging.
	1b. CONTACT: Personal injury and/or property damage caused by being struck by Site traffic or equipment used in Site activities.	1b. Observe and maintain the posted speed limits. 1b. When first arriving onsite, park vehicles in designated parking space and/or out of the way locations. Use parking brake on all vehicles and tire chocks on work trucks and trailers. 1b. Check in with Site Manager/Supervisor to ensure coordination with other Site activities. Ensure that short-service employees (SSE) are identified. 1b. Identify potential traffic sources. 1b. Wear PPE including high visibility clothing or reflective vest. 1b. Use a spotter while moving work vehicles; plan ahead to avoid backing when unnecessary. 1b. Maintain a minimum 10' exclusion zone when vehicles are in motion. When backing up truck rig with an attached trailer use a second spotter if there is tight clearance simultaneously on multiple sides of the equipment or if turning angles limit driver visibility. 1b. Delineate work area with 42" cones, flags, caution tape, and/or other barriers. 1b. Position "Work Area" signs at Site entrances, if possible, or at either side of work area. 1b. Position largest vehicle to protect against oncoming traffic. 1b. Face traffic, maintain eye contact with oncoming vehicles, use a spotter, and establish a safe exit route.
	1c. CAUGHT: Personal injury from pinch points and being in line-of-fire of vehicle and/or equipment.	1c. Make sure driver has engaged parking brake and placed wheel chocks in a position to prevent movement. Be sure that vehicle is parked in front/down gradient of work area. 1c. Wear leather gloves when handling any tools or equipment. Wear cut-resistant gloves (Kevlar or similar) when handling sharp objects/cutting tools/glass. 1c. Keep body parts away from line-of-fire of equipment. 1c. Always carry tools by the handles and/or designated carrier. Ensure sharp-edged tools are sheathed/secure. 1c. Remove any loose jewelry. Avoid wearing loose clothing and/or ensure loose clothing is secure.

[1] Each Job or Operation consists of a set of tasks / steps. Be sure to list all the steps needed to perform job.

[2] A hazard is a potential danger. Break hazards into five types: Contact - victim is struck by or strikes an object; Caught - victim is caught on, caught in or caught between objects; Fall - victim falls to ground or lower level (includes slips and trips); Exertion - excessive strain or stress / ergonomics / lifting techniques; Exposure - inhalation/skin hazards; Energy Source – electricity, pressure, compression/tension.

[3] Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the risk. List the recommended safe operating procedures. Say exactly what needs to be done - such as "use two persons to lift." Avoid general statements such as, "be careful."

Assess **[1]JOB STEPS**	**Analyze** **[2]POTENTIAL HAZARDS**	**Act** **[3]CRITICAL ACTIONS**
	1d. OVEREXERTION: Muscle strains while lifting/carrying equipment.	1d. Use body positioning and lifting techniques that avoid muscle strain; keep back straight, lift with legs, keep load close to body, and never reach with a load. 1d. Ensure that loads are balanced. Use assistance (mechanical or additional person) to carry equipment that is either unwieldy or over 50 lbs.
	1e. EXPOSURE: Personal injury from exposure to biological and environmental hazards.	1e. Inspect area to avoid contact with biological hazards (i.e. poisonous plants, stinging insects, ticks, etc.). 1e. Wear long sleeved clothes treated with permethrin, apply insect repellant containing DEET, and inspect clothes and skin for ticks during and after work. 1e. Apply sunscreen (SPF 15+) if exposure to sun for 30 minutes or more is expected.
	1f. EXPOSURE: Heat and cold related injuries.	1f. Watch for heat stress symptoms (muscle cramping, exhaustion, dizziness, rapid and shallow breathing). Take breaks as needed. 1f. Watch for cold stress symptoms (severe shivering, slowing of body movement, weakness, stumbling or inability to walk, collapse). Take breaks as needed. 1f. Wear clothing appropriate for weather and temperature conditions (e.g., rain jackets, snow pants, multiple layers). 1f. If lightning is observed, wait 30 minutes in a sheltered location (car is acceptable) before resuming work.
	1g. EXPOSURE: Personal injury from noise hazards.	1g. Wear hearing protection if sound levels exceed 85 (if you must raise your voice for normal conversation).

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[2] A hazard is a potential danger. Break hazards into five types: Contact - victim is struck by or strikes an object; Caught - victim is caught on, caught in or caught between objects; Fall - victim falls to ground or lower level (includes slips and trips); Exertion - excessive strain or stress / ergonomics / lifting techniques; Exposure - inhalation/skin hazards; Energy Source – electricity, pressure, compression/tension.

[3] Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the risk. List the recommended safe operating procedures. Say exactly what needs to be done - such as "use two persons to lift". Avoid general statements such as, "be careful".

JOB SAFETY ANALYSIS	Cntrl. No. GEN-009	DATE: 10/2/2019	☐ NEW ☒ REVISED	PAGE 1 of 2

JSA TYPE CATEGORY	WORK TYPE	WORK ACTIVITY (Description)
GENERIC	**Hand Tools**	**Pre-Clearing activities, including Air Knifing and Soil Vacuuming**

DEVELOPMENT TEAM	POSITION / TITLE	REVIEWED BY:	POSITION / TITLE
Jeff Wills	Senior Hydrogeologist	Levi Curnutte	SHSM

REQUIRED AND / OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT

☐ LIFE VEST ☒ HARD HAT ☐ LIFELINE / BODY HARNESS ☒ SAFETY GLASSES	☐ GOGGLES ☒ FACE SHIELD (while air knifing) ☒ HEARING PROTECTION (as needed) ☒ SAFETY SHOES: Steel or composite toed	☐ AIR PURIFYING RESPIRATOR ☐ SUPPLIED RESPIRATOR ☒ PPE CLOTHING: Fluorescent reflective vest or high visibility clothing	☒ GLOVES: Nitrile and cut resistant ☒ OTHER: Dust mask (as needed)

REQUIRED AND / OR RECOMMENDED EQUIPMENT

Required Equipment: Air Knife, Vactor Truck (Vac Truck), Compressor, Hand Tools, Photoionization Detector, Multi-Gas Meter, Traffic Cones, 20 lb. Fire Extinguisher, "Work Area" and/or "Exclusion Zone" Signs

Commitment to LPS – All personnel onsite will actively participate in SPSA performance by verbalizing SPSAs throughout the day.

EXCLUSION ZONE: A 10 foot exclusion zone will be maintained around air knife and/or soil vacuum operations.

Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
1. Verify pre-clearance protocol.	1a. **CONTACT**: Underground utility damage; property damage; personal injury. See Site Walk Inspection JSA for potential hazards.	1a. Confirm that local utility companies were contacted prior to drilling. 1a. Walk the Site to evaluate utility markings and review maps (**See Site Walk Inspection JSA for critical actions**). 1a. Review pre-clearing checklist form and sub-surface clearance form. Pre-clearing protocol indicates that clearance must be conducted to a minimum of 5 vertical feet below ground surface or 8 vertical feet below ground surface in the critical zone using hand tools.
2. Mobilize/demobilize and establish work area.	2a. **See Mobilization / Demobilization JSA for potential hazards.**	2a. **See Mobilization / Demobilization JSA for critical actions.**
3. Pre-clear with air knife and soil vacuum, and/or clearance with hand tools	3a. **CONTACT**: Flying debris. 3b. **EXPOSURE/ENERGY SOURCE**: Inhalation/exposure to hazardous vapors; inhalation/exposure to dust; electrocution. 3c. **CONTACT:** Damage to unknown/known utility with air knife. 3d.**OVEREXERTION**: Poor body positioning when handling equipment and materials.	3a. **Maintain 10 foot exclusion zone.** Only (air knife/vac truck) operator and designated helper shall remain within exclusion zone while air knife/vac truck is active. Use the required PPE, including (at a minimum), cut resistant gloves, safety glasses with side shields, and long sleeved shirt. 3a. Wear a face shield to protect face from flying debris when using air knife. 3a. Aim air knife tip away from self and others, so to avoid line-of-fire hazards. 3a. Use anti-whip devices on compressor hoses. 3b. Monitor breathing zone with a calibrated PID and multi-gas meter. If vapors sustain levels > 5 ppm, the Roux field personnel must temporarily cease work, instruct all Site personnel to step away from the area of elevated readings and inform the Roux Project Manager of the condition. The Roux Project Manager will then recommend additional precautions. 3b. Wear dust masks as needed. 3b. Ensure no open flames/heat sources are present within the work area. 3b. Ensure vac truck is properly grounded prior to use. 3b. Do not use metal dig bar; use fiberglass or equivalent. 3c. Avoid contacting utilities directly with the high pressure air stream and using the air knife tip as a physical digging tool. 3c. Keep the air knife tip constantly moving to reduce direct pressure on a potential utility. 3c. Increase the distance between air knife tip and soil/utility. 3c. Continually remove soil slurry from hole with vacuum, which may have an abrasive effect on utility casings. 3d. Use proper body positioning and lifting techniques that minimizes muscle strain; keep back straight, lift with legs, keep

[1] Each Job or Operation consists of a set of tasks / steps. Be sure to list all the steps needed to perform job.

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[3] Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the risk. List the recommended safe operating procedures. Say exactly what needs to be done - such as "use two persons to lift." Avoid general statements such as, "be careful."

		load close to body, and never reach with a load.
3. Pre-clearing with air knife and soil vacuum, and/or clearance with hand tools (continued)	3d. **OVEREXERTION**: (continued) Poor body positioning when handling equipment and materials.	3d. Ensure that loads are balanced to reduce the potential for muscle strain. 3d. Two people or a mechanical lifting aid are required when lifting objects over 50 lb. or when the shape makes the object difficult to lift.
	3e. **FALL**: Tripping/falling due to uneven terrain, weather conditions, and materials/equipment stored at the Site.	3e. Inspect walking path for uneven terrain, weather-related hazards (e.g., ice, puddles, snow, etc.), and obstructions prior to mobilizing equipment. 3e. Walk around any stored materials/equipment; do not climb over. Practice good housekeeping. 3e. Use established pathways and walk on stable, secure ground. 3e. Equipment and tools will be stored at the lowest point of potential energy and out of the walkway and immediate work area (i.e., tools should not be propped against walls or nearby equipment or vehicles). 3e. Equipment and tools that are not anticipated to be used will be returned to a storage area that is out of the immediate work area. 3e. Ensure power cords/hoses are grouped when used within the work area. Mark out cords/hoses that cross pathways with traffic cones. 3e. Ensure all Site personnel and equipment stay a minimum of 2 feet from an open hole. Mark out open holes with traffic cones/caution tape, etc. 3e. Pre-cleared location will be finished flush to grade as to prevent a slip/trip hazard.
	3f. **CAUGHT**: Pinch points associated with the equipment and vacuum hose.	3f. Always wear cut-resistant gloves when making connections and using hand tools. 3f. Inspect the equipment prior to use for potential pinch points. 3f. Test all emergency shutdown devices prior to using equipment. 3f. Ensure all jewelry is removed, loose clothing is secured, and PPE is secured close to the body. 3f. **All non-essential personnel shall maintain a 10 foot exclusion zone**; position body out of the line-of-fire of equipment. 3f. **Drillers and helpers will understand and use the "Show Me Your Hands Policy".**
	3g. **EXPOSURE**: Noise from vac truck and/or air compressor.	3g. Wear hearing protection when vac truck and air compressor are in operation. Otherwise, if sound levels exceed 85 dB, don hearing protection.
4. Move drum to staging area using drum cart.	4a. **EXPOSURE/CONTACT**: Contamination (e.g., Separate Phase Hydrocarbons (SPH), contaminated groundwater, soil).	4a. Wear chemically resistant gloves (i.e., Nitrile; worn in addition to cut resistant gloves). 4a. Do not overfill drums. Ensure that the drum lids are attached securely. 4a. Stage all drums in the designated storage area (per Roux Project Manager) and ensure they are labeled.
	4b. **EXERTION**: Muscle strain while maneuvering drums with drum cart/lift gate.	4b. See 3d. Do not overfill drums. Use lift gate on back of truck to load and unload drums or drum cart to transport drums.
	4c. **CAUGHT**: Pinch points associated with handling drum lid.	4c. Ensure that fingers are not placed under the lid of the drum. Wear cut-resistant gloves. Use 15/16" ratchet while sealing drum lid.
5. Decontaminate equipment and tools.	5a. **EXPOSURE/CONTACT**: To contamination (e.g., Separate Phase Hydrocarbons (SPH), contaminated groundwater, vapors).	5a. See 4a. 5a. Contain decontamination water (closed lid) so that it does not spill. 5a. Use an absorbent pad to clean spills, if necessary. 5a. Store all impacted materials/PPE in a designated storage container (per Roux Project Manager) and ensure the container is labeled.
	5b. **EXPOSURE**: To chemicals in cleaning solution.	5b. See 4a.

[1] Each Job or Operation consists of a set of tasks / steps. Be sure to list all the steps needed to perform job.

[2] A hazard is a potential danger. Break hazards into five types: Contact - victim is struck by or strikes an object; Caught - victim is caught on, caught in or caught between objects; Fall - victim falls to ground or lower level (includes slips and trips); Exertion - excessive strain or stress / ergonomics / lifting techniques; Exposure - inhalation/skin hazards; Energy Source – electricity, pressure, compression/tension.

[3] Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the risk. List the recommended safe operating procedures. Say exactly what needs to be done - such as "use two persons to lift". Avoid general statements such as, "be careful".

JOB SAFETY ANALYSIS Ctrl. No. GEN-004	DATE 10/2/2019	☐ NEW ☒ REVISED	PAGE 1 of 2

JSA TYPE CATEGORY:	WORK TYPE:	WORK ACTIVITY (Description):	
Generic	**Drilling**	**Direct Push Soil Borings / Well Installation**	
DEVELOPMENT TEAM	**POSITION / TITLE**	**REVIEWED BY:**	**POSITION / TITLE**
Jeffrey Wills	Senior Hydrogeologist	Levi Curnutte	SHSO

REQUIRED AND / OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT

☐ LIFE VEST ☒ HARD HAT ☐ LIFELINE / BODY HARNESS ☒ SAFETY GLASSES	☐ GOGGLES ☐ FACE SHIELD ☒ HEARING PROTECTION: (as needed) ☒ SAFETY SHOES: Composite-toe or steel toe boots	☐ AIR PURIFYING RESPIRATOR ☐ SUPPLIED RESPIRATOR ☒ PPE CLOTHING: Fluorescent reflective vest or high visibility clothing, Long Sleeve Shirt	☒ GLOVES: Leather, Nitrile and cut resistant ☒ OTHER: Insect Repellant, sunscreen (as needed)

REQUIRED AND / OR RECOMMENDED EQUIPMENT

Geoprobe or Truck-Mounted Direct Push Drill Rig, Hand Tools, Photoionization Detector, Multi-Gas Meter (or equivalent), Macrocore liners, Liner Opening Tool, 20 lb. Fire Extinguisher, 42" Cones & Flags, "Work Area" Signs, Water

COMMITMENT TO LPS - All personnel onsite will actively participate in SPSA performance by verbalizing SPSAs throughout the day.

Exclusion Zone Policy – All non-essential personnel will maintain a distance of 10' feet from drilling equipment while moving/engaged.

"SHOW ME YOUR HANDS"
Driller and helper should show that hands are clear from controls and moving parts

Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
1. Mobilization of drilling rig (ensure the Subsurface Clearance Protocol and Drill Rig Checklist are completed)	1a. **CONTACT**: Equipment/property damage.	1a. The drill rig's tower/derrick will be lowered and secured prior to mobilization. 1a. A spotter should be utilized while moving the drill rig. If personnel move into the path of the drill rig, the drill rig will be stopped until the path is again clear. Use a spotter for all required backing operations. 1a. Set-up the work area and position equipment in a manner that eliminates or reduces the need for backing of support trucks and trailers. 1a. When backing up truck rig with an attached trailer use a second spotter if there is tight clearance simultaneously on multiple sides of the equipment or if turning angles limit driver visibility. 1a. Inspect the driving path for uneven terrain. Level or avoid if needed. 1a. Drill rig should have a minimum **exclusion zone of 10 feet** for non-essential personnel (i.e., driller helper, geologist) when the rig is moving/ in operation.
	1b. **FALL**: Slip/trip/fall hazards.	1b Inspect walking path for uneven terrain, weather-related hazards (i.e., ice, puddles, snow, etc.), and obstructions prior to mobilizing equipment. 1b. Do not climb over stored materials/equipment; walk around. Practice good housekeeping. 1b. Use established pathways and walk on stable, secure ground.
2. Raising tower/derrick of drill rig	2a. **CONTACT**: Overhead hazards.	2a. Prior to raising the tower/derrick, the area above the drilling rig will be inspected for wires, tree limbs, piping, or other structures, that could come in contact with the rig's tower and/or drilling rods or tools. 2a. Maintain a safe distance from overhead structures.
	2b. **CONTACT**: Pinch Points when raising the rig and instability of rig	2b. Inspect the equipment prior to use and avoid pinch points. 2b. Lower out riggers on rig to ensure stability prior to raising rig tower/derrick. 2b. If the rig needs to be mounted, be sure to use three points of contact.
3. Advancement of drilling equipment and well installation	3a. **CONTACT**: Flying debris	3a. Be aware of and avoid potential lines of fire and wear required PPE such as eye, ear, and hand protection.

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[3] Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the risk. List the recommended safe operating procedures. Say exactly what needs to be done - such as "use two persons to lift". Avoid general statements such as, "be careful".

3. Advancement of drilling equipment and well installation (Continued)	3b. **EXPOSURE**: Noise and dust.	3b. Wet borehole area with sprayer to minimize dust. 3b. Stand upwind and keep body away from rig. 3b. Dust mask should be worn if conditions warrant. 3b. Wear hearing protection when the drill rig is in operation.
	3c. **CAUGHT**: Limb/extremity pinching; abrasion/crushing.	3c. Always wear leather gloves when making connections and using hand tools; wear cut-resistant (i.e., Kevlar) gloves when handling cutting tools. 3c. Inspect the equipment prior to use for potential pinch points. Keep hands away from being between pinch points and use of tools is preferable compared to fingers and hands. 3c. Inspect drill head for worn surface or missing teeth; replace if damaged or blunt. 3c. Ensure all jewelry is removed, loose clothing is secured, and PPE is secured close to the body. 3c. All non-essential personnel should stay away from the immediate work area; position body out of the line-of-fire of equipment. 3c. Drillers and helpers will understand and use the "Show Me Your Hands" Policy. 3c. Spinning rods/casing have an **exclusion zone of 10 feet** while in operation.
	3d. **CONTACT**: Equipment imbalance during advancement of drill equipment.	3d. Drillers will advance the borehole with caution to avoid causing the rig to become imbalanced and/or tip. 3d. The blocking and leveling devices used to secure the rig will be inspected by drillers and Roux personnel regularly to see if shifting has occurred. 3d. In addition, personnel and equipment that are non-essential to the advancement of the borehole will be positioned away from the rig at a distance that is at least as far as the boom is high (**minimum exclusion zone of 10 feet**).
	3e. **EXPOSURE**: Inhalation of contamination/vapors.	3e. Air monitoring using a calibrated photoionization detector (PID) will be used to periodically to monitor the breathing zone of the work area. 3e. If a reading of >5ppm is recorded, the Roux field personnel must temporarily cease work, instruct all Site personnel to step away from the area of elevated readings and inform the Roux PM of the condition. The Roux PM will then recommend additional precautions in accordance with the site specific health and safety plan.
	3f. **FALL**: Slip/trip/fall hazards.	3f. Contain drill cuttings and drilling water to prevent fall hazards from developing in work area. 3f. See 1b.
	3g. **EXERTION**: Potential for muscle strain/injury while lifting and installing well casings, lifting sand bags, and/or lifting rods.	3g. Keep back straight and bend at the knees. 3g. Utilize team lifting for objects over 50lbs. 3g. Use mechanical lifting device for odd shaped objects.
4. Decontaminate equipment.	4a. **EXPOSURE/CONTACT**: To contamination (e.g., Separate Phase Hydrocarbons (SPH), contaminated groundwater, vapors).	4a. Wear chemical-resistant disposable gloves and safety glasses. 4a. Contain decontamination water so that it does not spill. 4a. Use an absorbent pad to clean spills, if necessary. 4a. See 3b.
	4b. **EXPOSURE:** To chemicals in cleaning solution including ammonia.	4b. See 4a. Review MSDS to ensure appropriate precautions are taken and understood.

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[3] Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the risk. List the recommended safe operating procedures. Say exactly what needs to be done - such as "use two persons to lift". Avoid general statements such as, "be careful".

JOB SAFETY ANALYSIS	Cntrl#: GEN-015	DATE 10/2/2019	☐NEW ☒REVISED	PAGE 1 of 2

JSA TYPE CATEGORY:	WORK TYPE:	WORK ACTIVITY (Description):	
GENERIC	**Drilling**	**Well Development**	
DEVELOPMENT TEAM	**POSITION / TITLE**	**REVIEWED BY:**	**POSITION / TITLE**
Jeff Wills	Senior Hydrogeologist	Levi Curnutte	SHSM

REQUIRED AND / OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT

☐ LIFE VEST ☒ HARD HAT ☐ LIFELINE / BODY HARNESS ☒ SAFETY GLASSES	☐ GOGGLES ☐ FACE SHIELD ☒ HEARING PROTECTION (as needed) ☒ SAFETY SHOES: Composite-toe or steel toe boots	☐ AIR PURIFYING RESPIRATOR ☐ SUPPLIED RESPIRATOR ☒ PPE CLOTHING: Fluorescent reflective vest or high visibility clothing	☒ GLOVES: Leather, Nitrile and cut resistant ☒ OTHER: Insect repellant, sunscreen (as needed)

REQUIRED AND / OR RECOMMENDED EQUIPMENT

Required Equipment as needed: Truck Rig or support truck, Trailer, 42 inch Safety cones and flags, Caution Tape, Interface Probe, Power Source, Submercible Pump, Surge Block/Plunger, 20 lb. Fire Extinguisher, Holding Tanks and/or Buckets, Tools as needed: Socket and Pipe Wrench, Screw Driver, Pry Bar, Ratchet, Vault Key.

COMMITMENT TO LPS - All personnel onsite will actively participate in SPSA performance by verbalizing SPSAs throughout the day.

Maintain a 20 Foot Exclusion Zone During Development Activities

"SHOW ME YOUR HANDS"
Driller and helper should show that hands are clear from controls and moving parts

Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
1. Mobilization / Demobilization (**Review Mobilization and Demobilization JSA**)	1a. **CONTACT:** Equipment/property damage.	1a. The truck rig's tower/derrick will be lowered and secured prior to mobilization. 1a. Set-up the work area / position equipment in a manner that eliminates or reduces the need for backing of trucks and trailers. 1a. All non-essential personnel should **maintain an exclusion zone of 20 feet**. 1a. Beep horn twice before backing up. 1a. When backing up with an attached trailer use a spotter if there is tight clearance simultaneously on multiple sides of the equipment or if turning angles limit driver visibility. Stay away from the line-of-fire. 1a. Inspect the driving path for uneven terrain. Level or avoid if needed.
	1b. **FALL:** Slip/trip/fall hazards.	1b Inspect walking path for uneven terrain, weather-related hazards (i.e., ice, puddles, snow, etc.), and obstructions prior to mobilizing equipment. 1b. Do not climb over stored materials/equipment; walk around. Store equipment at lowest potential energy.
2. Open/close well.	2a. **OVEREXERTION:** Muscle strain (some wells have large vault covers).	2a. Keep back straight, lift with legs, keep load close to body, and never reach with a load. Ensure that loads are balanced to reduce the potential for muscle strain. Two people are required when lifting objects over 50 lbs or when the shape makes the object difficult to lift.
	2b. **CAUGHT:** Pinch points associated with removing/replacing manholes and working with hand tools.	2b. Wear leather gloves when working with well vault/cover and hand tools. Do not put fingers under well vault/cover. 2b. Use ratchet and pry bar for well cover and inspect before use.
	2c. **EXPOSURE:** Potentially hazardous vapors.	2c. No open flames/heat sources. 2c. Allow well to vent after opening it and before starting development activities to minimize exposure to vapors. Air monitoring must be performed prior to set up and during the well development activities. Work on upwind side of well.
	2d. **CONTACT:** Traffic.	2d. Wear required PPE including high visibility clothing or reflective vest. 2d. Delineate work area with 42" safety cones and/or other barriers. Position vehicle to protect against oncoming traffic. 2d. Face traffic, maintain eye contact with oncoming vehicles, and establish a safe exit route.

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[3] Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the risk. List the recommended safe operating procedures. Say exactly what needs to be done - such as "use two persons to lift". Avoid general statements such as, "be careful".

Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
3. Develop well (mechanical surging).	3a. **CAUGHT:** Cut hazards and finger pinch points. 3b. **CONTACT/EXPOSURE:** Contamination (e.g., SPH, contaminated groundwater, vapors). 3c. **OVEREXERTION:** Muscle strain from lifting equipment. 3d. **CONTACT:** Injury while handling wench line/cable, or with active surging equipment	3a See 2b. 3a. Use required PPE including leather/cut-resistant gloves when handling development equipment. Identify finger/hand pinch points. Keep hands away from active surge equipment. 3a. All non-essential personnel should **maintain an exclusion zone of 20 feet**. 3b. See 2c. 3b. Wear Nitrile gloves and safety glasses. Insert and remove surge block/plunger and line/cable slowly to avoid splashing at the surface. 3b. Use an absorbent pad to clean any spills. 3c. See 2a. 3c. Use mechanical device to insert and remove surge block/plunger if greater than 50lb. 3d. If using a drill rig, inspect all wench lines/cables for any kinks or if frayed prior to use. Replace any damaged lines/cables. Review **Drill Rig checklist prior to development activities**. . 3d. See 3a.
4. Purging well (pumping water to holding tanks/drums/buckets).	4a. **CAUGHT:** Pinch points associated with connecting hose to tank. Pinch points associated with handling pump and hoses. 4b. **FALL:** Using side mounted ladder when attaching hose to tank. Slip, trip, fall from lines/hoses 4c. **CONTACT:** Contamination (e.g., SPH, contaminated groundwater). 4d. **EXERTION:** Muscle strain from lifting/carrying equipment. 4e.**FALL:** Spilled purge water.	4a. See 3a. 4a. Ensure that fingers are not placed near coupling when attaching and securing hose(s). Do not place fingers under pump/hoses. Wear leather or cut-resistant gloves when handling pump/hose(s). 4a. Keep hands clear from any line of fire. 4b. Inspect ladder steps make sure steps are not bent/damaged and free of debris/fluid. 4b. Use three points of contact at all times when using ladder. 4b. Utilize anti-whip cords on all compressed hoses. Keep hoses and lines coiled and organized out of designated walking paths around the work zone. 4c. Secure water hose. 4c. Do not overfill tanks, and purge/transfer liquids in such a manner that they do not splash. (See 3b). 4c. Dispose of used materials/PPE in the designated impacted PPE container. 4d. Use lifting techniques to minimize muscle strain when carrying equipment. When possible, use mechanic means to lift equipment. 4d. Use two people to lift any equipment or material that is over 50 lbs. 4e. Clean up any spills using absorbent pads or spill kits.
5. Decontaminate equipment	5a. **CONTACT/EXPOSURE:** Contamination (e.g., SPH, contaminated groundwater, vapors). 5b. **EXPOSURE/CONTACT:** Chemicals in cleaning solution	5a. See 3b. 5b. Decontaminate equipment in well-ventilated area. Wear nitrile gloves to avoid skin contact with cleaning solutions.

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JOB SAFETY ANALYSIS Ctrl. No. GEN-005	DATE 10/2/2019	☐ NEW ☒ REVISED	PAGE 1 of 2

JSA TYPE CATEGORY	WORK TYPE:	WORK ACTIVITY (Description):
Generic	**Gauging and Sampling**	**Gauging and Sampling**

DEVELOPMENT TEAM	POSITION / TITLE	REVIEWED BY:	POSITION / TITLE
Jeff Wills	Senior Hydrogeologist	Levi Curnutte	SHSM

REQUIRED AND / OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT

☒ LIFE VEST	☐ GOGGLES	☐ AIR PURIFYING RESPIRATOR	☒ GLOVES: Leather, Nitrile and cut resistant
☒ HARD HAT	☐ FACE SHIELD	☐ SUPPLIED RESPIRATOR	☒ OTHER: Knee pads, Insect Repellant, sunscreen (as needed)
☐ LIFELINE / BODY HARNESS	☐ HEARING PROTECTION	☒ PPE CLOTHING: Fluorescent reflective vest or high visibility clothing	
☒ SAFETY GLASSES	☒ SAFETY SHOES: Composite-toe or steel toe boots		

REQUIRED AND / OR RECOMMENDED EQUIPMENT

42 inch Safety Cones, Caution Tape, Interface Probe and/or Water Level Meter, 20 lb. Fire Extinguisher, Buckets. Tools as needed: Socket Wrench, Impact Gun, Screw Driver, Crow Bar, Mallet, and Wire Brush.

Commitment to LPS – All personnel onsite will actively participate in SPSA performance by verbalizing SPSAs throughout the day.

Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
1. Mobilization to monitoring well(s).	1a. **FALL:** Personal injury from slip/trip/fall due to uneven terrain and/or obstructions.	1a. Inspect pathway and plan for most suitable designated pathway prior to mobilization. 1a. Use established pathways, walk and/or drive on stable, secure, ground and avoid steep hills or uneven terrain. 1a. If working near open water with an unguarded edge, wear life vest.
	1b. **CONTACT:** With traffic/third parties.	1b. Identify potential traffic sources and delineate work area with 42 inch traffic safety cones. Position vehicle to protect against oncoming traffic. Use caution tape to provide a more visible delineation of the work area if necessary. 1b. Wear appropriate PPE including high visibility clothing or reflective vest. 1b. Face traffic, maintain eye contact with oncoming vehicles, and establish a safe exit route.
	1c. **EXPOSURE:** To biological hazards.	1c. Inspect work area for bees and insects. 1c. Use insect/tick repellent as necessary.
2. Open/close well.	2a. **ERGNOMICS:** Muscle strain.	2a. Use proper lifting techniques; keep back straight, lift with legs and bend knees when reaching to open/close well.
	2b. **CAUGHT:** Pinch/crush points associated with removing/replacing manholes and working with hand tools.	2b. Wear leather gloves or cut resistant gloves when working with well cover and hand tools. 2b. Use proper tools (ratchet and pry bar/impact gun for well cover) and inspect before use. 2b. Do not put fingers under well cover.
	2c. **CAUGHT:** Pinch points associated with placing J-plug back onto PVC pipe.	2c. See 2b. 2c. Keep fingers out of line-of-fire when securing cap
	2d. **EXPOSURE:** To potential hazardous vapors.	2d. No open flames/heat sources. 2d. To minimize exposure to vapors allow well to vent after opening it and before sampling activities begin. 2d. Stand up-wind, if possible, to avoid vapors.
3. Gauge well.	3a. **CONTACT:** With contamination (e.g. contaminated groundwater).	3a. Wear chemical-resistant disposable gloves (over cut-resistant gloves) and safety glasses when gauging well. 3a. Insert and remove probe slowly to avoid splashing. 3a. Use an absorbent pad to clean probe.
	3b. **CONTACT:** With traffic.	3b. See 1b.
4. Purge and sample well.	4a. **EXPOSURE/CONTACT:** To contamination (e.g., SPH, contaminated groundwater, vapors) and/or sample preservatives.	4a. Open and fill sample jars slowly to avoid splashing and contact with preservatives. 4a. Wear cut-resistant gloves and chemical-resistant disposable gloves when sampling. 4a. Fill sample containers over purge container to avoid spilling water onto the ground. 4a. Use an absorbent pad to clean spills. 4a. When using a bailer to purge a well, pull the bailer slowly from the well to avoid splash hazards. 4a. When sampling or purging the water using a bailer, pour out water slowly to reduce the potential for splash hazards with groundwater.

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		4a. When using a tubing valve always remove the valve slowly after sample collection to release any pressure and avoid pressurized splash hazards 4a. When collecting a groundwater sample always point sampling apparatus (tubing, bailer, etc.) away from face and body.
Assess **[1]JOB STEPS**	**Analyze** **[2]POTENTIAL HAZARDS**	**Act** **[3]CRITICAL ACTIONS**
4. Purge and sample well (Continued).	4b. **CONTACT:** Personal injury from cuts, abrasions, or punctures by glassware or sharp objects.	4b. To avoid spills or breakage, place sample ware on even surface. 4b. Do not over tighten caps on glass sample ware. 4b. Wear chemical-resistant nitrile disposable gloves over cut-resistant (i.e. Kevlar) gloves when sampling and handling glassware (i.e., VOA vials) or when using cutting tools.
	4c. **ERGONOMICS:** Muscle strain while carrying equipment.	4c. Use proper lifting techniques when handling/moving equipment; bend knees and keep back straight. 4c. Use mechanical assistance or team lifting techniques when equipment is 50lbs or heavier. 4c. Make multiple trips to carry equipment.
	4d. **CONTACT:** With traffic.	4d. See 1b.
	4e. **CONTACT**: Pinch points with groundwater pump components (i.e. wheel, line, clamps)	4e. Wear leather gloves when working with groundwater pumps 4e. Never place hands on or near pinch points such as the wheel, clamps or other moving parts during pump operations 4e. Use correct the correct mechanisms, such as a pump reel, to lower pump into well 4e. Never attempt to manually stop any moving part of equipment including hose reels and/or tubing.
	4f. **ERGONOMICS**: Muscle strain from repetitive motion of bailing and sampling a well	4f. See 4c. 4f. Include a stretch break when repetitive motions are part of the task.
5. Management of purge water.	5a. **EXPOSURE/CONTACT:** To contamination (e.g., SPH, contaminated groundwater, vapors). 5b. **ERGONOMICS:** Muscle strain from lifting/carrying and moving containers.	5a. Do not overfill container and pour liquids in such a manner that they do not splash. 5a. Properly dispose of used materials/PPE in appropriate container in designated storage area. 5b. Use proper lifting techniques when lifting / carrying or moving container(s) (see 4c.). 5b. Do not overfill container(s).
6. Decontaminate equipment.	6a. **EXPOSURE/CONTACT:** To contamination (e.g., SPH, contaminated groundwater, vapors). 6b. **CAUGHT:** Pinch points associated with handling hand tools	6a. Work on the upwind side, where possible, of decon area. 6a. Wear chemical-resistant disposable gloves and safety glasses. 6a. Use an absorbent pad to clean spills. 6b. See 2b. 6b. Inspect hand tools for sharp edges before decontaminating

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[3] Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the risk. List the recommended safe operating procedures. Say exactly what needs to be done - such as "use two persons to lift". Avoid general statements such as, "be careful".

APPENDIX B

Safety Data Sheets (SDSs) for Chemicals Used

SAFETY DATA SHEET

Creation Date 10-Dec-2009 **Revision Date** 23-Jan-2018 **Revision Number** 5

1. Identification

Product Name **Tetrachloroethylene**

Cat No. : **AC445690000; ACR445690010; AC445690025; AC445691000**

CAS-No 127-18-4
Synonyms Perchloroethylene

Recommended Use Laboratory chemicals.
Uses advised against Not for food, drug, pesticide or biocidal product use

Details of the supplier of the safety data sheet

Company
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

Emergency Telephone Number
For information **US** call: 001-800-ACROS-01 / **Europe** call: +32 14 57 52 11
Emergency Number **US:**001-201-796-7100 / **Europe:** +32 14 57 52 99
CHEMTREC Tel. No.**US:**001-800-424-9300 / **Europe:**001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Skin Corrosion/irritation	Category 2
Serious Eye Damage/Eye Irritation	Category 2
Skin Sensitization	Category 1
Carcinogenicity	Category 1B
Specific target organ toxicity (single exposure)	Category 3
Target Organs - Central nervous system (CNS).	
Specific target organ toxicity - (repeated exposure)	Category 2
Target Organs - Kidney, Liver, Blood.	

Label Elements

Signal Word
Danger

Hazard Statements
Causes skin irritation
Causes serious eye irritation
May cause an allergic skin reaction
May cause drowsiness or dizziness
May cause cancer
May cause damage to organs through prolonged or repeated exposure



Precautionary Statements
Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Contaminated work clothing should not be allowed out of the workplace
Do not breathe dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Wear protective gloves/protective clothing/eye protection/face protection
Response
IF exposed or concerned: Get medical attention/advice
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Skin
IF ON SKIN: Wash with plenty of soap and water
Take off contaminated clothing and wash before reuse
If skin irritation or rash occurs: Get medical advice/attention
Eyes
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
Toxic to aquatic life with long lasting effects
WARNING. Cancer - https://www.p65warnings.ca.gov/.

3. Composition/Information on Ingredients

Component	CAS-No	Weight %
Tetrachloroethylene	127-18-4	>95

4. First-aid measures

General Advice If symptoms persist, call a physician.

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. If skin irritation persists, call a physician.

Inhalation Move to fresh air. If not breathing, give artificial respiration. Get medical attention if symptoms occur.

Ingestion Clean mouth with water and drink afterwards plenty of water.

Most important symptoms and effects	None reasonably foreseeable. May cause allergic skin reaction. Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting: Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing
Notes to Physician	Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Unsuitable Extinguishing Media	No information available
Flash Point	No information available
Method -	No information available
Autoignition Temperature	No information available
Explosion Limits	
Upper	No data available
Lower	No data available
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical
Thermal decomposition can lead to release of irritating gases and vapors. Containers may explode when heated.

Hazardous Combustion Products
Chlorine Hydrogen chloride gas Phosgene
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical hazards
2	0	0	N/A

6. Accidental release measures

Personal Precautions	Use personal protective equipment. Ensure adequate ventilation.
Environmental Precautions	Do not flush into surface water or sanitary sewer system.
Methods for Containment and Clean Up	Soak up with inert absorbent material. Keep in suitable, closed containers for disposal.

7. Handling and storage

Handling	Wear personal protective equipment. Do not get in eyes, on skin, or on clothing. Ensure adequate ventilation. Avoid ingestion and inhalation.
Storage	Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from sunlight.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH	Mexico OEL (TWA)
Tetrachloroethylene	TWA: 25 ppm STEL: 100 ppm	(Vacated) TWA: 25 ppm (Vacated) TWA: 170 mg/m^3 Ceiling: 200 ppm TWA: 100 ppm	IDLH: 150 ppm	TWA: 100 ppm TWA: 670 mg/m^3 TWA: 200 ppm TWA: 1250 mg/m^3 STEL: 200 ppm STEL: 1340 mg/m^3

Legend

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
NIOSH IDLH: The National Institute for Occupational Safety and Health Immediately Dangerous to Life or Health

Engineering Measures Use only under a chemical fume hood. Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection Long sleeved clothing.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Liquid
Appearance	Colorless
Odor	Characteristic, sweet
Odor Threshold	No information available
pH	No information available
Melting Point/Range	-22 °C / -7.6 °F
Boiling Point/Range	120 - 122 °C / 248 - 251.6 °F @ 760 mmHg
Flash Point	No information available
Evaporation Rate	6.0 (Ether = 1.0)
Flammability (solid,gas)	Not applicable
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	18 mbar @ 20 °C
Vapor Density	No information available
Density	1.619
Specific Gravity	1.625
Solubility	0.15 g/L water (20°C)
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	> 150°C
Viscosity	0.89 mPa s at 20 °C
Molecular Formula	C2 Cl4
Molecular Weight	165.83

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Stable under normal conditions.

Conditions to Avoid Incompatible products. Excess heat. Exposure to moist air or water.

Incompatible Materials Strong acids, Strong oxidizing agents, Strong bases, Metals, Zinc, Amines, Aluminium

Hazardous Decomposition Products Chlorine, Hydrogen chloride gas, Phosgene

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Tetrachloroethylene	LD50 = 2629 mg/kg (Rat)	LD50 > 10000 mg/kg (Rat)	LC50 = 27.8 mg/L (Rat) 4 h

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation Irritating to eyes and skin

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Tetrachloroethylene	127-18-4	Group 2A	Reasonably Anticipated	A3	X	A3

IARC: (International Agency for Research on Cancer)

NTP: (National Toxicity Program)

ACGIH: (American Conference of Governmental Industrial Hygienists)

Mexico - Occupational Exposure Limits - Carcinogens

IARC: (International Agency for Research on Cancer)
Group 1 - Carcinogenic to Humans
Group 2A - Probably Carcinogenic to Humans
Group 2B - Possibly Carcinogenic to Humans
NTP: (National Toxicity Program)
Known - Known Carcinogen
Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen
A1 - Known Human Carcinogen
A2 - Suspected Human Carcinogen
A3 - Animal Carcinogen
ACGIH: (American Conference of Governmental Industrial Hygienists)
Mexico - Occupational Exposure Limits - Carcinogens
A1 - Confirmed Human Carcinogen
A2 - Suspected Human Carcinogen
A3 - Confirmed Animal Carcinogen
A4 - Not Classifiable as a Human Carcinogen
A5 - Not Suspected as a Human Carcinogen

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure Central nervous system (CNS)

STOT - repeated exposure Kidney Liver Blood

Aspiration hazard No information available

Symptoms / effects,both acute and delayed Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting: Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing

Endocrine Disruptor Information

Component	EU - Endocrine Disrupters Candidate List	EU - Endocrine Disruptors - Evaluated Substances	Japan - Endocrine Disruptor Information
Tetrachloroethylene	Group II Chemical	Not applicable	Not applicable

Other Adverse Effects Tumorigenic effects have been reported in experimental animals.

12. Ecological information

Ecotoxicity

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. The product contains following substances which are hazardous for the environment.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Tetrachloroethylene	EC50: > 500 mg/L, 96h (Pseudokirchneriella subcapitata)	LC50: 4.73 - 5.27 mg/L, 96h flow-through (Oncorhynchus mykiss) LC50: 11.0 - 15.0 mg/L, 96h static (Lepomis macrochirus) LC50: 8.6 - 13.5 mg/L, 96h static (Pimephales promelas) LC50: 12.4 - 14.4 mg/L, 96h flow-through (Pimephales promelas)	EC50 = 100 mg/L 24 h EC50 = 112 mg/L 24 h EC50 = 120.0 mg/L 30 min	EC50: 6.1 - 9.0 mg/L, 48h Static (Daphnia magna)

Persistence and Degradability Insoluble in water Persistence is unlikely based on information available.

Bioaccumulation/ Accumulation No information available.

Mobility . Is not likely mobile in the environment due its low water solubility. Will likely be mobile in the environment due to its volatility.

Component	log Pow
Tetrachloroethylene	2.53 - 2.88

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
Tetrachloroethylene - 127-18-4	U210	-

14. Transport information

DOT

UN-No UN1897
Proper Shipping Name TETRACHLOROETHYLENE
Hazard Class 6.1
Packing Group III

TDG

UN-No UN1897

Proper Shipping Name TETRACHLOROETHYLENE
Hazard Class 6.1
Packing Group III

IATA
UN-No UN1897
Proper Shipping Name TETRACHLOROETHYLENE
Hazard Class 6.1
Packing Group III

IMDG/IMO
UN-No UN1897
Proper Shipping Name TETRACHLOROETHYLENE
Hazard Class 6.1
Subsidiary Hazard Class P
Packing Group III

15. Regulatory information

All of the components in the product are on the following Inventory lists: X = listed

International Inventories

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
Tetrachloroethylene	X	X	-	204-825-9	-		X	X	X	X	X

Legend:
X - Listed
E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
P - Indicates a commenced PMN substance
R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).
Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b) Not applicable

SARA 313

Component	CAS-No	Weight %	SARA 313 - Threshold Values %
Tetrachloroethylene	127-18-4	>95	0.1

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Tetrachloroethylene	-	-	X	X

Clean Air Act

Component	HAPS Data	Class 1 Ozone Depletors	Class 2 Ozone Depletors
Tetrachloroethylene	X		-

OSHA Occupational Safety and Health Administration
Not applicable

CERCLA This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
Tetrachloroethylene	100 lb 1 lb	-

California Proposition 65 This product contains the following proposition 65 chemicals

Component	CAS-No	California Prop. 65	Prop 65 NSRL	Category
Tetrachloroethylene	127-18-4	Carcinogen	14 µg/day	Carcinogen

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Tetrachloroethylene	X	X	X	X	X

U.S. Department of Transportation

Reportable Quantity (RQ): Y
DOT Marine Pollutant Y
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security
This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

16. Other information

Prepared By
Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date 10-Dec-2009
Revision Date 23-Jan-2018
Print Date 23-Jan-2018
Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

SAFETY DATA SHEET

Creation Date 03-Feb-2010 **Revision Date** 14-Jul-2016 **Revision Number** 2

1. Identification

Product Name **Trichloroethylene**

Cat No. : **T340-4; T341-4; T341-20; T341-500; T403-4**

Synonyms Trichloroethene (Stabilized/Technical/Electronic/Certified ACS)

Recommended Use Laboratory chemicals.
Uses advised against

Details of the supplier of the safety data sheet

Company
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Emergency Telephone Number
CHEMTREC®, Inside the USA: 800-424-9300
CHEMTREC®, Outside the USA: 001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Skin Corrosion/irritation	Category 2
Serious Eye Damage/Eye Irritation	Category 2
Skin Sensitization	Category 1
Germ Cell Mutagenicity	Category 2
Carcinogenicity	Category 1A
Specific target organ toxicity (single exposure)	Category 3
Target Organs - Central nervous system (CNS).	
Specific target organ toxicity - (repeated exposure)	Category 2
Target Organs - Kidney, Liver, Heart, spleen, Blood.	

Label Elements

Signal Word
Danger

Hazard Statements
Causes skin irritation
Causes serious eye irritation
May cause an allergic skin reaction
May cause drowsiness or dizziness
Suspected of causing genetic defects
May cause cancer
May cause damage to organs through prolonged or repeated exposure



Precautionary Statements
Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Contaminated work clothing should not be allowed out of the workplace
Do not breathe dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Wear protective gloves/protective clothing/eye protection/face protection
Response
IF exposed or concerned: Get medical attention/advice
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Skin
IF ON SKIN: Wash with plenty of soap and water
Take off contaminated clothing and wash before reuse
If skin irritation or rash occurs: Get medical advice/attention
Eyes
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
Harmful to aquatic life with long lasting effects
WARNING! This product contains a chemical known in the State of California to cause cancer, birth defects or other reproductive harm.

3. Composition / information on ingredients

Component	CAS-No	Weight %
Trichloroethylene	79-01-6	100

4. First-aid measures

General Advice Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.

Inhalation Move to fresh air. If not breathing, give artificial respiration. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a

	pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.
Ingestion	Do not induce vomiting. Call a physician or Poison Control Center immediately.
Most important symptoms/effects	None reasonably foreseeable. May cause allergic skin reaction. Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting: Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing
Notes to Physician	Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Unsuitable Extinguishing Media	No information available
Flash Point	No information available
Method -	No information available
Autoignition Temperature	410 °C / 770 °F
Explosion Limits	
Upper	10.5 vol %
Lower	8 vol %
Oxidizing Properties	Not oxidising
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical
Thermal decomposition can lead to release of irritating gases and vapors. Containers may explode when heated. Keep product and empty container away from heat and sources of ignition.

Hazardous Combustion Products
Hydrogen chloride gas Chlorine Phosgene Carbon monoxide (CO) Carbon dioxide (CO_2)
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

NFPA

Health	Flammability	Instability	Physical hazards
2	1	0	N/A

6. Accidental release measures

Personal Precautions	Ensure adequate ventilation. Use personal protective equipment. Keep people away from and upwind of spill/leak. Evacuate personnel to safe areas.
Environmental Precautions	Should not be released into the environment. Do not flush into surface water or sanitary sewer system.
Methods for Containment and Clean Up	Soak up with inert absorbent material. Keep in suitable, closed containers for disposal.

7. Handling and storage

Handling	Wear personal protective equipment. Do not get in eyes, on skin, or on clothing. Use only under a chemical fume hood. Do not breathe vapors or spray mist. Do not ingest.
Storage	Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from light. Do not store in aluminum containers.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH	Mexico OEL (TWA)
Trichloroethylene	TWA: 10 ppm STEL: 25 ppm	(Vacated) TWA: 50 ppm (Vacated) TWA: 270 mg/m^3 Ceiling: 200 ppm (Vacated) STEL: 200 ppm (Vacated) STEL: 1080 mg/m^3 TWA: 100 ppm	IDLH: 1000 ppm	TWA: 100 ppm TWA: 535 mg/m^3 STEL: 200 ppm STEL: 1080 mg/m^3

Legend

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
NIOSH IDLH: The National Institute for Occupational Safety and Health Immediately Dangerous to Life or Health

Engineering Measures Use only under a chemical fume hood. Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection Long sleeved clothing.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Liquid
Appearance	Colorless
Odor	Characteristic
Odor Threshold	No information available
pH	No information available
Melting Point/Range	-85 °C / -121 °F
Boiling Point/Range	87 °C / 188.6 °F
Flash Point	No information available
Evaporation Rate	0.69 (Carbon Tetrachloride = 1.0)
Flammability (solid,gas)	Not applicable
Flammability or explosive limits	
Upper	10.5 vol %
Lower	8 vol %
Vapor Pressure	77.3 mbar @ 20 °C
Vapor Density	4.5 (Air = 1.0)
Specific Gravity	1.460
Solubility	Slightly soluble in water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	410 °C / 770 °F
Decomposition Temperature	> 120°C
Viscosity	0.55 mPa.s (25°C)

Molecular Formula C2 H Cl3
Molecular Weight 131.39

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Light sensitive.

Conditions to Avoid Incompatible products. Excess heat. Exposure to light. Exposure to moist air or water.

Incompatible Materials Strong oxidizing agents, Strong bases, Amines, Alkali metals, Metals,

Hazardous Decomposition Products Hydrogen chloride gas, Chlorine, Phosgene, Carbon monoxide (CO), Carbon dioxide (CO_2)

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information
Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Trichloroethylene	LD50 = 4290 mg/kg (Rat) LD50 = 4920 mg/kg (Rat)	LD50 > 20 g/kg (Rabbit) LD50 = 29000 mg/kg (Rabbit)	LC50 = 26 mg/L (Rat) 4 h

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation Irritating to eyes and skin

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Trichloroethylene	79-01-6	Group 1	Reasonably Anticipated	A2	X	Not listed

IARC: (International Agency for Research on Cancer)

IARC: (International Agency for Research on Cancer)
Group 1 - Carcinogenic to Humans
Group 2A - Probably Carcinogenic to Humans
Group 2B - Possibly Carcinogenic to Humans

NTP: (National Toxicity Program)

NTP: (National Toxicity Program)
Known - Known Carcinogen
Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen

ACGIH: (American Conference of Governmental Industrial Hygienists)

A1 - Known Human Carcinogen
A2 - Suspected Human Carcinogen
A3 - Animal Carcinogen
ACGIH: (American Conference of Governmental Industrial Hygienists)

Mutagenic Effects Mutagenic effects have occurred in humans.

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure Central nervous system (CNS)
STOT - repeated exposure Kidney Liver Heart spleen Blood

Aspiration hazard No information available

Symptoms / effects,both acute and delayed Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting: Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Do not empty into drains. The product contains following substances which are hazardous for the environment. Contains a substance which is:. Harmful to aquatic organisms. Toxic to aquatic organisms.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Trichloroethylene	EC50: = 175 mg/L, 96h (Pseudokirchneriella subcapitata) EC50: = 450 mg/L, 96h (Desmodesmus subspicatus)	LC50: 39 - 54 mg/L, 96h static (Lepomis macrochirus) LC50: 31.4 - 71.8 mg/L, 96h flow-through (Pimephales promelas)	EC50 = 0.81 mg/L 24 h EC50 = 115 mg/L 10 min EC50 = 190 mg/L 15 min EC50 = 235 mg/L 24 h EC50 = 410 mg/L 24 h EC50 = 975 mg/L 5 min	EC50: = 2.2 mg/L, 48h (Daphnia magna)

Persistence and Degradability Persistence is unlikely based on information available.

Bioaccumulation/ Accumulation No information available.

Mobility Will likely be mobile in the environment due to its volatility.

Component	log Pow
Trichloroethylene	2.4

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
Trichloroethylene - 79-01-6	U228	-

14. Transport information

DOT

UN-No UN1710
Proper Shipping Name TRICHLOROETHYLENE
Hazard Class 6.1
Packing Group III

TDG

UN-No UN1710
Proper Shipping Name TRICHLOROETHYLENE
Hazard Class 6.1
Packing Group III

IATA

UN-No UN1710
Proper Shipping Name TRICHLOROETHYLENE

Hazard Class	6.1
Packing Group	III

IMDG/IMO

UN-No	UN1710
Proper Shipping Name	TRICHLOROETHYLENE
Hazard Class	6.1
Packing Group	III

15. Regulatory information

All of the components in the product are on the following Inventory lists: X = listed

International Inventories

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
Trichloroethylene	X	X	-	201-167-4	-		X	X	X	X	X

Legend:
X - Listed
E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
P - Indicates a commenced PMN substance
R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).
Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b) Not applicable

Component	TSCA 12(b)
Trichloroethylene	Section 5

SARA 313

Component	CAS-No	Weight %	SARA 313 - Threshold Values %
Trichloroethylene	79-01-6	100	0.1

SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic Health Hazard	Yes
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Trichloroethylene	X	100 lb	X	X

Clean Air Act

Component	HAPS Data	Class 1 Ozone Depletors	Class 2 Ozone Depletors
Trichloroethylene	X		-

OSHA Occupational Safety and Health Administration
Not applicable

CERCLA
This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
Trichloroethylene	100 lb 1 lb	-

California Proposition 65 This product contains the following proposition 65 chemicals

Component	CAS-No	California Prop. 65	Prop 65 NSRL	Category
Trichloroethylene	79-01-6	Carcinogen Developmental Male Reproductive	14 µg/day 50 µg/day	Developmental Carcinogen

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Trichloroethylene	X	X	X	X	X

U.S. Department of Transportation

Reportable Quantity (RQ): Y
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security
This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

16. Other information

Prepared By
Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date 03-Feb-2010
Revision Date 14-Jul-2016
Print Date 14-Jul-2016
Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer
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End of SDS

Safety Data Sheet
acc. to OSHA HCS

Printing date 03/05/2019 *Reviewed on 03/05/2019*

1 Identification

· **Product identifier**

· **Product Name: BTEX Standard**

· **Part Number:** BTEX
· **Application of the substance / the mixture** Certified Reference Material

· **Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
SPEX CertiPrep, LLC.
203 Norcross Ave, Metuchen,
NJ 08840 USA

· **Information department:** product safety department
· **Emergency telephone number:**
Emergency Phone Number (24 hours)
CHEMTREC (800-424-9300)
Outside US: 703-527-3887

2 Hazard(s) identification

· **Classification of the substance or mixture**



GHS02 Flame

Flam. Liq. 2 H225 Highly flammable liquid and vapor.



GHS06 Skull and crossbones

Acute Tox. 3 H331 Toxic if inhaled.



GHS08 Health hazard

STOT SE 1 H370 Causes damage to organs.

· **Label elements**
· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
· **Hazard pictograms**



GHS02 GHS06 GHS08

· **Signal word** Danger

· **Hazard-determining components of labeling:**
methanol
· **Hazard statements**
H225 Highly flammable liquid and vapor.
H331 Toxic if inhaled.
H370 Causes damage to organs.
· **Precautionary statements**
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Use explosion-proof electrical/ventilating/lighting/equipment.
Do not breathe dust/fume/gas/mist/vapors/spray.
If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
Store locked up.
Dispose of contents/container in accordance with local/regional/national/international regulations.
· **Classification system:**
· **NFPA ratings (scale 0 - 4)**



Health = 1
Fire = 3
Reactivity = 0

(Contd. on page 2)

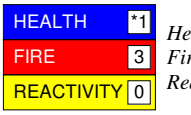
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· **HMIS-ratings (scale 0 - 4)**



*Health = *1*
Fire = 3
Reactivity = 0

· **Other hazards**
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.

3 Composition/information on ingredients

· **Chemical characterization: Mixtures**
· **Description:** Mixture of the substances listed below with nonhazardous additions.

· **Dangerous components:**		
67-56-1	methanol	99.88%

· **Chemical identification of the substance/preparation**		
71-43-2	benzene	0.02%
95-47-6	o-xylene	0.02%
106-42-3	p-xylene	0.02%
108-88-3	toluene	0.02%
100-41-4	ethylbenzene	0.02%
108-38-3	m-xylene	0.02%

4 First-aid measures

· **Description of first aid measures**
· **General information:**
Immediately remove any clothing soiled by the product.
Remove breathing apparatus only after contaminated clothing have been completely removed.
In case of irregular breathing or respiratory arrest provide artificial respiration.
· **After inhalation:**
Supply fresh air or oxygen; call for doctor.
In case of unconsciousness place patient stably in side position for transportation.
· **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
· **After eye contact:** Rinse opened eye for several minutes under running water. Then consult a doctor.
· **After swallowing:** Do not give anything to eat or drink - Do not induce vomitting
· **Information for Doctor:**
· **Most important symptoms and effects, both acute and delayed** No further relevant information available.
· **Indication of any immediate medical attention and special treatment needed** No further relevant information available.

5 Fire-fighting measures

· **Extinguishing media**
· **Suitable extinguishing agents:** CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
· **Special hazards arising from the substance or mixture** During heating or in case of fire poisonous gases are produced.
· **Advice for firefighters**
· **Protective equipment:** Mouth respiratory protective device.

6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures**
Mount respiratory protective device.
Wear protective equipment. Keep unprotected persons away.
· **Environmental precautions:**
Dilute with plenty of water.
Do not allow to enter sewers/ surface or ground water.
· **Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.

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· **Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.
· **Protective Action Criteria for Chemicals**

· **PAC-1:**		
67-56-1	methanol	530 ppm
71-43-2	benzene	52 ppm
108-88-3	toluene	67 ppm
100-41-4	ethylbenzene	33 ppm
108-38-3	m-xylene	130 ppm

· **PAC-2:**		
67-56-1	methanol	2,100 ppm
71-43-2	benzene	800 ppm
108-88-3	toluene	560 ppm
100-41-4	ethylbenzene	1100* ppm
108-38-3	m-xylene	920 ppm

· **PAC-3:**		
67-56-1	methanol	7200* ppm
71-43-2	benzene	4000* ppm
108-88-3	toluene	3700* ppm
100-41-4	ethylbenzene	1800* ppm
108-38-3	m-xylene	2500* ppm

7 Handling and storage

· **Handling:**
· **Precautions for safe handling**
Ensure good ventilation/exhaustion at the workplace.
Open and handle receptacle with care.
Prevent formation of aerosols.
· **Information about protection against explosions and fires:**
Keep ignition sources away - Do not smoke.
Protect against electrostatic charges.
Keep respiratory protective device available.

· **Conditions for safe storage, including any incompatibilities**
· **Storage:**
· **Requirements to be met by storerooms and receptacles:** Store in a cool location.
· **Information about storage in one common storage facility:** Not required.
· **Further information about storage conditions:**
Keep receptacle tightly sealed.
Store in cool, dry conditions in well sealed receptacles.
· **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

· **Additional information about design of technical systems:** No further data; see item 7.

· **Control parameters**

· **Components with limit values that require monitoring at the workplace:**	
67-56-1 methanol	
PEL	Long-term value: 260 mg/m³, 200 ppm
REL	Short-term value: 325 mg/m³, 250 ppm Long-term value: 260 mg/m³, 200 ppm Skin
TLV	Short-term value: 328 mg/m³, 250 ppm Long-term value: 262 mg/m³, 200 ppm Skin; BEI

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· **Ingredients with biological limit values:**

67-56-1 methanol

BEI 15 mg/L
Medium: urine
Time: end of shift
Parameter: Methanol (background, nonspecific)

· **Additional information:** The lists that were valid during the creation were used as basis.

· **Exposure controls**
· **Personal protective equipment:**
· **General protective and hygienic measures:**
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Store protective clothing separately.
· **Respiratory protection:**
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.
· **Protection of hands:**



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
· **Material of gloves**
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.
· **Penetration time of glove material**
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
· **Eye protection:**



Tightly sealed goggles

9 Physical and chemical properties

· **Information on basic physical and chemical properties**	
· **General Information**	
· **Appearance:**	
Form:	Liquid
Color:	According to product specification
· **Odor:**	Characteristic
· **Odour Threshold:**	Not applicable.
· **pH-value:**	Not applicable.
· **Change in condition**	
Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	64.7 °C (148.5 °F)
· **Flash point:**	< 23 °C (<73.4 °F)
· **Flammability (solid, gaseous):**	Not applicable.
· **Ignition temperature:**	455 °C (851 °F)
· **Decomposition temperature:**	Not applicable.
· **Auto igniting:**	Product is not selfigniting.
· **Danger of explosion:**	Product is not explosive. However, formation of explosive air/vapor mixtures are possible.
· **Explosion limits:**	
Lower:	5.5 Vol %
Upper:	44 Vol %

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· **Vapor pressure at 20 °C (68 °F):**	128 hPa (96 mm Hg)
· **Density at 20 °C (68 °F)**	0.79009 g/cm³ (6.5933 lbs/gal)
· **Relative density**	Not applicable.
· **Vapor density**	Not applicable.
· **Evaporation rate**	Not applicable.
· **Solubility in / Miscibility with**	
Water:	Fully miscible.
· **Partition coefficient (n-octanol/water):**	Not applicable.
· **Viscosity:**	
Dynamic:	Not applicable.
Kinematic:	Not applicable.
· **Solvent content:**	
Organic solvents:	100.0 %
VOC content:	100.00 %
Solids content:	0.0 %
· **Other information**	No further relevant information available.

10 Stability and reactivity

· **Reactivity** No further relevant information available.
· **Chemical stability**
· **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
· **Possibility of hazardous reactions** No dangerous reactions known.
· **Conditions to avoid** No further relevant information available.
· **Incompatible materials:** No further relevant information available.
· **Hazardous decomposition products:** No dangerous decomposition products known.

11 Toxicological information

· **Information on toxicological effects**
· **Acute toxicity:**

· **LD/LC50 values that are relevant for classification:**

67-56-1 methanol

Oral	LD50	5,628 mg/kg (rat)
Dermal	LD50	15,800 mg/kg (rabbit)

· **Primary irritant effect:**
· **on the eye:** No irritating effect.
· **Sensitization:** No sensitizing effects known.
· **Additional toxicological information:**
The product shows the following dangers according to internally approved calculation methods for preparations:
Toxic

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**

71-43-2	benzene	1
95-47-6	o-xylene	3
106-42-3	p-xylene	3
108-88-3	toluene	3
100-41-4	ethylbenzene	2B
108-38-3	m-xylene	3

· **NTP (National Toxicology Program)**

71-43-2	benzene	K

· **OSHA-Ca (Occupational Safety & Health Administration)**

71-43-2	benzene

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12 Ecological information

· **Toxicity**
· **Aquatic toxicity:** No further relevant information available.
· **Persistence and degradability** No further relevant information available.
· **Behavior in environmental systems:**
· **Bioaccumulative potential** No further relevant information available.
· **Mobility in soil** No further relevant information available.
· **Additional ecological information:**
· **General notes:**
Water hazard class 1 (Self-assessment): slightly hazardous for water
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **Other adverse effects** No further relevant information available.

13 Disposal considerations

· **Waste treatment methods**
· **Recommendation:** Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

· **Uncleaned packagings:**
· **Recommendation:** Disposal must be made according to official regulations.
· **Recommended cleansing agent:** Water, if necessary with cleansing agents.

14 Transport information

· **UN-Number**	
· **DOT, ADR, IMDG, IATA**	UN1230
· **UN proper shipping name**	
· **DOT**	Methanol
· **ADR**	1230 METHANOL
· **IMDG, IATA**	METHANOL
· **Transport hazard class(es)**	
· **DOT**	
· **Class**	3 Flammable liquids
· **Label**	3, 6.1
· **ADR**	
· **Class**	3 Flammable liquids
· **Label**	3+6.1
· **IMDG**	
· **Class**	3 Flammable liquids

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· **Label**	3/6.1
· **IATA**	
	
· **Class**	3 Flammable liquids
· **Label**	3 (6.1)
· **Packing group**	
· **DOT, ADR, IMDG, IATA**	II
· **Environmental hazards:**	Not applicable.
· **Special precautions for user**	Warning: Flammable liquids
· **Danger code (Kemler):**	336
· **EMS Number:**	F-E,S-D
· **Stowage Category**	B
· **Stowage Code**	SW2 Clear of living quarters.
· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**	Not applicable.
· **Transport/Additional information:**	
· **ADR**	
· **Excepted quantities (EQ)**	Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml
· **IMDG**	
· **Limited quantities (LQ)**	1L
· **Excepted quantities (EQ)**	Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml
· **UN "Model Regulation":**	UN 1230 METHANOL, 3 (6.1), II

15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**
· **Sara**

· **Section 313 (Specific toxic chemical listings):**
All ingredients are listed.

· **TSCA (Toxic Substances Control Act):**
All ingredients are listed.

· **Proposition 65**

· **Chemicals known to cause cancer:**

71-43-2	benzene
100-41-4	ethylbenzene

· **Chemicals known to cause reproductive toxicity for females:**
None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for males:**

71-43-2	benzene

· **Chemicals known to cause developmental toxicity:**

67-56-1	methanol
71-43-2	benzene
108-88-3	toluene

· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**

71-43-2	benzene	A, K/L
95-47-6	o-xylene	I
106-42-3	p-xylene	I
108-88-3	toluene	II

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100-41-4	ethylbenzene	D
108-38-3	m-xylene	I

· **TLV (Threshold Limit Value established by ACGIH)**

71-43-2	benzene	A1
95-47-6	o-xylene	A4
106-42-3	p-xylene	A4
108-88-3	toluene	A4
100-41-4	ethylbenzene	A3
108-38-3	m-xylene	A4

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**

71-43-2	benzene

· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
· **Hazard pictograms**



GHS02 GHS06 GHS08

· **Signal word** Danger

· **Hazard-determining components of labeling:**
methanol
· **Hazard statements**
H225 Highly flammable liquid and vapor.
H331 Toxic if inhaled.
H370 Causes damage to organs.
· **Precautionary statements**
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Use explosion-proof electrical/ventilating/lighting/equipment.
Do not breathe dust/fume/gas/mist/vapors/spray.
If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
Store locked up.
Dispose of contents/container in accordance with local/regional/national/international regulations.
· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Department issuing SDS:** product safety department
· **Contact:**
SPEX CertiPrep, LLC.
1-732-549-7144
· **Date of preparation / last revision** 03/05/2019 / -
· **Abbreviations and acronyms:**
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
VOC: Volatile Organic Compounds (USA, EU)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
BEI: Biological Exposure Limit
Flam. Liq. 2: Flammable liquids – Category 2
Acute Tox. 3: Acute toxicity – Category 3
STOT SE 1: Specific target organ toxicity (single exposure) – Category 1

APPENDIX C

Heat Illness Prevention Program

HEAT ILLNESS
PREVENTION PROGRAM

CORPORATE HEALTH AND SAFETY DIRECTOR	:	**Brian Hobbs, CIH, CSP**
EFFECTIVE DATE	:	**10/2019**
REVISION DATE	:	**03/2025**
REVISION NUMBER	:	**4**

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1. PURPOSE

Roux Associates, Inc. and its affiliated companies, Roux Environmental Engineering and Geology, D.P.C, and Remedial Engineering (collectively, "Roux"), have established this heat illness prevention program to assist in preventing workplace accidents, injuries, and illnesses associated with temperature extremes. Roux is committed to taking every precaution to protect employees who might be exposed to heat stress, including establishing safe work practices, heat illness prevention controls, and emergency preparedness, which will be detailed in this plan.

2. SCOPE AND APPLICABILITY

Roux's Heat Illness Prevention Program applies to all employees and subcontractors who may be exposed to heat stress in the field.

3. ROLES AND RESPONSIBILITIES

The Heat Illness Prevention Program Administrator for Roux is the Corporate Health and Safety Director (CHSD), Brian Hobbs, CIH, CSP. The daily administration of the program is delegated to the Operations Manager (OM) , Office Health and Safety Manager (OHSM), and Site Health and Safety Officer (SHSO). The CHSD has the authority, responsibility, and overall accountability for the comprehensive implementation of this program.

All managers and supervisors shall implement and maintain the heat illness prevention program in work areas where there is a potential for heat stress.

Management Responsibilities

Management (i.e., Project Managers, Project Principals, OM) must provide the following to promote compliance and foster a good safety culture:

- Comply with applicable standards.
- Inform employees of the provisions of the heat illness prevention program and ensure understanding.
- Provide sufficient water, shade, rest areas, and other heat illness controls for employees.
- Assist with establishing work practices to minimize heat stress risks, such as acclimatization, required rest periods, employee monitoring, and strategic scheduling.
- Encourage employees to report hazardous conditions or heat illness symptoms.
- Provide training to any employee who could possibly be exposed to the risk of heat illness.

Employee Responsibilities

Employees are expected to actively participate in the organization's heat illness prevention program, which includes the following responsibilities:

- Receive appropriate training with regard to heat stress.
- Understand core concepts of heat illness prevention and follow guidelines to mitigate risks.
- Recognize the signs and symptoms of heat illness and immediately report them.
- Cooperate with workplace inspections and incident investigations.

Effective Communication

All Roux employees shall be accountable for ensuring there is effective communication with both the field team and their subcontractors. Communication between Roux employees, project leads (e.g., Project Principal, Project

Managers), and subcontractors (if applicable) will be established and maintained so that employees can quickly contact should there be a change in condition or someone at the Site exhibits signs/symptoms of heat stress. These types of incidents would follow Roux's Incident Investigation and Reporting Management Program 2.12 and Roux's Injury Illness Prevention Program 2.22.

4. HAZARD IDENTIFICATION AND ASSESSMENT

Prior to scheduled fieldwork, the project team shall ensure a hazard assessment is conducted as it relates to heat stress. This will include a determination of how much heat and exertion employees are likely to be exposed to based on the work activity.

Factors that can increase heat stress include the following:

- Temperatures at the work site;
- Humidity;
- A lack of air movement or exchange;
- The amount of time employees spend working in the heat;
- The time of day work takes place;
- Sources of radiant heat (e.g., sunlight, fire, or hot furnace);
- Work activities that produce heat (e.g., welding);
- Physical contact with warm or hot objects or liquids;
- The clothing and PPE employees are required to wear; and/or
- Physically strenuous work.

Results of the hazard analysis should be used to determine appropriate controls for mitigating heat stress, whenever possible, for planning acclimatization, and for developing work schedules that rotate workers to limit employee exposure. Typically, the Site Supervisor (SS) or Site Health and Safety Officer (SHSO) shall conduct worksite observations to ensure all employees follow heat illness prevention procedures and that hazards are sufficiently controlled. However, all employees should be continuously evaluating work site conditions and be able to recognize heat stressors in order to prevent heat illnesses.

5. TRAINING

All Roux employees shall be trained on the topics listed below prior to beginning work, which may potentially expose workers to heat stress.

Training Topics

- The environmental, behavioral, and personal risk factors for heat illness, such as radiant heat sources, exertion, clothing and PPE, and use of alcohol or drugs.
- Types of heat illnesses, common symptoms, and appropriate emergency response for each.
- The knowledge that mild symptoms may quickly become more severe or life-threatening.
- The importance of immediately reporting any signs or symptoms of heat illness to the supervisor.
- The employer's responsibility to provide shade, water, access to first aid, and cool-down rests during work and the employee's freedom to exercise their rights under this standard without fear of retaliation.

- The employer's heat stress plan and its procedures:
  - Procedures for employees who are newly assigned to work in high-heat areas.
  - The organization's acclimatization methods, as applicable.
  - Heatwave procedures.
  - Heat illness and emergency response, including contact information.
- The importance of frequent consumption of water and the taking of rest breaks.
- How heat illness prevention applies to employees' specific tasks.

Increasing Training Effectiveness:

- The SS/SHSO will hold daily tailgates with the field team to go over daily work tasks and basic safety information, including Job Safety Analysis (JSA) review, as well as incorporate elements such as current weather and effects on the work activities for the day.
- If a heat wave or high heat is anticipated, OHSMs and/or OMs will provide communications to Roux employees prior to their shifts and remind them of any special high heat procedures.

6. DRINKING WATER

Employees shall be given access to potable drinking water. Access to water will be provided as near as possible to where employees are working, and there shall be enough locations so employees will have sufficient water. Water should be fresh and pure, free of taste or smell that would discourage employees from drinking, comfortably cool, and obtained from an approved source.

The recommendation is that during warm or hot weather, employees drink four 8-ounce glasses of water, or a total of one quart per hour, throughout the entire work shift. Easy access to sufficient potable drinking water throughout the work shift encourages employees to drink.

During a heat wave, water shall be replenished more often to keep it available and cool. Water containers (and all spouts and levers) must be kept clean. If able, provide single-use drinking cups with appropriate waste receptacles. Accessible sanitation facilities shall also be maintained at work Sites as appropriate.

SS/SHSO is responsible for the following:

- Drink sufficient water before, during, and after work shifts to maintain hydration.
- Encourage frequent drinking of small amounts of water throughout the shift. In high-heat environments, remind field staff and subcontractors that drinking extra water may be necessary.
- Discourage the choice of drinks with caffeine or sugar that may possibly dehydrate employees instead of water. Also, discourage the drinking of alcohol.
- Monitor the water supply.
- If employees become dehydrated and are unable to alleviate symptoms with the steps below, get them immediate medical attention.

Field Staff/Subcontractors are responsible for the following:

- Drink sufficient water before, during, and after work shifts to maintain hydration. Drink up to 4 cups of water per hour, especially during hot weather.
- Be aware that in high-heat situations, you may need to drink more water.

- Monitor yourself and others for signs of dehydration. If you feel dehydrated:
  - Follow Roux's Incident Notification Flowchart;
  - Rest in the shaded resting area; and
  - Drink water in small amounts, but frequently.

7. ACCESS TO SHADE

Access to shaded areas will be provided to Roux staff, as needed. Employees are encouraged to use these areas when they feel overheated. Roux's SS/SHSO shall oversee the proper implementation of shaded areas and will communicate these locations on a daily basis with the Field Team.

Depending on the Site, shaded areas can include the following:

- Pop-up Tents
- Canopies
- Umbrellas
- Structures mechanically ventilated or open to air movement
  - Garage
- Conex-mounted RV canopies
- Full and thick tree canopies that block direct sunlight
- Buildings
- Enclosed areas only if they provide cooling comparable to shade in open-air
  - Vehicles with air conditioning

Shaded Area Requirements

The shade shall be strong enough to cool employees down and other shadows should not be visible in the shade. The shade will be provided by Roux when the air temperature exceeds 80°F. If the temperature is less than 80°F, shade will be available and provided upon request. The SS/SHSO will monitor conditions to determine when the air will exceed (and is exceeding) 80°F. For most Sites, air will be monitored hourly and shade will be set up immediately if 80°F is exceeded.

Shade shall be located as close as practical to areas where employees are working and is easily accessible. These areas will be considered safe and free from other hazards. Shaded areas should be large enough to accommodate all employees who are on a break, resting, or recovering without crowding. Should natural vegetation be used for shade, the SS/SHSO will evaluate shade for effectiveness.

Field Staff Responsibilities

Field Staff should take ordinary rest breaks in the shaded areas and monitor themselves for signs of heat stress, and go to the shaded area when they need to cool down. Any issues or problems with shaded areas should be reported to the SS/SHSO for the Site.

If shaded areas are used for a preventative cool-down, the SS/SHSO will ensure the affected employees will remain in the shade until they begin to feel better. The SS/SHSO will continue to monitor the employees and ask them if

they are experiencing symptoms of a heat illness. Employees shall not be sent back to work before symptoms have ended and at a minimum at least 10 minutes of rest.

8. MONITORING AND SCHEDULING

Monitoring

The SS/SHSO and Field Team will continue to monitor themselves and others for signs of heat illness. The SS/SHSO will monitor when the air temperature exceeds 80°F. Throughout the summer, weather and temperature will be monitored at least two weeks ahead, and the work schedule will be planned to accommodate the expected weather.

Scheduling

Scheduling accommodations may include:

- Working during cooler hours of the day
- Working at night
- Stopping work early
- Rescheduling work activities
- Increasing frequency of breaks

In general, strenuous work activities shall be rescheduled to the coolest parts of the day.

Special precautions are required for temperatures above 80°F, 95°F, and heat waves. These precautions are provided in the sections below.

9. ACCLIMATIZATION AND NEW EMPLOYEE PROCEDURES

Roux requires employees to be acclimatized in order for them to better tolerate heat in the workplace. Acclimatization is the physical process of adapting to a different thermal environment, allowing a better toleration of heat. Acclimatization procedures require gradual exposure that gives the employee time to adjust to each level of exposure. Acclimatization is essential for new employees but is necessary for all employees when the temperature significantly changes. Heat stress is much more likely if these procedures are not followed.

The SS/SHSO is responsible for observing new employees during their first 14 days of employment in high-heat areas.

Re-acclimatization is necessary if employees are absent from high-heat environments for a week or more or the temperature increases significantly.

10. HEATWAVE AND EXTREME HEAT PROCEDURES

Heat Wave Procedures

A heat wave is defined as consistent temperatures over 80°F or if the temperature is 10° higher than the average daily temperatures in the preceding 5 days.

SS/SHSO and Project Management (e.g., PP, PM) shall closely observe and monitor employees during a heat wave. The Field Teams should institute a ratio of one SS to 20 or fewer employees, a mandatory buddy system, or

a consistent practice for supervisors to check on employees. Pre-shift meetings to review high-heat procedures with employees will be carried out to emphasize work-rest schedules, drinking water, shade, etc.

Extreme Heat Procedures

When work-site temperatures equal or exceed 95°F, the employer will enact extreme heat procedures:

- Employees will be closely observed by the SS/SHSO for signs of heat illness. New employees will be supervised for acclimatization.
- Effective communication and monitoring will be ensured through the use of periodic check-ins via phone with the SS/SHSO. Communications between employees and Project Management (e.g., PP/PM) will be established and maintained. Mandatory 10-minute break periods are required for every two hours worked. SS/SHSO must enforce this rule.
- Pre-shift safety tailgate meetings will occur to review procedures and to remind employees to drink water and take cool-down rests if needed. SS/SHSO shall remind employees to rest and drink water. Employees should drink more water than usual.

11. EMERGENCY RESPONSE PROCEDURES

Roux is dedicated to providing prompt appropriate care for all employees who report or show symptoms of heat illness. If an employee shows signs of heat illness, they will be monitored and shall not be left alone or sent home without being offered first aid or emergency medical services. If on-site personnel require any medical treatment, the following steps will be taken:

1. Notify Roux's Project and Corporate Management Team for any work-related injury and/or illness occurrence, and communicate with the contracted Occupational Health Care Management Provider, AllOne Health (AOH), immediately following the notifications provided above.
2. Based on discussions with the Project Team, Corporate Management, and the AOH evaluation, if medical attention beyond onsite First Aid is warranted, transport the injured/ill person (IP) to the Urgent Care Center, or notify the Fire Department or Ambulance Emergency service and request an ambulance or transport the victim to the hospital, and continue communications with Corporate Management Team. An Urgent Care/Hospital Route map with locations and directions is provided within Site Specific Health and Safety Plans.
3. First aid medical support will be provided by onsite personnel trained and certified in First Aid, Cardio Pulmonary Resuscitation (CPR), Automatic External Defibrillation (AED), and Blood-Borne Pathogens (BBP) Awareness, until relieved by emergency medical services (EMS).
4. The SHSO and Project Manager will perform a Loss Investigation (LI), and the Project Team will complete the final Loss Report.

12. HEAT-RELATED ILLNESSES

Heat Stress

Heat stress is a significant potential hazard and can be associated with heavy physical activity and/or the use of personal protective equipment (PPE) in hot-weather environments. For these reasons, the company will provide potable drinking water and access to shade or other areas of relief (i.e., air-conditioned vehicles and work trailers). Supervisors, prior to supervising personnel in the field as well as all personnel involved with the fieldwork of a project, are trained in this HASP that includes preventing heat-related illnesses and the below procedures in response to heat-related symptoms and illness. Since much of our work is dependent upon environmental factors beyond our control, we must closely monitor air temperature and humidity and be aware of avoiding radiant heat sources and providing as much air circulation as possible wherever we work. Physical factors that need to be evaluated as part of our Job Safety Analysis (JSA) reviews include the level of physical activity and duration of work

and the type (i.e., color, weight breathability) of the clothing we select. In addition, personal factors such as age, weight, fitness, drug/alcohol use, and prior history of heat-related illness need to be considered.

Heat cramps are brought on by prolonged exposure to heat. As an individual sweats, water and salts are lost by the body, resulting in painful muscle cramps. The signs and symptoms of heat stress are as follows:

- Severe muscle cramps, usually in the legs and abdomen;
- Exhaustion, often to the point of collapse; and
- Dizziness or periods of faintness.

First aid treatment includes, but is not limited to, shade, rest, and fluid replacement. Typically, the individual should recover within one-half hour while being monitored constantly. If the individual has not improved substantially within 30 minutes and the body temperature has not decreased, the individual should be transported to a hospital for medical attention.

Heat Exhaustion

Heat exhaustion may occur in a healthy individual who has been exposed to excessive heat while working or exercising. The circulatory system of the individual fails as blood collects near the skin to rid the body of excess heat through transference. The signs and symptoms of heat exhaustion are as follows:

- Rapid and shallow breathing;
- Weak pulse;
- Cold and clammy skin with heavy perspiration;
- Skin appears pale;
- Fatigue and weakness;
- Dizziness; and
- Elevated body temperature.

First aid treatment includes, but is not limited to, cooling the victim, elevating the feet, and replacing fluids. If the individual is not substantially improved within 30 minutes and the body temperature has not decreased, the individual should be transported to the hospital for medical attention.

Heat Stroke

Heat stroke occurs when an individual is exposed to excessive heat and stops sweating. This condition is classified as a MEDICAL EMERGENCY requiring immediate cooling of the victim and transport to a medical facility. The signs and symptoms of heat stroke are as follows:

- Dry, hot red skin;
- Body temperature approaching or above 105 degrees F;
- Confusion, altered mental state, slurred speech;
- Seizures;
- Large (dilated) pupils; and
- Loss of consciousness – the individual may go into a coma.

First aid treatment requires immediate cooling and transportation to a medical facility. Heat stress is a significant hazard if any type of protective equipment (semi-permeable or impermeable) that prevents evaporative cooling is worn in hot-weather environments.

13. OTHER HEAT CONTROLS

Clothing and PPE

Employees should choose clothing that is reflective, light-colored, lightweight, loose-fitting, and breathable. Clothing should cover the exposed parts of the body. In direct sun, hard hats with a brim or bill may be helpful. Should specialized cooling garments be applicable, please consult with your OM/OHSM/CHSD.

Managing Employee Risk Factors

It is recommended that employees are aware of how their health can affect their risk of heat stress. The following increases personnel's risk for a heat-related illness:

- A poor level of physical fitness
- Obesity
- Chronic or acute illnesses
- Conditions such as diabetes, heart disease, or high blood pressure
- Certain medications, such as diuretics
- Age (60+)

Employees should:

- Maintain their health outside of work
- Be aware of the effects of medications
- Drink adequate amounts of water
- Eat light, cool meals during work shifts and save heavy meals until after the shift is over
- Do not skip meals: food helps replace electrolytes when sweating
- Take breaks as needed
- Do not consume alcohol prior to working in a hot environment

APPENDIX D

Personal Protective Equipment (PPE) Management Program

PERSONAL PROTECTIVE EQUIPMENT
MANAGEMENT PROGRAM

CORPORATE HEALTH AND SAFETY DIRECTOR	:	**Brian Hobbs, CIH, CSP**
EFFECTIVE DATE	:	**01/2019**
REVIEW DATE	:	**03/2025**
REVISION NUMBER	:	**6**

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1. PURPOSE

Roux Associates, Inc. and its affiliated companies, Roux Environmental Engineering and Geology, D.P.C., and Remedial Engineering (collectively, “Roux”), have instituted the following program to establish guidelines for the selection of personal protective equipment (PPE) for use by Roux personnel performing field activities in hazardous environments. PPE is not meant to be a substitute for engineering, work practice, and/or administrative controls, but PPE should be used in conjunction with these controls to protect employees in the workplace. Clothing, body coverings, and other accessories designed to prevent worker exposure to workplace hazards are all types of PPE. To ensure adequate PPE,, employee-owned PPE is assessed on a case-by-case basis to ensure its adequacy, maintenance, and sanitation.

2. SCOPE AND APPLICABILITY

These guidelines apply to all PPE selection decisions to implement the Roux program. The foundations for this program are the numerous Occupational Health and Safety Administration (OSHA) standards related to PPE cited in 29 CFR 1910 Subpart I, 29 CFR 1926 Subpart E, and the hazardous environment work employee protection requirements under the OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER) standard at 29 CFR 1910.120 and 1926.65 as well as California OSHA (Cal/OSHA) Title 8 5192 HAZWOPER. To ensure hazard assessments are documented, the levels of protection, types of protection, and tasks requiring protection are covered in site-specific Health and Safety Plans (HASPs) and Job Safety Analyses (JSAs).

3. PROCEDURES

Due to the varied nature of site activities and the different potential hazards associated with different sites, several aspects must be considered when selecting PPE. The following text describes PPE selection logic and provides guidelines and requirements for the appropriate selection and use of PPE.

3.1 Introduction

To harm the body, chemicals must first gain entrance. The intact skin and respiratory tract are usually the first body tissues that are exposed to chemical contaminants. These tissues provide barriers to some chemicals but, in many cases, are damaged themselves or are highly permeable by certain chemical compounds. PPE, therefore, is used to minimize or eliminate chemical compounds from coming into contact with these first barrier tissues.

Proper PPE selection is essential in preventing exposure. The Project Manager (PM) or health and safety personnel making the selection will have to consider several factors. The level of protection, type, and kind of equipment selected depends on the hazardous conditions. In some cases, additional selection factors include cost, availability, compatibility with other equipment, and performance. All these factors must be accurately assessed before work can be safely carried out.

3.1.1 Training

Training shall be provided to all field-based employees on how to properly use and care for PPE. Training shall include, but not be limited to, the initial 40-hour HAZWOPER training, annual 8-hour HAZWOPER refresher training, and site-specific PPE training. The training program includes when PPE is necessary, what types of PPE are required; how to don, doff, adjust, and wear PPE; the limitations of PPE; the proper care, maintenance, useful life, signs of PPE failure and emergency procedures to follow in the event of PPE failure and disposal of PPE. In addition, retraining shall be conducted when workplace changes require a change in PPE when an employee demonstrates a lack of knowledge or improper use of PPE is identified.

3.2 Types of PPE

The type and selection of PPE must meet certain general criteria and requirements as required under OSHA 29 CFR 1910.132 (General Industry) and 1926.95 (Construction). In addition to these general requirements, specific requirements and specifications exist for some types of PPE that form the basis of the protective clothing scheme. All manufacturer's recommendations for PPE care and use shall be followed. All PPE shall be maintained in a sanitary and reliable condition. Additionally, proper fit and size shall be evaluated to ensure adequate employee protection. Should PPE become defective, it shall be immediately removed from service and discarded.

The following is a list of the common types of specific PPE and the specific requirements for the PPE type, where applicable:

1. Hard Hats - Regulated by 29 CFR 1910.135 and 1926.100; and specified in ANSI Z89.1.
2. Face Shields and Safety Glasses - Regulated by 29 CFR 1910.133 and 1926.102; and specified in ANSI Z87.1.
3. Respiratory Protection - Regulated by 29 CFR 1910.134 and 1926.103.
4. Hand Protection - Regulated by 29 CFR 1910.138
5. Foot Protection - Regulated by 29 CFR 1910.136 and 1926.96; and specified in ANSI Z41.1.
6. Protective Clothing (e.g., fully encapsulated suits, aprons) - Specified in NFPA 1991/1992/1994.

3.2.1 PPE Inspection, Cleaning Maintenance, and Storage

The Office Health and Safety Manager (OHSM) or their designee is responsible for procuring PPE, in accordance with this management program. Single-use/disposable PPE should be purchased and used whenever practicable.

3.2.1.1 PPE Inspection

Roux employees must inspect PPE regularly, before and after each use, to check for defects and damage. Garments and other PPE in central storage must be inspected at least annually or as recommended by the manufacturer by the OHSM, Equipment Manager, and/or their designee. Defective or damaged equipment must be tagged as out-of-service, immediately removed from the work site, and discarded.

3.2.1.2 PPE Cleaning and Maintenance

All Roux employees are responsible for routine cleaning of their assigned PPE. Decontamination of PPE is addressed within Roux's Site Control and Decontamination Program as specified within site-specific health and safety plans. As appropriate, Roux employees should be issued single-use PPE when practicable to minimize the requirement for decontamination. When performing routine cleaning of reusable PPE:

- Always follow the manufacturer's recommendations to avoid damaging the PPE. For example, some cleaning solutions compromise the integrity of protective helmets shell.
- Clean and maintain PPE according to the manufacturer's recommendations. Before being re-issued, PPE should be thoroughly sanitized.
- Disassemble, wash and sanitize reusable respirators after each use. For more information, refer to Roux's Respiratory Protection Management Program.

Employees are not authorized to repair PPE without prior approval from the Health and Safety Department. Reusable PPE may require maintenance by the manufacturer to maintain integrity and certification. Many

manufacturers specify which repairs, if performed by the end-user, will void the product warranty. Therefore, Roux employees are not authorized to perform such maintenance or repairs.

3.2.1.3 PPE Storage

Certain equipment failures can be directly attributed to improper storage. The OHSM or Equipment Manager (or another designated person) is responsible for implementing procedures for appropriate PPE storage, for equipment that is centrally stored. Both central storage and dedicated PPE provided to employees should be stored using the following:

- Store goggles and safety glasses in protective cases.
- Store PPE (such as helmets, boots, etc.) in clean, dust-proof containers or bags out of direct sunlight.
- PPE should ideally be stored under climate-controlled conditions. PPE, stocked gear bags, and/or go-kits should not be stored in hot, cold, or other extreme environmental conditions, and they should not be stored in vehicles (government-owned or rentals) for even short periods of time. Do not store helmets on the rear window shelf of a vehicle.
- Store different kinds of clothing and gloves separately to prevent errors in selection.
- Hang or fold protective clothing in accordance with manufacturers' recommendations.
- Never store contaminated PPE near new protective clothing or street clothing. Potentially contaminated, reusable clothing must be stored (usually bagged) away from new PPE in a well-ventilated area with good airflow around each item until the garment is decontaminated or disposed.
- See Roux's Respiratory Protection Management Program for detailed respirator storage procedures.

3.3 Fitting, Donning, and Doffing PPE

Roux shall provide appropriately sized PPE for Roux employees. Improper fitting such as tight-fitting garments, can tear, especially at the knees, crotch, shoulders, back, and elbows due to movement. Protective clothing that is too large can easily snag and/or limit a user's dexterity. The Roux PM shall ensure site/project-specific PPE is kept in a sufficient stock of appropriately sized PPE (e.g., Level C ensembles). The OHSM, Equipment Manager, and/or their designee shall maintain a sufficient stock of appropriately sized PPE in central storage locations.

The Site Supervisor (SS)/Site Health and Safety Officer (SHSO) is responsible for ensuring that site-specific procedures for donning and doffing PPE are incorporated into site-specific HASPs. Donning and doffing procedures may differ depending on the type of PPE and clothing (e.g., Level D, Modified Level D, Level C) utilized. Figures 1-4, provide examples of procedures that can be used to don and doff Levels A through D and are provided as a reference. Site-specific conditions may warrant adjustments to such procedures. Consult the CHSD for additional information.

Site-specific donning and doffing procedures should include using an assistant where necessary. Donning and doffing certain types of PPE without assistance could risk failure or damage. Care must be taken to prevent the spread of contaminants on the PPE. Decontamination procedures should limit the potential for cross-contamination and may include gross decontamination of outer boots, gloves, and suits as necessary to prevent contaminants from tracking into the contamination reduction zone (CRZ) and clean zone(s).

3.4 Controlling Hazards Associated with PPE Use

PPE use can pose potential health and safety hazards, which range from minor discomfort to life-threatening height stroke. The magnitude of the potential hazard can vary and will depend on various factors, including an individual's fitness level, the type of PPE worn, the work demands, individual work practices, duration of work, and environmental conditions. The use of PPE can also lead to reduced efficiency and work performance.

Among hazards associated with PPE use, heat stress emerges as a prevalent and significant hazard. Particularly, the use of substantial and/or impermeable attire, such as heavy coveralls, Tyvek suits, splash suits, or Level A or B suits, alongside strenuous work, amplifies the risk of heat stress. Regular monitoring for indications of heat stress is imperative for workers operating in such conditions. Roux's Heat Illness Prevention Program lays out requirements for signs and symptoms as well as preventative measures to mitigate the potential for heat illness. In addition, cold environments can pose adverse risk, such examples include use of non-insulated steel-toe safety shoes in frigid conditions which has the potential to increase the risk of frostbite, while safety gloves worn for chemical protection may inadequately insulate hands from the cold.

It is the responsibility of Project Teams to integrate site-specific protocols to manage PPE hazards into such site-specific HASPs. These protocols can encompass considerations like work/rest ratios, crew rotations, and other accommodations for exceptionally demanding conditions.

The following measures are recommended for controlling hazards posed by PPE use:

- Prioritize through the hierarchy of controls with a focus on elimination, substitution, engineering, work practice and administrative control implementation rather than sole reliance on PPE. PPE shall be considered the last line of worker protection.
- Workers should maintain physical fitness to be able to withstand the potential physical strain of PPE use. A physically fit individual will endure less physiological strain, manifesting in a lower heart rate, reduced body temperature (indicating diminished retained body heat), more effective sweating, slightly lower oxygen consumption, and carbon dioxide production. Furthermore, acclimatization to extreme environmental conditions, such as high temperatures, can influence work performance and physical capacity.
- Understand the symptoms of PPE failure. Workers encountering any of these symptoms while donning PPE should promptly notify their onsite SHSO and/or SS:
    - Perception of odors when wearing a respirator
    - Skin irritation
    - Acute discomfort
    - Difficulty breathing
    - Unusual fatigue
    - Dizziness
    - Inability to see, hear, or speak clearly
    - Uncomfortable restriction of movement
    - Rapid pulse, nausea, or chest pain
- Implement a buddy system. Especially in situations where there is a need for increased level of protection (e.g., Level A-C) workers should work in pairs or teams, and are instructed to monitor the integrity of their team/partners gear and remain alert for symptoms of PPE failure.

3.5 PPE Selection

For site-specific work, the Project Manager, in consultation with the Health and Safety Department, has overall responsibility for coordinating the selection and distribution of PPE to field staff and for ensuring that the selected PPE is appropriate for the site-specific hazards. Generally speaking, Roux employees are not engaged in emergency response or perform work at uncontrolled hazardous waste sites; if this is the case, the CHSD shall be made aware of the work and consult with the Project Team on appropriate PPE selection. Most work falls under environmental sampling of low-concentration contaminants in water/soil/perimeter air. Therefore work is carried out in Level D PPE. Upgrades would be based on more information as it becomes available. The United States Environmental Protection Agency (EPA) has created Guidelines for PPE Ensemble Selection to assist workers in selecting PPE ensembles for specific activities and tasks and determining which ensembles and air monitoring equipment should be used to address specific chemicals. Guidelines to Ensembles for Specific Activities/Tasks Where Chemical Exposure is Possible is provided as a reference in Appendix A.

3.6 Protective Clothing Selection Criteria

3.6.1 Chemicals Present

The most important factor in selecting PPE is the determination of what chemicals the employee may be exposed to. The number of chemicals on field investigations may range from a few to several hundred. The exact chemicals or group of chemicals present at the site (certain groups tend to require similar protection) can be determined by collecting and analyzing air, soil, water, or other site media samples. When data are lacking, research into the hazardous materials used or stored at the site can be used to infer potential chemical exposures on the site.

The most appropriate clothing shall be selected once the known or suspected chemicals have been identified and considered based on the type of work to be performed.

Protective garments are made of several different substances for protection against specific chemicals. There is no universal protective material. All will decompose, permeate, or otherwise fail to protect under given circumstances. Fortunately, most manufacturers make guides to using their products (i.e., Dupont's Tyvek™ Permeation Guide). These guides are usually for gloves and coveralls and typically provide information regarding chemical degradation rates (failure of the material to maintain structural integrity when in contact with the chemical) and may provide information on the permeation rate (whether or not the material allows the chemical to pass through). When permeation tables are available, they shall be used with degradation tables to determine the most appropriate protective material for the specific chemical hazard(s).

During most site work, chemicals are usually in mixed combinations, and the protective materials are not in continuous contact with pure chemicals for long periods; therefore, the selected material may be adequate for the particular chemical of most concern and the type of work being performed, yet not the "best" protecting material for all site chemicals and activities. Selection shall depend upon the most hazardous chemicals based on their hazards and concentrations. Sometimes, layering (i.e., using several layers of protective materials) affords the best protection.

3.6.2 Concentration of the Chemical(s)

One of the major criteria for selecting protective material is the concentration of the chemical(s) in air, liquid, and solid state. Airborne and liquid chemical concentrations should be compared to the OSHA standards, American Conference of Governmental Industrial Hygienists (ACGIH) and National Institute for Occupational Safety and Health (NIOSH) guidelines to determine the level of skin or other absorptive

surface (e.g., eyes) protection needed. While these standards are not designed specifically for skin exposed directly to the liquid, they may provide skin designations indicative of chemicals known to have significant skin or dermal absorption effects. For example, airborne levels of PCBs on-site may be low because they are not very volatile, so the inhalation hazard may be minimal; however, PCB-containing liquid coming in direct contact with the skin may cause overexposure. Thus, PCBs have been assigned a skin designation in the OSHA and ACGIH exposure limit tables.

3.6.3 Physical State

The characteristics of a chemical may range from nontoxic to highly toxic, depending on its physical state. Inorganic lead in soil would not be considered toxic to site personnel unless it became airborne since it is generally not absorbed through the intact skin. However, organic lead in a liquid could be readily absorbed through the skin. Soil is frequently contaminated with hazardous materials. Concentrations will vary from a few parts per million to nearly one hundred percent by volume. The degree of hazard depends on the type of soil and concentration of the chemical. Generally speaking, “dry” soils that have not become airborne do not pose a hazard to site personnel if they take minimal precautions, such as wearing lightweight gloves.

3.6.4 Length of Exposure

The length of time a material is exposed to a chemical increases the probability of a breakthrough. Determinations of actual breakthrough times for short-term exposures indicate that several materials that would be considered inadequate under long-term exposures can be used. Different materials that would be considered inadequate under long-term exposures can be used. It should be kept in mind that during the manufacturer’s permeation testing, a pure (100% composition) liquid is usually placed in direct contact with the material, producing a worst-case situation.

3.6.5 Abrasion

When selecting protective clothing, the job the employee is engaged in must be taken into consideration. Persons moving drums or performing other manual tasks may require added protection for their hands, lower chest, and thighs. Using leather gloves and a heavy apron over other normal protective clothing will help prevent damage to the normal PPE and thus reduce worker exposures.

3.6.6 Dexterity

Although protection from skin and inhalation hazards is the primary concern when selecting PPE, the ability to perform the assigned task must be maintained. For example, personnel cannot be expected to perform work that requires fine dexterity if they must wear thick gloves. Therefore, the PPE selection process must consider the task being performed and provide PPE alternatives or techniques that maintain dexterity while still protecting the worker (e.g., wearing tight latex gloves over more bulky hand protection to increase dexterity).

3.6.7 Ability to Decontaminate

If disposable clothing cannot be used, the ability to decontaminate the materials selected must be taken into consideration. Once a chemical makes contact with the material, the PPE must be cleaned before reusing it. If the chemical has completely permeated the material, the clothing cannot be adequately decontaminated, and the material should be discarded.

3.6.8 Climactic Conditions

The human body works best with few restraints from clothing. Protective clothing adds a body burden by increasing weight, restricting movement, and preventing the body's natural cooling process. In severe situations, a modified work program must be used.

Some materials act differently when they are very hot and very cold. For example, PVC becomes almost brittle in frigid temperatures. If there are any questions about the stability of the protective materials under different conditions, the manufacturer should be contacted before using PPE in the field.

3.6.9 Work Load

Like climactic conditions, the type of work activity may affect work duration and personnel's ability to perform certain tasks. Similarly, the amount of protective materials a person wears will affect their ability to perform certain tasks. For example, a person in a total encapsulating suit, even at 72˚F, cannot work for more than a short period of time without requiring a break.

The work schedule should be adjusted to maintain the health of the employees. Modified work practices may include allowing more time for individual job tasks and implementing work/rest cycles per NIOSH and ACGIH thermal stress recommendations. Special consideration should be given to the selection of clothing that protects the worker and adds the least burden when personnel are required to perform strenuous tasks. Excessive bodily stress frequently represents the most significant hazard encountered during fieldwork.

3.6.10 Types of Protective Materials

1. Cellulose or Paper: suitable for nuisance dust and coarse fibers.
2. Natural and Synthetic Fibers
    a. Tyvek™: suitable small-sized hazardous particles, including lead, asbestos, and mold.
    b. Tychem™: is suitable for a variety of hazards, from light liquid splashes to heavy exposures to industrial chemicals and agents.
    c. Nomex™: is suitable for flame-resistance, radiation resistance, acids, alkalis, fluorocarbon refrigerants (CFCs), and non-polar solvents.
3. Elastomers
    a. Polyethylene: suitable for polar substances and solvents.
    b. Saran™ : suitable for flame-resistance, acids, alkalis, oils, and organic solvents.
    c. Polyvinyl Chloride (PVC): suitable for alcohols, oils, inorganic acids, alkalis, and salts.
    d. Neoprene: suitable for polar/non-polar substances, petroleum mixtures, and ≤ 200 F heat resistance.
    e. Butyl Rubber: suitable for polar substances and solvents.
    f. Viton: suitable for non-polar substances, petroleum mixtures, and ≤ 200 F heat resistance.
    g. Nitrile: suitable for polar/non-polar substances and petroleum mixtures.

3.7 Protection Levels

3.7.1 Level A Protection

Level A protection (a fully encapsulated suit) is used when skin hazards exist or when no known data positively rule out skin and other absorption hazards. Per the Roux Respiratory Protection Management Program, Roux employees are not authorized to enter an IDLH atmosphere; therefore, the program does

not allow supplied air respirators (SARs) or self-contained breathing apparatus (SCBA). At no time will Level A work be performed without the consent of the CHSD and OM.

The following conditions warrant the use of Level A protection:

- Hazardous substances have been identified and require the highest level of protection for skin, eyes, and the respiratory system;
- The atmosphere contains less than 19.5% oxygen or an atmosphere immediately dangerous to life and health (IDLH) that have not been ruled out;
- Site operations involve a high potential for splash, skin immersion, or exposure to suspected skin hazards;
- Direct-reading instruments indicate high levels of unidentified but potentially hazardous vapors or gases in the air (e.g., Total atmospheric readings on the Photoionization Detector (PID), Flame Ionization Detector (FID), and similar instruments indicate 500 to 1,000 ppm of unidentified substances); and
- Direct-reading instruments are not available to test the air and suspected highly toxic substances may be present.

It may be necessary to base the decision to use Level A protection on indirect evidence. Other conditions that may indicate the need for Level A protection include:

- Confined spaces;
- Sites containing known skin hazards;
- Sites with no established history to rule out skin and other absorption hazards;
- Site exhibiting signs of acute mammalian toxicity (e.g., dead animals, illnesses associated with past entry into the site by humans);
- Sites at which sealed drums of unknown materials must be opened;
- Visible indicators such as leaking containers or smoking chemical fires; and
- Extremely hazardous substances (e.g., cyanide compounds, concentrated pesticides, Department of Transportation Poison "A" materials, suspected carcinogens, and infectious substances) are known or suspected to be present, and skin contact is possible.

Table 1: Recommended Level A Ensemble Components

Component	Type	Manufacturer / Recommended Material	Notes
Respirator	Positive-pressure full-facepiece SCBA or positive-pressure supplied-air respirator with escape SCBA[1]	NIOSH approved respirator	See Roux's Respiratory Protection Program. Roux employees are not approved to utilize Supplied Air (SAR) and/or Self-contained breathing apparatus (SCBA).
Suit	Totally encapsulated chemical- and vapor-protective suit	DuPont® Tychem™ or Responder CSM™	Other material types may be substituted based on known contaminants.
Inner Gloves	Lightweight	Nitrile, Neoprene, PVC, or Viton®	Other material types may be substituted based on known contaminants.
Outer Gloves	An integral part of the suit	See Appendix A for additional information	Confirm chemical performance rating for suspected contaminants. Glove material may have different performance ratings than suit material. All fully-encapsulating suit materials must be compatible with substances involved.
Inner Boot	Integral Part of Suit	-	-
Outer Boot	HazMat boot[2]	–	Confirm chemical performance rating of outer boot for suspected contaminants. Provides slip/abrasion resistance.
Hard Hat	Standard[3]	-	-

[1] Must be NIOSH approved.
[2] Must meet NFPA 1991/NFPA 1994 requirements depending on the site hazard assessment.
[3] Must comply with the applicable ANSI standard.

3.7.2 Level B Protection

Level B protection is utilized when the highest level of respiratory protection is needed, but hazardous material exposure to the few unprotected areas of the body is unlikely. At no time will Level B work be performed by Roux personnel without the consent of the CHSD and OM.

The following conditions suggest a need for Level B protection:

- The type and atmospheric concentration of toxic substances have been identified, and they require the highest level of respiratory protection;

- IDLH atmospheres where the substance or concentration in the air does not present a severe skin hazard;
- The type and concentrations of toxic substances do not meet the selection criteria permitting the use of air-purifying respirators and
- It is highly unlikely that the work being done will generate high concentrations of vapors, gases, particulates, or splashes of materials that will affect personnel's skin.

Table 2: Recommended Level B Ensemble Components

Component	Type	Manufacturer / Recommended Material	Notes
Respirator	Positive-pressure full- facepiece SCBA or positive-pressure supplied-air respirator with escape SCBA[1]	NIOSH approved respirator	See Roux's Respiratory Protection Program. Roux employees are not approved to utilize Supplied Air (SAR) and/or Self-contained breathing apparatus (SCBA).
Suit	Chemical-resistant clothing (liquid-splash protective suit with integral boot and hood)[2]	DuPont® Tychem® CPF 3	Other material types may be substituted based on known contaminants.
Inner Gloves	Light/medium weight	Nitrile, Neoprene, PVC, Viton®, or PE/EVAL	Other material types may be substituted based on known contaminants.
Outer Gloves	Medium/heavy weight	Butyl MIL-G12223, Nitrile, Neoprene, PVC, Viton®, PE/EVAL, or heavy weight Nitrile or Neoprene	Confirm chemical performance rating. Other material types may be substituted based on known contaminants.
Inner Boot	Safety work boot	–	Other boot types may be substituted based on known contaminants and physical hazards. Puncture resistant shanks may be required.
Outer Boot	Heavy weight Latex booties or outer boots[2]	Latex booties are used to protect suit for light duty applications. NFPA-rated outer boots may be required based on anticipated site conditions and tasks.	Other outer boot coverings may be substituted based on known contaminants/anticipated tasks.
Hard Hat	Standard[3]	-	-

[1] Must be NIOSH approved.
[2] Must meet NFPA 1991/NFPA 1994 requirements depending on the site hazard assessment.
[3] Must comply with the applicable ANSI standard.

3.7.3 Level C Protection

Level C protection is utilized when skin and respiratory hazards are well defined, and the criteria for using negative pressure respirators have been fulfilled (i.e., known contaminants and contaminant concentrations, acceptable oxygen levels, approved filter/cartridge available, known cartridge service

life, etc.). Level C protection may require an emergency escape respirator during specific initial entry and site reconnaissance situations or when applicable after that.

Table 3: Recommended Level C Ensemble Components

Component	Type	Manufacturer / Recommended Material	Notes
Respirator	Full-face air-purifying respirator with appropriate cartridge[1]	NIOSH approved respirator	See Roux's Respiratory Protection Program for information about the brand, model, acceptable configurations, and specific care instructions for the standard issue respirator. Half-faced respirators may be donned if hazard assessment warrants.
Suit	Puncture/tear resistant suit material with boot and hood[2]	DuPont® Tychem® CPF 2/CPF 3 or Saranex	Other material types may be substituted based on known contaminants, if considered more appropriate.
Inner Gloves	Light weight	Nitrile, Neoprene	Other material types like Neoprene, PVC, Viton®, or PE/EVAL may be substituted based on known contaminants, if considered more appropriate.
Outer Gloves	Medium/heavy weight	Butyl, Nitrile, or other work glove	Confirm chemical performance rating. Other material types may be substituted based on known contaminants, if considered more appropriate.
Inner Boot	Safety work boot	–	Other boot types may be substituted based on known contaminants and physical hazards. Puncture resistant shanks may be required.
Outer Boot	Heavy weight Latex booties or outer boots[2]	Latex booties are used to protect suit for light duty applications. NFPA rated outer boots may be required based on anticipated site conditions and tasks.	Other outer boot coverings may be substituted based on known contaminants.
Hard Hat	Standard[3]	-	-
Eye Protection	Safety glasses/goggles[3,4]	-	-

1 Must be NIOSH approved.
2 Must meet NFPA 1991/NFPA 1994 requirements depending on the site hazard assessment.
3 Must comply with the applicable ANSI standard.
4 In the case a ½ face respirator is worn eye protection is required.

3.7.4 Level D Protection

Level D is the basic work uniform. Level D is worn when the atmosphere contains no known hazard. Work functions preclude splashes, immersion, potential for inhalation, or direct contact with hazard chemicals. For most Roux field jobs Level D is the standard minimum level of protection worn.

Table 4: Recommended Level D Ensemble Components

Component	Type	Manufacturer / Recommended Material	Notes
Respirator	None	-	-
Suit	Coveralls, street clothes, or disposable Tyvek suit	–	Other types may be substituted as appropriate.
Inner Gloves	N/A		
Outer Gloves	As appropriate for physical hazards and for comfort	–	-
Boot	Safety work boot	–	Roux's standard safety boot is 6", steel/composite safety toe, and electrical hazard (EH) rated.
Outer Boot Covering	As appropriate	–	–
Hard Hat	Standard[3]	-	-
Eye Protection	Safety glasses/goggles[3]	-	-
High Visibility Clothing	High Visibility Vest /Jacket[3]	-	ANSI Class 2 Safety Vests/Jackets are the standard. Class 3 Safety vests/jackets shall be worn in worksites with 50+ MPH traffic.
Hearing Protection	Ear muffs/plugs	-	Workers exposed to excessive noise shall don hearing protection. Refer to Roux's Hearing Conservation Program for more information.

[1] Must be NIOSH approved.
[2] Must meet NFPA 1991/NFPA 1994 requirements depending on the site hazard assessment.
[3] Must comply with the applicable ANSI standard.

3.7.5 Level E Protection

Level E protection is used when radioactivity above 10 millirems per hour (mrems/hr) is detected at the site. Personal protective equipment for Level E includes:

- Coveralls;
- Air purifying respirator (i.e., P100 or equivalent);
- Time limits on exposure;
- Appropriate dermal protection for the type of radiation present, and

- Radiation dosimetry and ambient monitoring.

3.7.6 Additional Considerations

Fieldwork will contain a variety of situations due to chemicals in various concentrations and combinations. These situations may be partially ameliorated by following the work practices listed below:

1. Foot protection is needed on every site. If the ground to be worked on is contaminated with liquid, and it is necessary to walk in the chemicals, some sort of protective shoe coverings or "booties" can be worn over the boots. Shoe coverings should be designed with soles to help prevent slips. Using disposable shoe coverings when contacting liquid contamination can on and reduce overall decontamination requirements. If non-liquids are to be encountered, a Tyvek™ bootie could be used. The advantage of booties is questionable if the ground contains any sharp objects. Boots should be worn with either cotton or wool socks to help absorb perspiration.
2. If the site requires hard hats, chin straps should be used if a person is stooping over where his/her hat may fall off. Respirator straps should not be placed over the hard hats, as this will affect the respirator's fit.

   Some types of protective materials conduct heat and cold readily. In cold conditions, natural material clothing should be worn under protective clothing. Protective clothing should be removed before allowing a person "to get warm." Applying heat, such as with a space heater, to the outside of the protective clothing may drive contaminant permeation. In hot weather, under clothing will absorb sweat. It is recommended that workers use all cotton undergarments.
3. Body protection should be worn and taped to prevent anything from running into the top of the boot. Gloves should be worn and taped to prevent substances from entering the top of the glove. Duct tape is preferred, but masking tape can be used. When aprons are used, they should be taped across the back for added protection. However, this should be done so that the person has mobility.
4. Atmospheric conditions such as precipitation, temperature, wind direction, humidity, wind velocity, and pressure determine the behavior of contaminants in air or the potential for volatile materials to become airborne. These parameters should be considered in determining the need for and the level of protection.
5. A program must be established for periodic air monitoring during site operations. Without an air monitoring program, any changes to air quality would go undetected and might jeopardize on-site personnel. Monitoring can be done with various types of air pumps and filtering devices, followed by laboratory analysis of the filtration media, personnel dosimeters, and periodic walk-throughs by personnel carrying real-time direct-reading survey instruments.
6. For operations in the exclusion zone, different levels of protection may be selected, and various types of chemical-resistant clothing may be worn. This selection should be based on the job function, reason for being in the area, and the potential for skin contact with, or inhalation of, the chemicals present.
7. Escape masks must be readily available when levels of respiratory protection do not include an SCBA and the possibility of an IDLH atmosphere exists. The use and placement of escape masks should be made on a case-by-case basis. Escape masks should be strategically located at the site in areas with a higher potential for vapors, gases, or particulates.

3.8 Decontamination of PPE

Roux prefers the use of single-use PPE to minimize the requirement for significant decontamination. The following procedures shall be considered should a field project require the need for decontamination of PPE. Roux has also developed a Site Control and Decontamination Management Program.

3.8.1 Site-Specific Decontamination Plans

The Project Manager (or another authorized individual) is responsible for formulating the site-specific PPE decontamination plan as an integral part of the Health and Safety Plan (HASP). The SHSO/SS' responsibilities include ensuring the plan's implementation and adapting it as site conditions evolve. Refer to Roux's Site Control and Decontamination Management program for additional requirements.

The decontamination plan, often created in conjunction with PPE selection, must be established prior to workers entering potentially contaminated areas. The plan should address the following key aspects:

- Decontamination Hazard Evaluation and Risk Assessment: Assessing risks associated with decontamination processes.
- PPE for Decontamination Line Assistants: Specifying appropriate PPE for personnel involved in decontamination.
- Roles and Responsibilities During Decontamination: Defining tasks and duties during the decontamination process.
- Layout and Quantity of Decontamination Stations: Determining the number and arrangement of decontamination stations, along with the designated PPE decontamination procedures at each station.
- Decontamination Equipment: Identifying the necessary equipment for effective decontamination.
- Decontamination Methods: Describing the methods and protocols for decontaminating personnel and equipment.
- Preventing Contamination of Clean Areas: Outlining procedures to prevent contamination of uncontaminated zones.
- Minimizing Contact with Contaminants During CPC Removal: Providing guidelines to reduce wearer exposure during the removal of Chemical Protective Clothing (CPC).
- Disposal Procedures for Inadequately Decontaminated Clothing and Equipment: Ensuring proper disposal practices for items that have not been adequately decontaminated.

The initial decontamination plan, which is developed in conjunction with the initial site hazard assessment, should be based on worst-case assumptions about the extent and type of contamination.

3.8.2 Emergency Decontamination of PPE

The designated SHSO/SS (or another authorized individual) assumes responsibility for addressing emergency decontamination within the site-specific Health and Safety Plan (HASP). Emergency decontamination may become necessary due to events such as fires, explosions, sudden violent storms, or medical emergencies. The emergency decontamination plan must clearly delineate emergency egress routes, as well as procedures for both decontamination and egress.

Some key points to consider regarding emergency decontamination.

- Immediate Notification: The SHSO/SS (or their designated counterpart) must be promptly informed of any circumstances requiring emergency decontamination. Additionally, they are accountable for tracking all personnel during the process.
- Urgent Medical Treatment: If urgent medical attention is necessary, decontamination of PPE may be delayed until the victim's condition stabilizes.
- Balancing Priorities: When feasible, decontamination should occur without hindering essential first aid. However, if a worker is exposed to an extremely toxic or corrosive substance, immediate decontamination is crucial to prevent severe injury or fatality.

- Heat-Related Illness: In cases of heat-related illness, protective clothing must be promptly removed (refer to Roux's Heat Illness Prevention Program).

Emergency Facilities:

- For workers potentially exposed to corrosive materials, quick drenching or flushing facilities must be provided in accordance with 29 CFR 1910.151(c) and 1926.50(g).
- Similarly, if workers face other hazards (such as splash or dust) that could harm the eyes or body, readily accessible wash stations are essential. These stations should be properly located and maintained, including regular water changes, as per the manufacturer's instructions.

3.8.3 Protection of Decontamination Line Assistants

Should work require a decontamination corridor the following shall be used as guidance. The SHSO/SS (or other designated person) must for ensuring that decontamination line assistants receive appropriate PPE and addressing their protection within the site-specific HASP. Key zones—namely, the Exclusion Zone (EZ), Contamination Reduction Zone (CRZ), and Clean Support Zone—must be clearly marked both in the field and within the site-specific HASP. The following should be considered when preparing for protection of decontamination line assistants.

1. Task Hazard Analysis: A thorough analysis must be conducted for line assistants to determine the optimal PPE level required. Factors influencing this decision include:
    - Expected or Visible Contamination on Responders
    - Type of Contaminant and associated respiratory and skin hazards
    - Total Vapor/Gas Concentrations in the CRZ
    - Presence of Particulates and specific inorganic or organic vapors in the CRZ
    - Results of Wipe Tests (refer to Section 5.4)
    - Slope and Configuration of the CRZ
2. PPE Levels: Depending on the situation:
    - Line assistants may need to wear the same PPE level as workers in the EZ.
    - Alternatively, line assistants may be adequately protected by using PPE one level lower (e.g., wearing Level C protection while decontaminating workers who are wearing Level B)."

3.8.4 Procedures to Minimize PPE Contamination

Proper work practices and procedures should be implemented at sites to minimize the potential for contact with chemicals of concern while onsite. The following guidance should be considered when developing site-specific procedures:

- Opt for single-use Personal Protective Equipment (PPE) when feasible to minimize decontamination needs.
- Ensure complete sealing of PPE closures and interfaces, including pockets, zippers, and other potential openings.
- Position gloves and boots underneath the sleeves and pant legs of outerwear to reduce exposure.
- Place hoods outside the collar if they are not already attached.
- Utilize disposable outerwear and equipment when suitable to facilitate easy disposal and reduce decontamination efforts.
- Secure all junctions with tape to block contaminants from entering gloves, boots, jackets, and suits.

- Adopt work practices that limit contact with hazardous substances, such as avoiding unnecessary exposure.
- Employ remote techniques for sampling, handling, and opening containers, like using drum grapples and pneumatic impact wrenches.
- Store monitoring and sampling devices in bags designed with openings for sample ports and sensors.
- Cover contaminant sources with plastic sheeting or overpacks to shield PPE from contamination.

3.8.5 PPE Disposal

The PM, in coordination with the field team, shall ensure the safe disposal of all wastes generated from PPE use. PPE must be placed in appropriate containers, labeled, and prepared for disposal separately from other forms of waste. Refer to Roux's General Waste Corporate Management Program for further guidance.

APPENDIX A
EPA's Emergency Responder Health and Safety Manual

APPENDIX E

Subsurface Utility Clearance Management Program

SUBSURFACE UTILITY CLEARANCE MANAGEMENT PROGRAM

CORPORATE HEALTH AND SAFETY DIRECTOR	**:**	**Brian Hobbs, CIH, CSP**
EFFECTIVE DATE	**:**	**01/2019**
REVIEW DATE	**:**	**03/2025**
REVISION NUMBER	**:**	**5**

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APPENDICES

Appendix A – Roux Subsurface Utility Clearance Checklist/ Utility Verification/Site Walkthrough Record

Appendix B – Private Utility Technology Applications and Considerations

1. PURPOSE

Roux Associates, Inc. and its affiliated companies, Roux Environmental Engineering and Geology, D.P.C., and Remedial Engineering (collectively, "Roux"), have instituted the following program for completing proper utility mark-outs and for conducting subsurface clearance activities. This establishes a method to ensure, to the greatest extent possible, that utilities have been identified and contact and/or damage to underground utilities and other subsurface structures will be avoided. For the purpose of this program, a structure is defined as any underground feature that may present a potential source(s) of energy, such as, but not limited to, utility vaults, bunkers, piping, electrical boxes, wires, conduits, culverts, utility lines, underground tanks, and ducts.

2. SCOPE AND APPLICABILITY

The Subsurface Utility Clearance Management Program applies to all Roux employees, as well as their contractors and subcontractors. Employees are expected to follow this program for all intrusive work involving Roux or other personnel (e.g., contractors, subcontractors) working for Roux, unless the client's requirements are more stringent. Intrusive work activities can include, but are not limited to, digging or scraping the ground surface, including, but not limited to, excavation; test pitting or trenching; soil vapor sampling or the installation of soil borings, soil vapor monitoring points and wells, or monitoring wells; and drilling within concrete slabs on grade.

Deviation from the program, regardless of the specific work activity or location, must be pre-approved based on the client's site knowledge, experience, site conditions, and additional documentation on the site. Any exceptions shall be documented through the Roux Subsurface Utility Clearance Variance Form, located within the Roux Health & Safety Online Application or via OKTA. Approval is required from the Project Principal (PP) and the Operations Manager (OM), in consultation with the Office Health and Safety Manager (OHSM) or Corporate Health and Safety Director (CHSD), prior to mobilization. Depending on the work location, more stringent federal, state, local, or client requirements may apply. It is the responsibility of the Project Team to identify such requirements prior to mobilization.

3. PROCEDURES

3.1 Before Intrusive Activities/Job Planning Process

Prior to intrusive work at a site, the Project Manager (PM) shall ensure that the notification of the State One Call or equivalent service (Nationwide-811) is completed a minimum of 48-72 hours (One-Call State Law Directory) before intrusive work activities (this timeline excludes Saturdays, Sundays, Legal Holidays and 811 observed holidays). This notification is required by law for all states. State-specific or local laws related to utility location may vary. The project team is responsible for understanding requirements that may affect their work site.

Obtain, review, and field verify relevant historical site data that may include: as-builts/site plans; easement/right-of-way information; historical aerial photos/development plans; local/state permitting records; previous site investigation/boring logs; and/or interviews with site representative/client. Interviews with site or client personnel should ask the following:

- Employee(s) Name and Relationship with the site;
- Types of utilities, including structure and location of utilities on-site;
- Depth of known utilities; and
- Any other relevant information as it pertains to the site.

Prior to intrusive work activities, information pertaining to the site should be included in Roux's Subsurface Utility Clearance Checklist and Utility Verification/Site Walkthrough forms. This form is located within the Roux Health & Safety Online Application or through OKTA.

If there is the potential for unexploded ordnances or munitions, consultation with your OM and CHSD is required prior to site operations.

3.1.1 Project Kick-Off Meeting

During the project kick-off meeting for intrusive activities, the PM will review the Roux Subsurface Utility Clearance Checklist, Utility Verification / Site Walkthrough Record (Appendix A) and the below bullet points with the project field team:

- Confirm that the State One Call or equivalent is received and that the ticket number is confirmed, reviewed, and valid for the time of work. If intrusive work activities are not conducted during this valid time period, the One Call ticket must be renewed, and the site must be remarked;
- Review the work scope to be performed with the site owner/tenant to determine if it may impact any utilities;
- Determine the need for utility owner companies to be contacted or to have their representatives on site;
- Where mark-outs terminate at the property boundary, consider the use of private utility locating / (e.g., Radio Frequency Detection, Electromagnetic Induction), Ground Penetrating Radar (GPR) , and other applicable geophysical inspection services. The use of private utility locating firms, however, does not eliminate the legal requirement for the subcontractor (e.g., driller, excavation firm) to submit a request for Public Utility Mark-outs. Also, the information provided by the service may be inaccurate and unable to locate subsurface utilities and structures in urban areas, landfills, urban fill areas, below-reinforced slabs, etc. They should not be relied upon as the only means of performing utility clearance;
    - A mark-out is defined as the process of contracting with a competent and qualified company to confirm the presence or absence of underground utilities and structures. This process will clearly mark out and delineate identified utilities so that intrusive work activities can be performed without causing disturbance or damage to the subsurface utilities and structures. After utility mark-outs are completed, soft Digging must completed prior to intrusive work. Section 3.4 Preferred Methods of Clearing the Subsurface (Pre-Clearing) outlines requirements for pre-clearing techniques in order of preference.
- Documented description of the dig site, which is included in the project's Health and Safety Plan (HASP), and one call report will be maintained in the field and distributed amongst Roux personnel, its contractors, and subcontractors; and
- Documentation of the actual placement of mark outs in the field shall be collected using dated pictures, videos, and/or sketches with distance from markings to fixed objects. All documentation shall be maintained within the project file.

3.2 Utility Mark Out

- Ensure the Mark-out / Stake-out Request Information Sheet (or one-call report) is complete and accurate for the site, including address and cross streets, and review for missing utilities. Ensure ticket life is still valid for work.
    - Note: Utility mark-out organizations do not have contracts with all utilities, and it is often necessary to contact certain utilities separately, such as the local water and sewer authorities, local transportation departments, and railroad operators. In the event the Project Teams

anticipate subsurface work will impact public utilities, railroad operations, or public roadways, coordination with the utility owners/operators is required.

- Have written confirmation prior to mobilizing to the site that the Project Team or Roux personnel performing the intrusive activity has correctly completed the mark-out notification process, including requesting mark-outs, waiting for mark-outs to be applied to ground surfaces at the site, and receiving written confirmation of findings (via fax or email) from utility operators for all known or suspected utilities in the proposed area of intrusive activity, and provided utility owner written confirmation to Roux personnel for review and project files documentation.
- Do not begin any intrusive activity until all utility mark-outs have been completed (i.e., Did all utilities mark-out the site?) and any unresolved mark-out issues are finalized. Perform a site walk to review the existing utilities and determine if the utility locators have located said utilities.

  (Note: The Tolerance Zone is defined as three feet from the outside edge of any subsurface structure.)
- For non-subscribing utility owners or if public one-call service is not available, perform due diligence and request further information regarding utility type, construction details, location, and burial depth directly from public service providers/utility owners. Request utility mark-out by each public service provider/utility owner as applicable. Confirm contact and response by each public utility owner on the Subsurface Utility Clearance Checklist.
- If utilizing a Private Mark out, ensure the contractor has a plan regarding what types of technology will be used based on Table 1 in Appendix B: Private Utility Technology Applications and Considerations. If possible, it is recommended that multiple technologies be used to sweep each location/work area. Use a tracer wire to locate the utility (when tracer wires are present). Record the results of the private utility mark-out on the Utility Verification/Site Walkthrough Record form.

3.3 Site Visit/Utility Walkthrough

Before mobilization with the subcontractor or during the pre-work safety tailgate with the subcontractor, perform a site walkthrough after utility mark-outs have been completed to determine whether additional potential hazards are present and look for visible signs of utilities that may be present. Outlined below are considerations regarding a site walk before intrusive activities. Before initiating any intrusive work, verify that the utilities marked on-site align with the information provided in the One Call response notification/ticket and with site plans and documents. If any discrepancies arise, address them promptly to ensure accuracy and do not start intrusive work until they are rectified.

- Identify overhead utilities that may impede equipment mobilization or work zones to ensure adequate Occupational Safety and Health Administration (OSHA) clearance distance(s), as specified within the site-specific Health and Safety Plan (HASP) and 29 CFR 1926.1408 Table A.

The presence of any of the following may indicate potential subsurface structures:

- Locations of buildings, equipment, and features like area lights, signs, sprinkler systems, phones, drains, natural gas meters, manholes, etc.;
- Warning tape, which is often a sign of underground services;
- Material like pea gravel, sand, or other non-native materials can indicate the presence of tanks or lines or any deviations from the established native soil or backfill conditions;
- Red concrete that is often used for electrical duct banks;
- Evidence of damaged utilities, such as piping materials, insulation, or odors present in the work area; and

- Other utilities, including fire hydrants, electrical transformers, pipeline markers, valve covers, steam lines, valve box covers, clean-outs, etc.

By observing the path between the main service line and the connection point (e.g., a utility meter at the exterior of the site building), it may be possible to determine the likely routing of on-site utilities. However, this method should not be relied upon solely, and proper risk mitigation strategies should be in place before proceeding with any ground disturbance activities. Look outside your work zone for other potential utilities that may cross through it.

For sites with potential underground storage tanks present (UST), the following guidance applies:

- Identify if the product piping is either rigid or flexible.
- Conduct a visual examination of the tank field, observation wells, dispensers, vent stacks, and UST fill points to determine their location.
- Locate and become familiar with the emergency shutoff button/switch, if present.
- Determine the orientation, arrangement, and location of the tanks, as well as their size and capacity, through the examination of visible features at grade, such as fill ports and extractor covers, and by consulting any available as-built drawings.

Before commencing any subsurface intrusive work, field staff should thoroughly address any discrepancies in utility company mark-outs or the absence of mark-outs.

3.3.1 Project Management - Field Personnel

Whenever possible, it is advisable to assign the same project personnel to both utility location and clearance tasks as well as intrusive activities. This continuity ensures that site knowledge and utility information gathered during the clearance phase remain up-to-date. Having this historical perspective helps minimize the risk potential of utility strikes.

In cases where maintaining the same personnel throughout the project is not feasible, a thorough knowledge transfer regarding site utilities, locations, clearance results, and proposed intrusive activities becomes essential. The PM must ensure that there is a successful handoff of information when there is a change in field personnel.

3.3.2 Utility Markings

The utility marking color code includes various uniform colors. The following APWA uniform color code (ANSI Z535.1) is provided below. While certain government agencies or large industrial facilities may use additional colors, Roux's policy is to consider any unlisted paint marking or pin flag color as a subsurface utility marking unless proven otherwise.

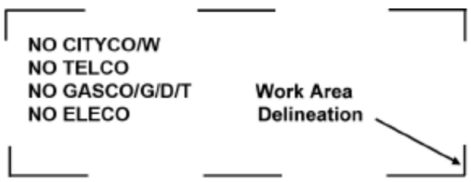
If utilities or subsurface anomalies are identified but their type or classification remains uncertain, it is advised to employ pink paint or pin flag (Temporary Survey Marking) for marking. Once the utility type is definitively established, the pink marks should be updated to represent the correct type of utility accurately.

White	Proposed Excavation
Pink	Temporary Survey Markings
Red	Electric Power Lines, Cables, Conduit, and Lighting Cables
Yellow	Gas, Oil, Steam, Petroleum, or Gaseous Materials
Orange	Communication, Alarm or Signal Lines, Cables, or Conduit
Blue	Potable Water
Purple	Reclaimed Water, Irrigation, and Slurry Lines
Green	Sewers and Drain Lines

Understanding the markings left by locators during the 811 process is crucial for avoiding utility-related issues. Typically, these markings are done when Roux staff members are not physically present on-site. To enhance understanding/accuracy, it is advisable for staff to be present during the 811 process or engage in conversations with locators, both public and private, while on-site. Additionally, utility marks must adhere to the proper standards outlined in the Uniform Color Code.

Common Abbreviations *(Source: Common Ground Alliance)*

Facility Identifier		Underground Construction Descriptions		Infrastructure Materials	
CH	Chemical	C	Conduit	ABS	Acrylonitrile - Butadiene - Styrene
E	Electric	CDR	Corridor	ACP	Asbestos Cement Pipe
FO	Fiber Optic	D	Distribution Facility	CL	Cast Iron
G	Gas	DB	Direct Buried	CMC	Cement Mortar Coated
LPG	Liquefied Petroleum	DE	Dead End	CML	Cement Mortar Lined
PP	Petroleum Products	JT	Joint Trench	CPP	Corrugated Plastic Pipe
RR	Railroad Signal	HP	High Pressure	CMP	Corrugated Metal Pipe
S	Sewer	HH	Hand Hole	CU	Copper
SD	Storm Drain	MH	Manhole	CWD	Creosote Wood Duct
SS	Storm Sewer	PB	Pull Box	HDPE	High Density Polyethylene
SL	Street Lighting	R	Radius	MTD	Multiple Tile Duct
STM	Steam	STR	Structure (vaults, junction inlets, lift station)	PLA	Plastic (conduit or pipe)
SP	Slurry System	T	Transmission Facility	RCB	Reinforced Concrete Box
TEL	Telephone			RCP	Reinforced Concrete Pipe
TS	Traffic Signal			RF	Reinforced Fiberglass
TV	Television			SCCP	Steel Cylinder Concrete Pipe
W	Water			STL	Steel
W	Reclaimed Water "Purple"			VCP	Vitrified Clay Pipe



3.4 Preferred Methods of Clearing the Subsurface (Pre-Clearing)

At least one of the methods listed below shall be carried out during pre-clearing activities. The Project Team is responsible for evaluating risks associated with the Scope of Work to determine which method is selected.

If none of the following pre-clearing activities are performed, a Subsurface Utility Clearance Variance must be submitted to the OM. This Subsurface Utility Clearance Variance must provide clear lines of evidence that there are no utilities present within the intrusive work zone. Examples include demolition permits of the site, utility closure documents indicating no live utilities on-site, as-builts, site history, etc.

The following approaches shall be considered and implemented based on the Scope of Work.

- ***Soft Digging***
  - This is the preferred method of utility clearance when clearing higher-risk utilities. Soil should be cleared through the use of a vacuum truck/equivalent, an accompanying air knife (preferred), or a water lance to break up and loosen the soil for removal with the vacuum.
- ***Hand Digging***
  - Soil should be broken up and removed using a shovel or other appropriate hand tools without excessive force. Limit the use of dig bars or other tools that, if used incorrectly, can significantly damage utilities.
- ***Hand Augering***
  - The hand auger must be turned slowly using even hand pressure without excessive force. Rounded-edge augers are preferred. Hand augers should not be used in pea stone/pea gravel where utilities may be present and could potentially be damaged by the hand auger. The abrupt absence of soil recovery in a hand auger could indicate utilities as pea gravel or sand may have spilled out of the auger (exception: native soil conditions that typically result in poor hand auger recoveries). If any resistance is encountered while operating the hand auger for pre-clearance, the equipment will be removed, and the exploratory test hole will be visually inspected by onsite personnel for any obstructions or indications of subsurface structures.

3.4.1 Guidance for Tools and Equipment

Personnel performing pre-clearance activities shall keep tools and equipment in safe working order and be properly inspected before use. If tools or equipment are broken, they will be tagged and removed from service. The following specify additional guidelines regarding tools and equipment:

- Hand-digging tools must have a non-conductive handle, such as fiberglass, wood, or composite, or fully insulated handles and potential contact surfaces.
- Blades on shovels and post-hole diggers should have rounded or blunt edges.
- Pick axes or pointed spades should not be used for physical clearance.
- Crowbars, pinch-bars, or pry bars should not be used to break hardened soil or backfill except when authorized by the Site Supervisor (SS). This should only be used to loosen materials like bricks or larger stones.
- Electric-powered equipment must have ground-fault protection.
- Should there be refusal or difficulty with advancing hand tools, the contractor shall stop work and notify the Roux SS or Site Health and Safety Officer (SHSO) immediately.

3.5 During Intrusive Activities

3.5.1 Concrete/Paving Surface Removal

Remove any surface coverings (i.e., pavement, brush, debris, etc.) to ensure workers have clear visibility of the work area and subsurface conditions. Avoid mechanical jackhammering over known lines unless they are de-energized, locked-out/tagged-out, and potential repairs are planned or if the utility has been completely disconnected prior. When cutting or coring, go only as far as needed to penetrate the surface cover. When removing a large surface area, begin at the perimeter of the removal zone. This initial step helps identify any utilities passing through the work zone. For extensive areas, using a concrete saw might not be practical. Instead, heavy equipment is often employed. During this process, a designated spotter should guide the heavy equipment. Their role is to watch for warning signs of utilities. It is crucial that the heavy equipment does not have “teeth” that could potentially pass through the surface and damage utilities.

3.5.2 Pre-Clearance Procedures

Install pre-clearance exploratory test holes using one of the techniques, as outlined in Section 3.4, for the first 5-ft below land surface (BLS) at each location before conducting intrusive mechanized activities. Should utilities be located at a greater depth than 5-ft BLS consult with the OM, OHSM and CHSD regarding adjustments to the pre-clearance requirements to go greater than 5-ft BLS. Some Clients may require greater than 5-ft BLS for pre-clearance test holes; Project teams should be aware of such Client requirements prior to work.

Pre-clearance exploratory test holes should be defined in the SOW/proposal provided to the client to prevent project delays and to allow adequate time for the PM and PP to evaluate alternative approaches for the project. Alternative approaches will need to be pre-approved by the OM through a Subsurface Utility Clearance Variance.

Both single-point and three-point clearance are acceptable as long as the following criteria are met below. For single-point clearance, the exploratory test hole is advanced at the exact location of the proposed borehole. If three-point clearance is performed, it must be done in a triangular pattern around the proposed borehole and in a configuration that would not allow utilities to enter the borehole.

- The size of the pre-clearance exploratory test hole should be, at a minimum, twice the diameter of any downhole tool or boring device.
- For direct push applications (CPT, Geoprobe®, etc.), the borehole clearance diameter shall be at least 125% of the diameter of the largest tool being pushed through the subsurface (e.g., tip, rod, sampler, etc.), to the minimum required depth.
- For excavations, all utilities need to be marked and then exposed by soft-digging or by hand, following the protocols in this program. Pre-clearing for excavations may be performed by the “moat” technique (i.e., soft Digging around the perimeter). In these cases, dig in small lifts (<12” for first 5 feet using a dedicated spotter.
- For Tolerance Zone work, unless otherwise agreed upon with the Utility Operator, work within the tolerance zone requires verification by means of pre-clearance test holes specified in Section 3.4 to expose the utility. Once structures have been verified, a minimum clearance of three feet must be maintained between the utility and any powered equipment. If considered a high-risk utility, additional requirements may be necessary and required by the Operator of the utility. Consultation with the OM and CHSD may be appropriate.

The PM, field team lead, or personnel performing oversight is to:

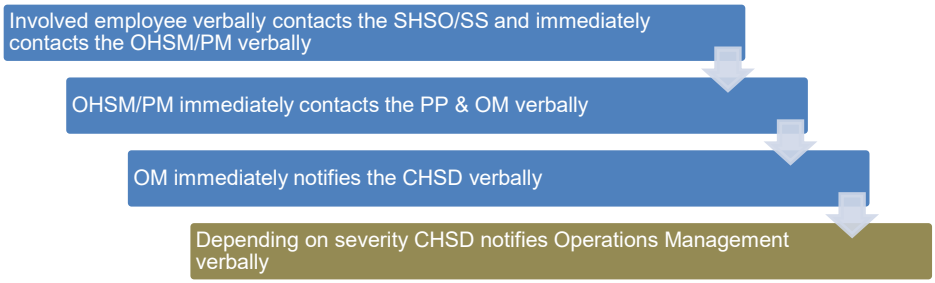
- Ensure the mark-out remains valid. (In certain states, there are limits regarding the duration of time after the mark-out was applied to the ground surface work can be started or interrupted.) Additionally, the mark-outs must be maintained, documented, and in many cases, refreshed periodically to be considered valid. This will be accomplished through calls to the one call center.
- Ensure intrusive activities are only performed within the safe boundaries of the mark-out as detailed in the One-Call Report.
- Halt all work if intrusive activities have resulted in the discovery of an unmarked utility. Roux personnel shall notify the facility owner/operator and the one call center. All incidents such as this will be reported as per Roux Incident Investigation and Reporting Management Program.
- Halt all work if intrusive activities must take place outside of the safe boundaries of a mark-out and only proceed after new mark-outs and subsurface utility clearance are performed.
- Halt the intrusive activities and immediately consult with the PP if an unmarked utility is encountered.
- Complete any loss reports associated with subsurface utility strikes, as necessary.
- If a utility cannot be found as marked, Roux personnel shall notify the facility owner/operator directly or through the one-call center. If the facility operator is not responsive, then the one-call center must be notified. Following notification, the excavation/mechanical intrusive work may continue unless otherwise specified in state law.
- Contractors/subcontractors must contact the one-call center to refresh the ticket when the excavation continues past the life of the ticket. State law dictates ticket life. Project teams must be aware of their state-specific requirements.

3.6 Stop Work Authority

Each Roux employee has Stop Work Authority that he or she will execute upon determination of any imminent safety hazard, emergency situation, or other potentially dangerous situation, such as hazardous weather conditions. This Stop Work Authority includes subsurface clearance issues such as the adequacy of a mark-out or identification during intrusive operations of an unexpected underground utility. Authorization to proceed with work will be issued by the PM/PP in consultation with the OHSM after such action is reviewed and resolved. The PM will initiate and execute all management notifications and contact emergency facilities and personnel when this action is appropriate.

3.7 Reporting Utility Incidents

Roux field personnel engaged in any utility strike (e.g., subsurface/aboveground) must promptly stop work, shutdown any equipment and get to a safe location at the Site. Then notify the PM to discuss the incident. In case of injuries, field personnel must call 911 or the local emergency services number and then inform the PM. Additional notifications shall follow Roux's Incident Notification Process. Depending on the utility strike additional notifications shall be made to utility operators and/or clients/site contacts.



Appendix A
Roux Subsurface Utility Clearance Checklist

Appendix A

Roux Subsurface Utility Clearance Checklist/Utility Verification/Site Walkthrough Record

Roux Subsurface Utility Clearance Checklist ***Date of Revision: 3/2024***

Work site set-up and work execution

ACTIVITY	Yes	No	N/A	COMMENTS INCLUDING JUSTIFICATION IF RESPONSE IS NO OR NOT APPLICABLE
Daily site safety meeting conducted, SPSAs performed, JSAs reviewed, appropriate work permits obtained (if applicable).				
HASP is available and reviewed by site workers / visitors.				
Subsurface Utility Clearance Procedure has been reviewed with all site workers.				
Mechanical intrusive work activities may not be performed at any location without authorization from the Roux Site Supervisor (SS). Clearance activities may not be performed at any location unless the SS is physically present.				
Work area secured; traffic control established as needed. Emergency shut-off switch located. Fire extinguishers / other safety equipment available as needed.				
Utility mark-outs (public / private) clear and visible. Provide Excavator's Stake-Out Reference Number / Request Date / Time.				
Tolerance zone work identified. Intrusive work activities cannot be performed in areas that are in direct conflict with any markings made by public or private locators.				
Unless the PP & OM authorizes it, all boreholes and test pit locations must be physically cleared before using mechanized equipment. Required minimum physical clearance depths and diameters are as follows: • Physically clear to a depth of 5 feet bls. • The size of the pre-clearance exploratory test hole must be, at a minimum, twice the diameter of any downhole tool or boring device. • For direct push applications (CPT, Geoprobe®, etc.) the borehole clearance diameter shall be at least 125% to the diameter of the largest tool being pushed through the subsurface (e.g., tip, rod, sampler, etc.).				
Work execution plan reviewed and adhered to (ground disturbance methods, clearance depths, any special utility protection requirements, or any other execution requirements; especially for Tolerance Zone work).				

Mechanical intrusive work is prohibited within 3-feet distance in all directions from subsurface structures that will be intentionally exposed during pre-clearance. Any removal of material within 3-feet of the subsurface structure may only proceed by hand using non-conductive tools/compressed air if authorized by state law and the owner/operator of the utility.				
All equipment onsite must maintain the appropriate horizontal distance from any point on the equipment to the nearest overhead electrical power line. Refer to site-specific HASP and local/utility company requirements.				
Verbal endorsement received from Roux PM and OM for any required field deviations to work execution plan.				

Key Reminders for Execution

The Subsurface Utility Clearance Protocol should be referenced to determine all requirements while executing subsurface work. The bullet points below are intended as general reminders only and should not be relied upon solely.

- The size of the pre-clearance exploratory test hole must be at a minimum twice the diameter of any downhole tool or boring device to minimum required depth of 5 feet bls.
- For direct push applications (CPT, Geoprobe®, etc.) the borehole clearance diameter shall be at least 125% of the diameter of the largest tool being pushed through the subsurface (e.g., tip, rod, sampler, etc.), to the minimum required depth of 5 feet bls.
- The tolerance zone is defined as three feet plus half of the diameter or half of the greatest dimension (for elliptical sewers, duct banks, and other non-cylindrical utilities) of a utility and three feet from the outside of any subsurface structure.
- For excavations, all utilities need to be marked and then exposed by hand, following the protocols in this program. Pre-clearing for excavations may be performed by the “moat” technique (i.e., soft digging around the perimeter). In these cases, dig in small lifts (<12” for first five feet) using a dedicated spotter.) For Tolerance Zone work, unless otherwise agreed upon with the Utility Operator, work within the tolerance zone requires verification by means of hand-dug test holes to expose the utility. Once structures have been verified, a minimum clearance of three feet must be maintained between the utility and any powered equipment.

Utility Verification/Site Walkthrough Record

Employee Name:_____

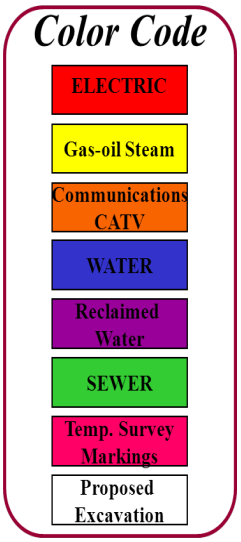
Date: _____

Instructions: For each utility suspected at the job site, indicate the location on the job site, approximate burial depth, and means of detecting the utility. Leave blank if that utility is not believed to be present.

Utility	Description of Utility Location Identified Onsite	Approx. Depth (bls)	Method / Instrumentation used to determine Utility Location	Utility Owner Response (Date/Time)	Mark Out Indicates (Clear / Conflict)
Electrical Lines					
Gas Lines					
Pipelines					
Steam Lines					
Water Lines					
Sanitary and Stormwater Sewer lines					
Pressured Air-Lines					
Tank Vent Lines					
Fiber Optic Lines					
Underground Storage Tanks					
Phone Lines/ Other					

* bls - below land surface

Site Sketch Showing Utilities:



Other Comments / Findings:

Completed by: _____

Signature: _____ Date: _____

Appendix B
Private Utility Technology Applications and Considerations

Appendix B – Private Utility Technology Applications and Considerations

Technology ⇒ Utility/Object ⇓	Radio Frequency Electro-Magnetic Detector (connection to utility, or induction without connection)	Radio Frequency Electro-Magnetic Detector (passive sweep)	Ground Penetrating Radar (GPR)⊙	Acoustic Plastic Pipe Locator	Beacon, Sonde or Conductive Rodder Insertion	EM-61 (time domain electromagnetics) Ξ	
Power/Instrument Line (Energized/Signaled) □	❋ G	G	G	R	R	G	
Power Line (Non-energized) □	❋ G	R	G	R	R	G	
Sewer/Water Line (Metallic) □	❋ G	Y	G	Y	G	G	
Sewer/Water Line (Non-metallic)	R	R	G	G	❋ G	R	
Instrument / Telecomm Lines (Non-energized)	❋ G	R	G	R	R	Y Only if metallic	
Hydrocarbon Transmission Line (Pipeline)◆ □	❋ G	R	G	R	R	G	
Metallic/Non-Metallic Line (with Tracer Wire)	❋ G	Y	G	Y	Y	G metallic	Y non-metallic
Metallic/Non-Metallic Line (without Tracer Wire)	G metallic	R non-metallic	R	❋ G	Y	Y	G metallic	R non-metallic
Metal or Fiberglass UST	R	R	❋ G	R	R	G metallic	R non-metallic

Additional Considerations

Technology ⇒ Variable ⇓	Radio Frequency Electro-Magnetic Detector	Ground Penetrating Radar (GPR)⊙	Acoustic Pipe Locator	Beacon, Sonde, or Conductive Rodder Insertion	EM-61 Ξ
Moist Soil	G	Y	G	G	G
Dry Soil	Y	G	Y	G	G
Clay	Y	R	G	G	G
Concrete w/Rebar	R	Y	G	G	R
Long Horizontal Profile	G	G	G	G	G
Short Horizontal but Deep Vertical Profile	Y	G	R	R	G
Access to Line✚	G	N/A	G	G	G
No Access to Line✚	G (induction or passive)	G	R	R	G
	R (direct connect)				G
Ferrous Metal	G	G	G	G	G
Non-ferrous Metal	Y	G	G	G	G
Adjacent or crossing conductive utility(ies)	Y	N/A	N/A	N/A	Y

Each site will be unique. Do not use this table as the sole criteria for technology selection. Use it as a starting point to assess available, applicable technology(s).

❋ Indicates best technology for given object. Site structures, rebar in concrete, shallow groundwater tables, perched storm water, etc. can significantly affect performance and reliability of any electro/magnetic method. Other utilities which cross or are adjacent to the target line can cause the EM signal to bleed or jump to the other utility line.

□ Metallic lines that have power running through them or can be connected to a tracer signal generator.

◆ Natural gas pipeline locating technicians must be trained/certified (in the U.S. requires DOT and Office of Pipeline Safety standards, other regions may have similar certification or requirements).

⊙ Most sensitive to interpretation. The skill, training and experience of operator are critical.

Ξ Emerging technology with limited availability.

✚ Access: induce unique electronic signature, apply acoustical impulse or insert conductive rodder/beacon/sonde.

Green Generally, an applicable technology **Yellow** May or may not be applicable **Red** Not generally applicable

Heavy Equipment Exclusion Zone Policy

HEAVY EQUIPMENT EXCLUSION ZONE MANAGEMENT PROGRAM

CORPORATE HEALTH AND SAFETY DIRECTOR	:	**Brian Hobbs, CIH, CSP**
EFFECTIVE DATE	:	**01/2019**
REVIEWED DATE	:	**03/2025**
REVISION NUMBER	:	**4**

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1. PURPOSE

The Exclusion Zone Management Program aims to establish the minimum clearance distance that must be maintained between workers and heavy equipment while the equipment is in operation (i.e., engaged or in motion). The intent is to have no personnel or equipment entering the Exclusion Zone while the equipment is in operation or moving to ensure that Roux and Subcontractor employees are unnecessarily exposed to the hazards of the equipment.

2. SCOPE AND APPLICABILITY

This Management Program applies to all Roux Associates, Inc. and its affiliated companies, Roux Environmental Engineering and Geology, D.P.C., and Remedial Engineering (collectively, "Roux") employees and their subcontractors performing fieldwork and are potentially exposed to heavy equipment. Heavy equipment includes, but is not necessarily limited to, excavation equipment, drill rigs, vacuum trucks, forklifts, lull telehandlers, man lifts, bobcats, delivery trucks, etc.

3. PROCEDURES

As specified in the following sections of this program, Exclusion Zones must be established and maintained during activities involving the movement/operation of heavy equipment. The Exclusion Zone requirements apply to all personnel on the site but are primarily focused on personnel required to work near the equipment. The exclusion zone is in effect when heavy equipment is moving or engaged (e.g., movement of an arm or bucket of an excavator, rotation of an auger, lifting of a load with a forklift, raising/lowering of a man lift, etc.).

1. The Exclusion Zone must meet the following minimum requirements:
   - A minimum distance of 10 feet from all heavy equipment and loads being moved by the equipment;
   - Greater than the swing/reach radius of any moving part on the heavy equipment (i.e., for large equipment, this may mean an exclusion zone distance larger than 20 feet);
   - Greater than the fall zone of equipment and their contents; and
   - Greater than the tip-over distance of the heavy equipment.

   The size of the Exclusion Zone will need to be determined on a task-specific basis considering the size of the heavy equipment in use and the task being performed. Prior to all heavy equipment operations, the Exclusion Zone(s) distance must be specifically identified in the Job Planning Process and incorporated in the pre-job tailgate meeting with the subcontractor(s), including any updates to our Job Safety Analysis (JSA).
2. The spotter (or another authorized individual) is responsible for enforcing the Exclusion Zone and not conducting any other task. The spotter should be positioned immediately outside of the Exclusion Zone within a clear line of sight of the equipment operator. The spotter must signal the operator to stop work if anyone or anything has the potential to enter or compromise the Exclusion Zone. The operator should stop work if the spotter is not within their line of sight. If a spotter must be within the Exclusion Zone, they must be in a designated area outside the swing/tip radius, fall zone, line of fire of lifted loads, etc. If multiple pieces of equipment are being used, one spotter may be adequate so long as there is a clear line of sight and the spotter can control the zone(s). Radios would be required since hand signals would not be adequate if two pieces of equipment are in operation at the same time in the Exclusion Zone.

3. If an individual must enter the Exclusion Zone, the designated Spotter must signal the Equipment Operator to stop the equipment. Once the equipment is no longer moving (e.g., movement of an arm of an excavator is STOPPED, lifting of a load with a forklift STOPPED, raising/lowering of a man lift is STOPPED, etc.), the operator must bring the boom/arm to the ground ensuring a “Zero Energy State” and DISENGAGE THE CONTROLS and STOP and SIGNAL BY “SHOWING HIS HANDS.” This signal will indicate that it is safe for the person to enter the limits of the Exclusion Zone to perform the required activity. The equipment must remain completely stopped/disengaged until all personnel exited the Exclusion Zone's boundaries and the designated Spotter has signaled by “SHOWING HIS HANDS” to the Equipment Operator that it is safe to resume operations.
4. When entering the limits of the Exclusion Zone, personnel must, at a minimum:
    - Establish eye contact with the operator and approach the heavy equipment in a manner that is in direct line of sight to the Equipment Operator;
    - Never walk under any suspended loads or raised booms/arms of the heavy equipment; and
    - Identify a travel path free of Slip/Trip/Fall hazards.
5. The Exclusion Zone should be delineated using cones with orange snow fences or solid poles between the cones, barrels, tape, or other measures. For work in rights-of-way, rigid barriers, such as Jersey barriers or temporary chain link fences, should be used. For certain types of widespread or moving/mobile equipment operations, such delineation may not be practicable around equipment or individual work areas. In such instances, it is expected that the entire operation will be within a larger secure work area or that additional means will be utilized to ensure the security of the work zone.

All subcontractors who provide heavy equipment operations to field projects must implement a program that meets or exceeds the expectations described above, as well as any additional requirements that may be required on a client or site-specific basis. Logistics involving heavy equipment should be understood and discussed prior to the field event during the job planning phase.

3.1 Exceptions

It is recognized that certain heavy equipment activities may require personnel to work within the limits of the Exclusion Zone as specified in this program. Such activities may include certain excavation clearance tasks, drill crew activities, or construction tasks. However, any such activity must be pre-planned, emphasizing limiting the amount and potential exposure of any activity required within the zone. The critical safety steps to mitigate the hazards associated with working within the Exclusion Zone must be defined in the JSA and potentially other project-specific plans (i.e., critical lift plans, etc.), and approved by the Roux Project Principal (PP), Office Health and Safety Manager (OHSM) and client representative, if required, prior to implementation.

4. TRAINING

Many Roux projects have different requirements that are client-specific or site-specific in nature. However, all Roux employees are provided initial training, as well as annually thereafter, on our Heavy Equipment Exclusion Zone policy.

5. STOP WORK AUTHORITY

All Roux employees and their subcontractors have stop-work authority. Upon initial hire, all Roux employees are provided initial safety orientation, including stop work authority. All Roux employees and subcontractors are encouraged to stop work whenever any task or operation presents an unreasonable risk or employees

are unsure how to carry out work safely. This includes upon observing any questionable safety-related behavior or condition, they are to stop work immediately and discuss the behavior or condition with the individual(s) involved. Upon stopping work, the following actions will be taken:

- Notify the affected parties to include the Project Manager (PM) and Site Health and Safety Officer (SHSO);
- Work to correct the situation or not proceed until the situation is corrected by the PM or SHSO;
- Resume work only when told to proceed by either the PM or SHSO;
- The SHSO will document the Stop-Work intervention in the field logbook;
- Stop-Work interventions will be reported to the PP for review to ensure the interventions are closed; and
- The PP will share learnings from the interventions, as appropriate, throughout the firm, to demonstrate the importance of the Stop-Work interventions.

Please note: Any form of retribution or intimidation directed at any individual or company for exercising their right to issue a stop work authority will not be tolerated.

APPENDIX G

Generic Community Air Monitoring Program

APPENDIX G

New York State Department of Health

Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical-specific monitoring with appropriately sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing

monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring

particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

APPENDIX G

Quality Assurance Project Plan

Quality Assurance Project Plan/Field Sampling Plan (QAPP/FSP)

Fairchild Republic Aircraft; Old Sump Site
(aka: Old Recharge Basin)
Broad Hollow Rd. and East Carmans Rd.
East Farmingdale, New York 11735

June 27, 2025

Prepared for:

Acadia Republic Farmingdale, LLC

Prepared by:

Roux Environmental Engineering and Geology, D.P.C.
209 Shafter Street
Islandia, New York 11749

2422.0001Y112/CV

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1. Introduction

Roux Environmental Engineering and Geology, D.P.C. (Roux), on behalf of Acadia Republic Farmingdale, LLC (Acadia), has prepared this Quality Assurance Project Plan/Field Sampling Plan (QAPP/FSP) to describe the measures that will be taken to ensure the data generated during performance of the Remedial Action Plan (RAP) for the Fairchild Republic Aircraft; Old Sump Site (aka: Old Recharge Basin) located in East Farmingdale, New York (hereinafter referred to as the "Site"), are of quality sufficient to meet project-specific data quality objectives (DQOs). The Site is currently in the New York State (NYS) Inactive Hazardous Waste Disposal Site Remedial Program, Site No. 152004, which is administered by New York State Department of Environmental Conservation (NYSDEC). The Site is separated into the southern portion (i.e., location of the former Old Recharge Basin), which is regulated by the NYSDEC; and the northern portion (i.e., location of the Former Johnson property), which is not regulated by the NYSDEC. This QAPP/FSP also includes field sampling procedures.

Acadia entered into an Order on Consent with the NYSDEC on July 24, 2014, to remediate the Site and a Record of Decision was issued on March 30, 2015 (2015 ROD). Laconia Properties LLC is a Participant in the Brownfield Cleanup Program (BCP). All RAP activities will be conducted under the New York State Department of Environmental Conservation (NYSDEC) BCP (Site #C203124). This QAPP/FSP was prepared in accordance with the guidance provided in NYSDEC Technical Guidance DER-10 Technical Guidance for Site Investigation and Remediation (DER-10), the NYSDEC BCP Guide, and the United States Environmental Protection Agency's (USEPA's) Guidance for the Data Quality Objectives Process (EPA QA/G 4).

1.1 Purpose

The QAPP/FSP describes in detail the field sampling and quality assurance/quality control (QA/QC) methods to be used during soil, soil vapor, and groundwater sampling tasks performed during the Remedial Action (RA).

This QAPP/FSP was prepared in accordance with the NYSDEC's DER-10 and provides guidelines and procedures to be followed by field personnel during performance of sampling during the RAP implementation. Information contained in this QAPP/FSP relates to:

- Sampling objectives (Section 2);
- Project organization (Section 3);
- Sample media, sampling locations, analytical suites, sampling frequencies, and analytical laboratory (Section 4);
- Field sampling procedures (Section 5);
- Sample handling, sample analysis, and quality assurance/ quality control (Section 6); and
- Site control procedures and decontamination (Section 7).

2. Sampling Objectives

The objective of the sampling program is designed to meet the DQOs set forth in DER-10. Specifically, analytical parameters selected for each sample, as described in Section 4, are comprehensive, and are intended to meet the following objectives:

- Collection and analysis of endpoint documentation and confirmation soil samples.
- Collection and analysis of soil designated for offsite disposal for parameters required by the selected disposal facility.
- Analyze offsite backfill to evaluate its suitability for use as backfill that meets the lower of the Commercial Use Soil Cleanup Objectives (SCOs) or the Protection of Groundwater SCO, presented in Table 6.8 (b) of the latest version of Title 6 of New York Code of Rules and Regulations (NYCRR) Part 375 (Part 375).
- Collection and analysis of groundwater samples.
- Collection and analysis of sub-slab depressurization system (SSDS) effluent air and indoor air samples.
- Collection of sub-slab soil vapor samples.

Sampling procedures are discussed in Section 5 of this QAPP/FSP. A discussion of the DQOs and quality assurance/quality control is provided in Section 6.

3. Project Organization

A general and generic summary of the overall management structure and responsibilities of project team members are presented below. Professional profiles for the team are provided in Attachment 1.

Project Principal

Jeff Wills, P.G., of Roux will serve as Project Principal. The Project Principal is responsible for defining project objectives and bears ultimate responsibility for the successful completion of the investigation.

Remedial Engineer

Charles McGuckin, P.E., will served as the Remedial Engineer. The Remedial Engineer is a registered professional engineer licensed by the State of New York. The Remedial Engineer will have primary direct responsibility for implementation of the Work Plan and future remedial program for the Site. The Remedial Engineer will certify in that the investigation activities were observed by qualified environmental professionals under supervision as well as any other relevant provisions of ECL 27-1419 have been achieved in full conformance with the RAP.

Project Manager

David Kaiser, P.E., of Roux will serve as Project Manager. The Project Manager is responsible for defining project objectives and bears ultimate responsibility for the successful completion of the work. This individual will provide overall management for the implementation of the scope of work and will coordinate all field activities. The Project Manager is also responsible for data review/interpretation and report preparation.

Field Team Leader

The Field Team Leader is to be determined. The Field Team Leader bears the responsibility for the successful execution of the field program. The Field Team Leader will direct the activities of the technical staff in the field, as well as all subcontractors. The Field Team Leader will also assist in the interpretation of data and in report preparation. The Field Team Leader reports to the Project Manager.

Laboratory Project Manager

Laboratory analysis will be completed by Eurofins Environment Testing Northeast, LLC (Eurofins) of Edison, New Jersey, NYSDOH Environmental Laboratory Accreditation Program (ELAP)-certified laboratories. The Laboratory Project Manager is Elizabeth Flannery. The Laboratory Project Manager is responsible for sample container preparation, sample custody in the laboratory, and completion of the required analysis through oversight of the laboratory staff. The Laboratory Project Manager will ensure that quality assurance procedures are followed and that an acceptable laboratory report is prepared and submitted. The Laboratory Project Manager reports to the Project Principal and Project Manager.

Quality Assurance Officer

David Kaiser, P.E., of Roux will serve as the Quality Assurance Officer (QAO) for this project. The QAO is responsible for conducting reviews, inspections, and audits to ensure the data collection is conducted in accordance with the FSP and QAPP. The QAO's responsibilities range from ensuring effective field equipment decontamination procedures and proper sample collection to the review of all laboratory analytical data for completeness and usefulness. The QAO reports to the Project Manager and makes independent recommendations to the Field Team Leader.

4. Sample Media, Locations, Analytical Suites, and Frequency

The media to be sampled during implementation of the RAP may include soil, groundwater, and air/soil vapor. A discussion of the sampling schedule for each medium is provided below, while the assumed number of field samples to be collected for each medium, including quality control (QC) samples, is shown in Tables 1 and 2. Specifics regarding the collection of samples at each location and for each task are provided in Section 5 of this QAPP/FSP.

4.1 Soil Sampling

Endpoint sidewall and bottom soil samples are to be collected following completion of excavation at the Site.

These confirmation and documentation samples for the remedial action are described in the RAP and proposed samples to be collected during remedial action activities. Bottom soil samples will be collected at a frequency of one sample per 900 square feet of excavation bottom. Sidewall soil samples will be collected at a frequency of one sample per 30 liner feet of excavation in accordance with NYSDEC DER-10 Section 5.4. The end-point samples will be analyzed for volatile organic compounds (VOCs) using United States Environmental Protection Agency (USEPA) Method 8260, and polychlorinated biphenyls (PCBs) using USEPA Method 8082A (SW-846) to demonstrate compliance with the SCOs.

QA/QC samples will be collected for all documentation samples. If odor/visual evidence of contamination or elevated photoionization detector (PID) readings are noted, additional samples will be collected from the interval that exhibits the highest contamination.

4.2 Groundwater Sampling

Although groundwater sampling is not anticipated as part of the remedial action for the Site, if collected groundwater samples will follow sampling method provided in this QAPP.

4.3 Air/Soil Vapor Sampling

Soil vapor intrusion (SVI) air samples will be collected to evaluate performaece of the remedy. Additinally, sub-slab soil vapor samples may be collected following completion of the remedy. All air and sub-slab soil vapor samples will be collected in accordance with the October 2006 New York State Department of Health (NYSDOH) Guidance for Evaluating Soil Vapor Intrusion in the State of New York dted October 2006 and updated May 2017 (NYSDOH 2017 Guidance). All air and sub-slab soil vapor samples will be analyzed for VOCs using USEPA Method TO-15.

5. Field Sampling Procedures

This section provides a detailed discussion of the field procedures to be used during soil, groundwater (not anticipated during implementation of RAP) and/or soil vapor/air sampling being completed as part of the RAP. Additional details regarding sampling procedures and protocols are described in Roux's relevant SOPs, which are provided in Attachment 3.

5.1 Soil Sampling and Monitoring Well Installation

Details for the collection of soil samples are provided below.

5.1.1 Soil Sampling

Soil will be collected from the sidewalls and bottom of the excavation area. The soil will be observed for lithology and evidence of contamination (e.g., staining, odors, and/or visible free-product) and placed immediately thereafter into large Ziploc® bags for recording headspace using a PID. After a minimum of 15 minutes for equilibration with the headspace in the Ziploc® bag, each sample will be screened for organic vapors using a PID equipped with a 10.6 eV lamp. Samples for possible VOC/PCB analysis will be placed in a laboratory-supplied jar or encore sampler prior to screening, due to the potential for loss of VOCs through volatilization. The samples will be placed in the laboratory-supplied containers and shipped to the laboratory under chain of custody procedures in accordance with Roux's SOPs in Appendix A.

All excavated soil will be placed in sealed and labeled U.S. Department of Transportation (DOT) approved 55-gallon drums or lined roll-off container pending characterization and off-Site disposal at a permitted facility.

5.1.2 Groundwater Monitoring Well Installation

Although not anticipated for the remedial action under the RAP, if needed, groundwater monitoring wells (monitoring wells) will be installed bridging the water table. Monitoring wells will be constructed of 2-inch inside diameter, Schedule 40 polyvinyl chloride (PVC) casing and, 0.020 inch slot, machined screen. A sand pack will be placed around the well screens, extending two feet above the top of the screened zones, to the extent possible. A minimum one foot thick bentonite seal will be placed above the sand pack. Once the bentonite has been allowed to hydrate, a cement bentonite grout will be pumped into the remaining annular space from the bottom up starting at the top of the bentonite seal. The monitoring wells will be completed using locking well plugs, and flush mounted, bolt down, watertight, manhole covers cemented into place.

Each newly installed monitoring well will be developed to remove any fine grained material in the vicinity of the well screen and to promote hydraulic connection with the aquifer. The wells will be developed using a submersible pump, which will be surged periodically until well yield is consistent and has a turbidity below 50 Nephelometric turbidity units (NTUs), if possible.

5.2 Groundwater Sampling

Although not anticipated for the remedial action under the RAP, if needed, groundwater samples will be collected no sooner than one week following development of the monitoring wells. Prior to sampling, depth to water will be measured at each well using an electronic water level meter with an accuracy of +/ 0.01

feet. All monitoring wells to be sampled will then be purged and sampled using a submersible pump or low-flow method, or an alternative method, depending on the observed depth to groundwater and logistical issues. Purging and sampling will be performed consistent with USEPA low-flow sampling requirements. Field parameters (i.e., pH, dissolved oxygen, ORP, etc. as described in the USEPA low-flow sampling requirements) will be collected using a water quality meter with flow-through cell until parameters stabilized before samples are collected. Samples will be analyzed for TCL VOCs.

All groundwater samples will be collected and placed in the laboratory-supplied containers and shipped to the laboratory under chain of custody procedures in accordance with Roux's field sampling SOPs included as Attachment 3.

5.3 Soil Vapor Intrusion Air Sampling

To evaluate the SSDS performance, SVI air samples will be collected at the Site. SVI air samples will be collected using pre-cleaned (batch-certified) laboratory supplied six-liter summa canisters. Following purging and verification with the tracer gas at each sub-slab soil vapor point, sample tubing will be connected to the laboratory supplied regulators calibrated to collect samples over a 2-hour period, which will be attached to pre-cleaned (batch-certified) six-liter summa canister. All air and soil vapor samples will be analyzed using USEPA Method TO-15 for VOCs.

6. Sample Handling and Analysis

To ensure quality data acquisition and collection of representative samples, there are selective procedures to minimize sample degradation or contamination. These include procedures for preservation of the samples, as well as sample packaging, shipping procedures, and QA/QC.

6.1 Field Sample Handling

A discussion of the proposed number and types of samples to be collected during each task, as well as the analyses to be performed, can be found in Section 4 of this QAPP/FSP. The types of containers, volumes, and preservation techniques for the aforementioned testing parameters are presented in Table 2.

6.2 Sample Custody Documentation

The purpose of documenting sample custody is to ensure the integrity and handling of the samples is not subject to question. Sample custody will be maintained from the point of sampling through the analysis (and return of unused sample portion, if applicable).

Each individual collecting samples is personally responsible for the care and custody of the samples. All sample labels should be pre-printed or filled out using waterproof ink. The technical staff will review all field activities with the Field Team Leader to determine whether proper custody procedures were followed during the fieldwork and to decide if additional samples are required.

All samples being shipped off-site for analysis must be accompanied by a properly completed chain of custody form. The sample numbers will be listed on the chain of custody form. When transferring the possession of samples, individuals relinquishing and receiving will sign, date, and note the time on the record. This record documents transfer of custody of samples from the sampler to another person, to/from a secure storage area, and to the laboratory.

Samples will be packaged for shipment and dispatched to the appropriate laboratory for analysis with a separate signed custody record enclosed in each sample box or cooler. Shipping containers will be locked and/or secured with strapping tape in at least two locations for shipment to the laboratory.

6.3 Sample Shipment

Laboratory analysis will be completed by Eurofins of Edison, NYSDOH ELAP-certified laboratory. Sample packaging and shipping procedures are based upon USEPA specifications, as well as DOT regulations. The procedures vary according to potential sample analytes, concentration, and matrix and are designed to provide optimum protection for the samples and the public. Sample packaging and shipment must be performed using the general outline described below.

All samples will be shipped within 24 hours of collection and will be preserved appropriately from the time of sample collection. A description of the sample packing and shipping procedures is presented below:

- Prepare cooler(s) for shipment:
  - tape drain(s) of cooler shut;
  - affix “This Side Up” arrow labels and “Fragile” labels on each cooler; and
  - place mailing label with laboratory address on top of cooler(s).

- Arrange sample containers in groups by sample number.
- Ensure that all bottle labels are completed correctly. Place clear tape over bottle labels to prevent moisture accumulation from causing the label to peel off.
- Arrange containers in front of assigned coolers.
- Place packaging material approximately at the bottom of the cooler to act as a cushion for the sample containers.
- Arrange containers in the cooler so that they are not in contact with the cooler or other samples.
- Fill remaining spaces with packaging material.
- Ensure all containers are firmly packed in packaging material.
- If needed, loose ice cubes should be repackaged in Zip-lock™ bags and placed on top of the packaging material. Blue ice or freezer packs will not be used when shipping sampling to be analyzed for PFAS.
- Sign chain of custody form (or obtain signature) and indicate the time and date it was relinquished to courier as appropriate.
- Separate chain of custody forms. Seal proper copies within a large Zip-loc™ bag and tape to inside cover of cooler. Retain copies of all forms.
- Close lid and latch.
- Secure each cooler using custody seals.
- Tape cooler shut on both ends.
- Relinquish to overnight delivery service as appropriate. Retain air bill receipt for project records. (Note: All samples will be shipped for "NEXT A.M." delivery).

6.4 Quality Assurance / Quality Control

Judy Harry of Data Validation Services will review the analytical data for QA/QC in accordance with NYSDEC standards. The professional profile for Judy Harry is provided in Attachment 1. A laboratory (Eurofins) SOP is included in Attachment 2.

The primary DQO of the soil, groundwater, and soil vapor programs, therefore, is that data be accurate and precise, hence representative of the actual Site conditions. Accuracy refers to the ability of the laboratory to obtain a true value (i.e., compared to a standard) and is assessed through the use of laboratory QC samples, including laboratory control samples and matrix spike samples, as well as through the use of surrogates, which are compounds not typically found in the environment that are injected into the samples prior to analysis. Precision refers to the ability to replicate a value and is assessed through both field and laboratory duplicate samples.

Sensitivity is also a critical issue in generating representative data. Laboratory equipment must be of sufficient sensitivity to detect target compounds and analytes at levels below NYSDEC standards and guidelines whenever possible. Equipment sensitivity can be decreased by field or laboratory contamination of samples, and by sample matrix effects. Assessment of instrument sensitivity is performed through the analysis of reagent blanks, near-detection-limit standards, and response factors. Potential field and/or laboratory contamination is assessed through use of trip blanks, method blanks, and equipment rinse blanks (also called "field blanks").

Table 1 lists the requirements for field and laboratory QC samples that will be analyzed to assess data accuracy and precision, as well as to determine if equipment sensitivity has been compromised. Table 2 lists the preservation, holding times and sample container information.

All “assessment” analyses (i.e., TCL VOCs) will be performed in accordance with the NYSDEC Analytical Services Protocol (ASP), using USEPA SW 846 methods.

All laboratory data are to be reported in NYSDEC ASP Category B deliverables and will be delivered to NYSDEC in electronic data deliverable (EDD) format as described on NYSDEC’s website (http://www.dec.ny.gov/chemical/62440.html). A Data Usability Summary Report will be prepared meeting the requirements in Section 2.2(a)1.ii and Appendix 2B of DER-10 for all data packages generated for the RI.

7. Site Control Procedures

Site control procedures, including decontamination and waste handling and disposal, are discussed below. Site control procedures have been developed to minimize both the risk of exposure to contamination and the spread of contamination during field activities at the Site. All personnel who come into designated work areas, including contractors and observers, will be required to adhere strictly to the conditions imposed herein and to the provisions of a Site-Specific Health and Safety Plan (HASP). The HASP is included as Appendix E to the RAP.

7.1 Decontamination

In an attempt to avoid the spread of contamination, all drilling and sampling equipment must be decontaminated at a reasonable frequency in a properly designed and located decontamination area. Detailed procedures for the decontamination of field and sampling equipment are included in Roux's SOPs for the Decontamination of Field Equipment located in Attachment 3. The location of the decontamination area will be determined prior to the start of field operations. The decontamination area will be constructed to ensure that all wash water generated during decontamination can be collected and containerized for proper disposal.

7.2 Waste Handling and Disposal

All waste materials (drill cuttings, decontamination water, etc.) generated during the RI will be consolidated, and stored in appropriate labeled bulk containers (drums, roll-off containers, etc.), and temporarily staged at a waste storage area on-Site. Roux will then coordinate waste characterization and disposal by appropriate means including the request for a Contained-In-Determination from the NYSDEC.

TABLES

1. Field and Laboratory QC Summary
2. Preservation, Holding Times, and Sample Containers

Table 1. Field and Laboratory QC Summary

QC Check Type	Minimum Frequency	Use
Field QC		
Duplicate	1 per matrix per 20 samples or SDG	Precision
Trip Blank	1 per VOC cooler	Sensitivity
Field Blank	1 per matrix per 20 samples	Sensitivity
Equipment Blank	1 per day when sampling for PFAS	Sensitivity
Laboratory QC		
Laboratory Control Sample	1 per matrix per SDG	Accuracy
Matrix Spike/Matrix Spike Duplicate/Matrix Duplicate**	1 per matrix per SDG	Accuracy/Precision
Surrogate Spike	All organics samples	Accuracy
Laboratory Duplicate	1 per matrix per SDG	Precision
Method Blank	1 per matrix per SDG	Sensitivity

* SDG - Sample Delivery Group - Assumes a single extraction or preparation

** Provided to lab by field sampling personnel

PFAS - Per- and Polyfluoroalkyl Substances

Table 2. Preservation, Holding Times and Sample Containers

Analysis	Matrix	Bottle Type	Preservation[a]	Holding Time[b]
TAL Metals (total)	Soil	8 oz wide mouth glass, teflon lined cap	Cool to 4°C	180 days, Hg 28 days
SW-846 6010/7471	Water	250 mL plastic, teflon lined cap	Nitric acid	7 days to extraction, 40 days to analysis
PFAS vis EPA 537(M)-Isotope Dilution	Water/Soil	250 mL HDPE bottles	Trizma	14 days to extraction, 28 days to analysis
1,4-Dioxane via 8270SIM	Water	500 mL amber glass	Cool to 4°C	7 days to extraction, 40 days to analysis
	Soil	8 oz wide mouth glass	Cool to 4°C	7 days to extraction, 40 days to analysis
TO-15	Air	6 liter Summa Canister	None	14 days from sample collection
Target Compound List (TCL)				
TCL Volatile Organic Compounds (VOCs)	Soil	Encore	Cool to 4°C	48 hours from sample collection, 14 days if frozen to -7°C or extruded into methanol
SW-846 8260B	Water	40mL voa vial, teflon lined cap	Hydrochloric Acid	14 days from sample collection
TCL Semivolatile Organic Compounds (SVOCs)	Soil	8 oz wide mouth glass, teflon lined cap	Cool to 4°C	14 days to extract, 40 days to analysis
SW-846 8270C	Water	1 liter amber glass, teflon lined cap		7 days to extract, 40 days to analysis
TCL Pesticides	Soil	8 oz wide mouth glass, teflon lined cap	Cool to 4°C	14 days to extract, 40 days to analysis
SW-846 8081A	Water	1 liter amber glass, teflon lined cap		7 days to extract, 40 days to analysis
TCL Herbicides	Soil	8 oz wide mouth glass, teflon lined cap	Cool to 4°C	14 days to extract, 40 days to analysis
SW-846 8051A	Water	1 liter amber glass, teflon lined cap		7 days to extract, 40 days to analysis
TCL Polychlorinated biphenyls (PCBs)	Soil	8 oz wide mouth glass, teflon lined cap	Cool to 4°C	14 days to extract, 40 days to analysis
SW-846 8082/TCLP	Water	1 liter amber glass, teflon lined cap		7 days to extract, 40 days to analysis

[a] All soil and groundwater samples to be preserved in ice during collection and transport

[b] Days from date of sample collection.

TAL - Target Analyte List

TCL - USEPA Contract Laboratory Program Target Compound List

USEPA - United States Environmental Protection Agency

HDPE - High Density Polyethylene

ATTACHMENTS

1. Professional Profiles
2. Eurofins Standard Operating Procedures
3. Roux Standard Operating Procedures

ATTACHMENT 1

Professional Profiles

PROFESSIONAL PROFILE



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EDUCATION

BCE, Civil Engineering,
University of Delaware, 1987
MBA, Management, Adelphi
University, 1992

PROFESSIONAL LICENSES

Professional Engineer:
New York, New Jersey, Pennsylvania, Rhode Island, Connecticut, Vermont, Virginia, North Carolina, Ohio, Michigan, and Montana

Charles J. McGuckin, PE

Vice President | Principal Engineer

EXPERIENCE SUMMARY

Thirty-five years of experience: Principal, Senior and Project Engineer with Roux Associates, Inc.; President of Remedial Engineering, P.C.; and Design Engineer at Dvirka and Bartilucci Consulting Engineers.

TECHNICAL SPECIALTIES

Engineering design of soil and groundwater remediation systems. Brownfields clean-up plans, stormwater studies and engineered natural treatment systems.

REPRESENTATIVE PROJECTS

- Principal Engineer for remedial investigation scoping, fate and transport analysis, and feasibility study preparation for a 1300+ acre Former Aluminum Smelter USEPA Superfund Site in Montana. Due to the size, complexity, and unique exposure areas of the Site it was broken up into multiple decision units including landfills, percolation ponds, operational areas, river area, soil, and groundwater. The contaminants of concern included metals, PAHs, cyanide, and fluoride. Remedial technologies evaluated in detail included landfill capping, groundwater extraction and treatment, pond and river dredging, soil excavation, slurry wall containment, *in situ* stabilization, and *in situ* groundwater treatment. Detailed effectiveness, implementability, and cost evaluations were prepared to support preferred remedial alternatives for each decision unit.
- Principal Engineer for remedial action implementation for a 2.5-acre former subway transit power station in Brooklyn along the Gowanus Canal. The project remedial action was completed under an extremely tight deadline to obtain the certificate of completion under the NYSDEC BCP program. The project also involves close coordination with USEPA due to the adjacent canal superfund status. The investigation required in depth review of historic facility operations and sampling of subsurface tunnel structures. The remedy included excavation of PCB impacted soils, LNAPL recovery, shoreline stabilization, concrete scarification, sewer cleaning and capping. The project has required close coordination with the development team to ensure management of impacted materials in conformance with the Site Management Plan.
- Principal Engineer for the preparation of field implementation plans, construction monitoring, and Engineers Certification Report for a former manufactured gas Plant (MGP) site in West Chelsea, Manhattan, New York. The site was one of the first projects completed under the NYS Brownfields Clean-up Program. The remedy included soil excavation and offsite thermal treatment, a sheet pile barrier wall, a vapor barrier, and basement ventilation system. A comprehensive air monitoring program was conducted due to the concerns over coal tar residue emissions and odors on the surrounding community. The remedy was incorporated into the design and construction of the headquarters office building of an international media company.
- Principal engineer for the preparation of the feasibility study, IRM plans, and remedial design/remedial action plans for a 40-acre former manufacturing facility in Rensselaer, New York. IRM Soil remediation included excavation of over 10,000 cubic yards of CVOC and metals source material for disposal at multiple facilities based on waste characteristics. Basement cleaning was performed in three large buildings to remove accumulated process sludges. Lagoon closure plans included sediment removal, dewatering, soil washing, and soil capping. The final remedy for the site includes a groundwater perimeter containment trench and 40 gpm treatment system for metals and VOCs and a 9-acre vegetated cap for a former landfill.

- Principal Engineer for the feasibility studies and remedial action work plans for multiple operable units of a large railyard located in Sunnyside, Queens, New York under the NYSDEC Inactive hazardous waste program. For the former engine house and maintenance area unit, pre-design studies included product plume thickness data collection and modeling, ex situ biopiles treatment, *in situ* enhanced bioremediation, and *in situ* chemical oxidation. The final design consisted of decontamination and removal of structures, excavation of hot spot soils for PCBs and lead, UST closures, a dual phase high vacuum extraction system and *in situ* bioremediation.
- Project Engineer for the design and construction management of a 600 gpm groundwater extraction and treatment system to prevent offsite migration at a petroleum storage and pipeline transfer facility in Providence, Rhode Island. The treatment system was designed to remove iron, BTEX, and naphthalene from the groundwater to below surface water discharge standards for the Providence River. The system processes consisted of equalization, aeration, de-aeration, flocculation, clarification, air stripping, dual media filtration, granular activated carbon adsorption (liquid and vapor phase), and sludge thickening and dewatering. The system included an outfall diffuser designed in accordance with the CORMIX computer model.
- Senior Engineer responsible for the design, construction management, and O&M of a 60,000-gpd constructed wetlands treatment system for a former manufacturing facility in Virginia. The 16-acre treatment system was designed within an existing phragmites wetland to remove zinc and iron from landfill leachate prior to discharge to an adjacent creek. The treatment system consisted of alkalinity producing cells, toxic ponds, compost and limestone berms, anaerobic cells, and aerobic cells. The design included a 400-foot reinforced earthen dike together with hydraulic control structures and piping to maintain cell water levels and flow rates. The system also includes a pump station and force main for both effluent discharge and irrigation purposes. Joint wetlands and local permit approvals were obtained for the project.
- Senior Engineer for the performance of a feasibility study and remedial design for the closure of a concrete oil/water separator filled with refinery sludge and demolition materials impacted with lead at a former refinery in Providence, Rhode Island. Remedial alternatives were developed and evaluated including capping and containment using a perimeter slurry wall, sheet piling or concrete wall sealing; excavation and disposal; and *in situ* solidification. The capping and containment using a slurry wall alternative was selected for implementation of the remedial design. The design consisted of removal and replacement of existing monitoring wells, sealing of separator wall openings, a 2-acre multi-layer cap, a 1200-foot long by 30-foot deep soil-bentonite slurry wall, and a perimeter drainage swale. The multi-layer cap included a 40-mil HDPE geomembrane and a geosynthetic clay liner. The slurry wall was keyed into the existing clay confining layer beneath the separator. The design incorporated disposal of an additional 10,000 cubic yards of petroleum impacted soil under the cap.
- Principal Engineer for environmental consulting support services for a large landfill O&M contract under review by the New York City Department of Investigation. The work entailed reviewing the scope of routine vs. non-routine work performed over a one-year period for compliance with contract requirements. The O&M Work included routine cover maintenance, groundwater and gas monitoring, landfill gas extraction, major system repairs and waste handling. Memos of findings were prepared assessing acceptability of work, compliance with permit regulations and providing recommendations for improvements.
- Principal Engineer for the independent engineering review of change orders for the New York MTA Office of the Inspector General associated with electric utility substations reconstruction damaged during the 2012 Superstorm Sandy. The cost review focused on contracting procedures, waste classification of impacted structures and soils, proper waste management and disposal. Findings were compiled in a report to determine if costs were legitimate and justifiable and providing recommendations for improved specifications for bidding and of management waste handling contracts.
- Principal Engineer for remedial action plan implementation oversight and certification for the CornellTech campus development on Roosevelt Island, New York. The first phase of the campus development included lead paint and ACM abatement and demolition of the former Goldwater Hospital, construction of six main campus buildings, new utilities, roadways, and lawn/landscaped areas. Responsibilities include oversight of soil/subsurface structures excavation handling, disposal, and reuse; community air monitoring; dewatering permit compliance; and SWPPP inspections.
- Senior and Principal Engineer for the decommissioning and decontamination of a pharmaceutical facility covering seven city blocks as a part of a NYSDEC Voluntary Cleanup Agreement in Brooklyn, New York. The former office and laboratory complex would be decontaminated for reuse as a school and small business space. Multiple other buildings were demolished. Responsibilities included preparation of interior abatement plans to address mercury, lead and PCBs in building materials and review of Interim Remedial Measure (IRM) work plans for lead, benzene and mercury-contaminated soil excavation and disposal. Groundwater remediation design

included air sparge/soil vapor extraction, *in situ* oxidation and a reactive barrier wall using colloidal carbon and ZVI.

- Principal Engineer for the performance of a Brownfields Demonstration Pilot Program in the Hamlet of New Cassel for the Town of North Hempstead, New York. Under an EPA grant, Roux Associates created an inventory of 50 potential commercial/industrial properties within New Cassel and evaluated these properties based on perceived contamination and potential for redevelopment/reuse. Eight sites exhibiting the greatest potential for redevelopment were selected to perform Phase I Environmental Site Assessments. Of these eight sites, four sites were selected for Brownfield Site investigations to identify the nature and extent of contamination in soil and groundwater and provide potential remedial alternatives and cleanup costs to revitalize these properties. The Brownfields Demonstration Pilot Program also included community outreach activities to promote a unified approach to the redevelopment of Brownfields in new Cassel.
- Principal Engineer responsible for engineering certification of all remediation activities related to the seven-city-block Barclay's Arena and Atlantic Yards redevelopment in Brooklyn, New York. This multi-billion-dollar redevelopment includes the Arena, which will be focal point of the largest redevelopment project in Brooklyn, consisting of an urban complex of housing, commercial and retail space, as well as several acres of landscaped public open space. The existing properties being redeveloped are residential, commercial, and industrial properties, including a large railroad yard. Engineering certification included multiple RAWPs under NYSDEC Spills Program, UST removals, soil excavation, *in situ* groundwater treatment and remedy oversight services. The project also includes ACM abatement, building demolition, soil pre-waste-classification, coordination (with the receiving facilities), and oversight of the removal of 1,000,000 cubic yards of soil (~550,000 yards removed to date), representing one of the largest excavation and soil removal projects performed in New York City.
- Principal Engineer responsible for the preparation of the remediation completion report at Captain's Cove former municipal landfill State Superfund Site located in Glen Cove, New York. This work has been performed in accordance with Title 3 of the NYS Environmental Quality Bond Act under contract to the City of Glen Cove. Design elements included excavation plans, radiological waste monitoring, demo debris and waste separation and screening, dewatering water management, waste disposal, and site restoration. Additional work included the delisting of a six acre "clean" portion of the site to allow the development of a ferry terminal and esplanade and development of alternative cleanup standards consistent with future site uses. Site remediation will accommodate site redevelopment as a commercial waterfront and operating ferry service and seaport area.
- Principal Engineer providing program management of interior building materials surveys for 22 residential buildings along the south shore of long island under an Army Corps of Engineers contract for dune reconstruction. Building materials surveys included testing and analysis of suspect contaminants and reporting in support of building abatement and demolition planning. Testing was completed using multiple teams on a tight timeline to meet project schedule requirements.
- Principal Engineer for the remediation of a former Manufactured Gas Plant (MGP) facility in Brooklyn, NY, including oversight of the excavation of both the former gasholders, and adjacent contaminated hotspots requiring offsite thermal desorption of over 30,000 tons of coal tar impacted soil. Directed the Community Air Monitoring Program (CAMP) specific to the MGP impacted soil removal, as required by both New York State Department of Environmental Conservation (NYSDEC) and New York State Department of Health (NYSDOH). Remedial activity met all substantive requirements of the NYSDEC approved Remedial Action Work Plan for the Site. The remedy included design of a passive subsurface vapor monitoring/recovery system for a 500,000 sq. ft. retail structure in Brooklyn, NY. The system design integrated a perforated piping system complemented by a protective vapor barrier below the structural floor slab to monitor and mitigate volatile organic compound vapors. Multiple vapor barrier options were evaluated to determine the optimum design based on the site conditions.
- Principal Engineer providing expert settlement support services to a county municipality in New York State. The case involved an EPA Order for underground storage tank (UST) compliance for over 50 county operated facilities with over 125 USTs. The project involved the field inventory of the USTs at each facility and development of both Interim and final compliance plans to comply with EPA, NYSDEC and local UST regulations. Detailed cost estimates were prepared for multiple scenarios for upgrading USTs including tightness testing, manway repairs, leak detection and overfill protection monitoring systems, UST removal and replacement, and new piping. The upgrade evaluation and negotiations included incorporation of Supplemental Environmental Project (SEPs) in accordance with EPA requirements. SEPs included centralized monitoring systems for leak detection and inventory control.
- Principal Engineer for preparation of a site management plan for redevelopment of a former watch case factory in Sag Harbor, New York. The primary engineering controls for the former factory conversion to a residential building consisted of a vapor barrier and an active sub slab depressurization system

(SSDS) to address chlorinated VOCs. The SSDS system was complicated due to the existing 100-year-old structure. A unique raised floor approach was designed to allow for the SSDS installation. The system design, approved by NYSDEC and NYSDOH includes multiple legs, dual blowers, low vacuum alarms and monitoring points.

- Principal Engineer for the Remedial Action Work Plan (RAWP) for redevelopment of a shopping center in the Bronx, New York. The RAWP elements included soil and groundwater management plans, stormwater management, air monitoring and vapor mitigation systems. To address vapor intrusion, active sub slab depressurization systems were designed for two pad buildings. One system for a new retail building construction and one retrofit system for an existing building to be used as a restaurant. Closure reports were prepared and certified documenting all remediation work and approved by NYC Mayor's Office of Environmental Remediation (OER).
- Principal Engineer for the preparation of a preliminary remedial design for the remediation and restoration of a pond and surface water tributaries to Canaan Lake that have been impacted from leachate generated from an upgradient former municipal landfill located in Holtsville, New York. Completed a preliminary remedial design for the construction of a compost-based permeable reactive barrier for the removal and treatment of leachate prior to discharge to the surface water, followed by restoration of the surface water body and surrounding wetlands. The project included development of a long term remedial strategy to reduce rainfall infiltration into the landfill and minimize leachate generation. Current plans to reduce rainfall infiltration include the planting of 3,250 hybrid poplars, regrading and lining of drainage swales, and the resurfacing of low lying areas consistent with recreational facilities.
- Principal Engineer for final capping elements and wetlands restoration work and completion of the Final Engineering Report for an inactive hazardous waste site in Syracuse, New York. The project included onsite consolidation of lead impacted waste; 7-acre landfill cap with vegetated layer, cover soil, and geomembrane; stormwater runoff controls; reconstruction of wastewater ponds; and an 8-acre wetland restoration. An O &M Plan was prepared and implemented consisting of groundwater, surface water and landfill gas monitoring, and annual cap and wetland inspections.
- Principal Engineer for the preparation of the remedial action work plan for an 11-acre former Department of Defense owned Site that manufactured airplane parts along Hempstead Harbor in Manorhaven, New York. The project is regulated under the NYSDEC Voluntary Cleanup Program. The remedial design consisted of both soil vapor extraction/air sparging and *in situ* enhanced bioremediation systems for Site groundwater impacted by chlorinated VOCs. The final remedial design and site management plan are expected to include soil capping, vapor barriers and passive ventilation systems to be incorporated into a residential redevelopment with waterfront access.
- Senior Engineer for the performance of a stormwater runoff evaluation for a manufacturing facility in Watertown, New York. Roux Associates was retained as third party to evaluate the drainage design and construction elements for an industrial landfill cap. The evaluation was performed for the facility owner in support of potential litigation arising from onsite building flooding incidents following a severe snow and rainstorm event. The scope of work included an evaluation of the existing onsite storm sewer system capacity, calculation of runoff flow rates for the 300-acre contributing area, review of landfill cap surface drainage design, review of erosion control measures implemented during construction, and analysis of specific flooding incident causes. The runoff analyses were performed using the TR 55 Method for three conditions: pre-capped, capping under construction prior to establishment of vegetation, and final vegetated cap design. Recommendations were made to improve the site drainage including design of surface drainage swales, temporary berms and sediment traps during construction and modification of snow handling practices.
- Principal Engineer for the management of a soil and ground-water remediation system for a nationwide overnight delivery distribution center in Brooklyn, New York as part of the NYSDEC Voluntary Cleanup Program. A risk-based remedial approach that called for the remediation of "hot spot" source area soils, and mass-reduction of VOCs was successfully utilized for the Site. As a result, the focus of remediation was on reducing the mass of VOCs in on-site groundwater to a level where natural attenuation would be effective in remediation of VOCs. To address the contamination in the source area, a soil vapor extraction (SVE) and air sparge (AS) system consisting of 8 SVE wells and 17 AS wells was designed, constructed, operated and maintained for a period of approximately 3 years. Permanent shutdown of the system was approved by the NYSDEC.
- Senior Engineer for the design and construction management of a soil remediation and stormwater management project at a 16-acre former pesticide warehouse facility in Dayton, New Jersey. The Site was redeveloped for storage and trailer parking. The project consisted of consolidation of pesticide contaminated soils; asphalt capping of the 3.5-acre contaminated soils area; stormwater collection, conveyance, and detention; and site regrading. The evaluation included TR-55 runoff modeling for pre and post capping and development conditions. The storm sewer system consisted of

multiple catch basins, over 2,000 linear feet of reinforced concrete pipe ranging in size from 15 to 30 inches, and a recharge basin. A Soil Erosion and Sedimentation Control Plan and a NJPDES General Permit were prepared for the project.

- Project Principal for the performance of LNAPL remediation studies at the New Jersey Transit former Lake Street Bus Garage in Newark, New Jersey. The studies involved evaluating remedial alternatives for free product recovery, performance of an LNAPL recovery pilot test and cost estimating. A RAWP and engineering design plans were prepared for both the bus garage and the adjacent park properties. The remedy included excavation of the source area, horizontal recovery wells, a vertical recovery trench, *in situ* oxidation injections and product recovery using vacuum extraction.
- Senior Engineer for the performance of a stormwater management analysis for a 28-acre industrial landfill in Virginia. The principal objective of the study was to identify engineering controls to minimize stormwater runoff to a metals-contaminated sediment impoundment. The study included TR-55 runoff modeling and storage analyses for multiple detention ponds. Three engineering control alternatives were identified including landfill cap regrading, diversion using berms and swales, and diking and weir raising.
- Senior Engineer for the investigation, design, and construction management of the closure of a 2-acre fire-water supply pond and modification of the stormwater conveyance system at a former manufacturing facility in Williamsburg, Virginia. The investigation phase of the project was focused on determining the sources and loading of metals influent to the pond. Field activities included examination of the existing stormwater drainage system, sub watershed delineation, groundwater monitoring, and installation of automatic stormwater sampling devices. The final design included 400 feet of open concrete channels, 250 feet of culvert replacement, slip lining of 370 feet of 36-inch RCP culvert, reconstruction of five catch basins, placement of 10,000 cubic yards of clay fill within the pond and regrading of existing drainage ditches. Erosion control measures and slope stabilization were also included as well as the design of a special outlet structure for minimizing erosion at the outfall.
- Project Principal for the investigation and closure of five USTs at the New Jersey Transit Broad Street Station site in Summit, New Jersey. Tank sizes ranged from 20,000 to 30,000-gallon capacity. UST closure program completed in accordance with the NJDEP Technical Requirements for Site Remediation. Closure report prepared and submitted to the NJDEP and subsequent issuance of a No Further Action letter from the NJDEP.
- Project Engineer of the underground storage tank (UST) program for a major retail chain store in the New York, New Jersey, and Pennsylvania region. Responsibilities included preparation of a UST management plan based on federal, state, and local regulations and costs to prioritize UST maintenance. The tank designs included plans and specifications for the removal and replacement, or upgrading, of USTs to meet regulatory requirements. The engineering design involved fuel requirements for dual heating and back-up generator usage, mechanical pumping equipment and fire wall design.
- Project Engineer for the design and construction management of a 1,000 sq. ft. hazardous and flammable materials storage facility in Syosset, New York. The facility included concrete secondary containment dikes, access ramps, sprinkler system modifications, and lighting. The separate flammable materials area included 2-hour fire rated concrete block walls and doors, ventilation equipment and a fire alarm system. Permitting services were performed for the Nassau County Department of Health, the Nassau County Fire Marshall, and the Building Department.
- Project Engineer for the design of a 2,000 sq. ft. hazardous waste storage facility in Astoria, New York. Prior to construction, demolition of an existing building was required and included removal of asbestos and lead paint. The project included driving treated timber piles and excavation and removal of contaminated soil and groundwater. The structure consisted of a steel frame with a metal standing seam roof system, decorative masonry block walls, and a roll-up door. Temporary and permanent fencing were required along with concrete sidewalk replacement.
- Senior Engineer providing construction management services in support of the BNYCP Cogeneration Facility construction and Brooklyn Navy Yard facility decommissioning. Work included preparation of construction management plans, supervision of soil, concrete, and sediment disposal activities, asbestos surveys, and PCB sampling and analysis work. A NYCDEP wastewater discharge permit was prepared for the million gallon per day stream condensate and wastewater backwash flow rate.
- Project Principal for performing remedial alternative cost estimating for a New Jersey Transit site in Montclair, New Jersey, which is to be redeveloped as a firehouse. A cost estimate prepared by another consultant was reviewed as part of the scope of work. The proposed remedial alternative for the site consisted of excavation and disposal of PAH-impacted fill material and capping. The alternative remedy proposed by Roux Associates was a more risk-based approach, resulting in a cost savings of approximately $100,000 for New Jersey Transit.

- Project Engineer for the design and construction management of cap repair and drainage improvement measures for an industrial hazardous waste landfill in Tennessee. Components of the design included replacement of the primary clay cover material, temporary and permanent erosion and sedimentation control measures, and a lined drainage channel to minimize the generation of landfill leachate. The project included the performance of a focused feasibility study to characterize the flow, quality, and treatability of the leachate. A feasibility study was also performed in order to evaluate constructed wetlands remedial technology as a method of effective and economical treatment of leachate.
- Senior Engineer for the remedial design and construction management of a 7-acre off-spec asphalt waste pond at a former refinery in New England. The asphalt material exhibited a low load bearing capacity combined with a viscous, tacky surface. An *in situ* solidification mix design was developed consisting of liquification using hot water and a 2-stage lime kiln dust reagent injection and mixing step. Gravel was added to the mix when the existing subgrade material was of insufficient bearing capacity. Solidified material was tested for unconfined compressive strength, durability, and TCLP. The final cover material consisted of a 6-inch vegetated layer.
- Principal Engineer for the performance of LNAPL remediation studies for a former bus maintenance facility and a segment of a Metropolitan Subway System in Newark, New Jersey. The studies involved evaluating groundwater and soil monitoring data, performance of LNAPL recovery pilot tests, evaluation of remedial alternatives and cost estimating. Recommendations included the use of mobile high vacuum extraction methods to collect LNAPL while minimizing capital expenditures and permanent low vacuum extraction methods to minimize odors to subway cars and surrounding communities.

Litigation Support Experience

- Project Engineer for the evaluation of remedial investigations and remedial cost estimates for a 30-acre former book publishing facility in Poughkeepsie, New York. The evaluation included the review of Phase I and Phase II investigation reports, remedial investigation (RI) and feasibility study (FS) reports, and the remedial investigation work plan. The findings included the presence of chlorinated volatile organic compounds in the soil and groundwater as well as identification of underground storage tanks. Deficiencies were identified in both the RI and FS reports by comparing with the NYSDEC's required criteria and recommendations were proposed for the RI work plan to further delineate source areas. Based on the remedial investigation review, revised costing assumptions were made, and remedial cost estimates were prepared totaling $3.6 million.
- Project Engineer for the evaluation of expected remedial costs for nine hazardous waste sites, two of which are federal superfund sites. The evaluation of both single and multiple PRP sites was performed to identify costs for an insurance claim. The expected remedial costs for nine sites, which include landfills or facility surface impoundments, totalled approximately $65 million. Remedial plans evaluated for multiple site operable units included groundwater pump and treat, alternative water supply systems, soil/sludge *in situ* solidification and treatment, and wetlands restoration. Additional work included evaluating invoices for site work previously performed and allocating expenses into their appropriate operable unit and work type, i.e., defense or indemnity.

Water Treatment Experience

- Senior Engineer for the engineering design of a 10 gpm groundwater recovery and treatment system at a former tank farm in Rhode Island. The recovery system included a 200-foot slotted HDPE horizontal well, a 400-foot coated concrete swale and curbing, and a series of seepage collection points manifolded to a common receiving structure. The entire system was designed for passive recovery and gravity flow transmission targeting free-product seepage areas. The treatment system consisted of a collection sump retrofitted within an existing separator, a coalescing plate oil/water separator, a surge tank, a bag filter, and carbon adsorption units. The project included a permit modification for discharge to the Providence River.
- Design Engineer for the design and start-up operation of a 2 mgd packed tower aeration system for potable water in Williston Park, New York. The primary contaminants were trichloroethane and tetrachloroethene which were stripped below drinking water standards. The design process included full scale pilot testing to assure proper removal levels.
- Design Engineer for the design, construction, and start-up operation of a 5 mgd industrial cooling water treatment system utilizing mechanical surface aeration. The system consisted of two lined aeration basins operating in series with floating mechanical aerators to remove volatile organic contaminants to levels suitable for recharge into the Long Island groundwater aquifer. The primary contaminants were 1,1-dichloroethene, trichloroethane, tetrachloroethene and vinyl chloride.
- Design Engineer for the design and construction of a 4 mgd granular activated carbon system for potable water in Hempstead, New York. The primary contaminants consisted of more than 8 volatile and semi volatile organic compounds. Responsibilities included site inspection for the installation of the six vessels containing 20,000 lbs. of carbon in each. The

system was designed for 99.9% removal efficiency with two units operating in series.

Constructed Wetlands Experience

- Senior engineer for the conceptual design of a constructed wetlands stormwater treatment system for a coal handling freight railroad facility in Norfolk, Virginia. The design consists of treatment of contaminated stormwater runoff generated from maintenance and fuel handling areas onsite. The design treatment performance objective is the reduction of total suspended solids, oil and grease, and selected metals to levels below the SPDES permit discharge standards established for two of the site's outfalls discharging to the Elizabeth River. The 3 acre system consists of a passively operated 200,000 gpd subsurface-type constructed wetlands with a low visual impact and specialized structural design to meet the needs of a busy railyard facility. Additional design components include stormwater bypass structures, jacking beneath tracks, a grit chamber, a lift station, and outfall modifications. A joint wetlands permit will be prepared for the project.
- Senior Engineer for the feasibility study, conceptual design, and construction of four constructed wetlands units and sedimentation basin for a stormwater treatment system along Cedar Swamp Creek for the City of Glen Cove, New York. The project consisted of review of stormwater studies of the 12 square mile contributing watershed, compilation of USGS water quality and flow data, evaluation of stormwater treatment methods and best management practices and optimum site selection along the creek. The constructed wetlands design included a forebay, high and low marsh cells, a micropool, and stormwater bypass structures for removal of sediment, nitrogen, phosphorus, and trace metals during first flush events. Final design for the first 1.8 acre constructed wetlands unit was completed and performance of construction management is ongoing. Design activities include structural and hydraulic design tasks with specific emphasis on storm water bypass. The design has been integrated into an into an intermodal transportation project with the addition of bicycle and walking paths. NYSDEC and Army Corps permits were obtained for the project.
- Project Engineer for the design of a 7,000 gpd subsurface flow-type constructed wetlands treatment system for a refinery site in Rhode Island. The system was designed to treat a surface-water stream impacted by petroleum hydrocarbons. The system's high aesthetic, low visual impact appeal was ideal for its golf course setting. Both phragmites SPP and Typha SPP wetland species were incorporated in the design in order to assess the biodegradation/biotransformation processes effectiveness. A growth and maturation plan and a treatment evaluation plan were developed in order to evaluate the system performance.
- Lead Engineer responsible for technical review of a design for modifications to a constructed wetlands system in Nicholas County, West Virginia. The system was designed to treat the leachate from a solid waste landfill at a maximum capacity of 30 gpm. The complete water-tight treatment system consisted of a sedimentation basin, stabilization basin, a series of three wetland cells and a finishing ditch. The wetland cells consisted of a double liner system with leachate collection piping overlaid with stone fill and a matrix of plant life. The technology combines physical, geochemical, and biological removal mechanisms operating simultaneously.

Permitting/Compliance Plans

- Project Engineer for the preparation of a Spill Prevention Control and Countermeasure (SPCC) Plan and a Storm Water Pollution Prevention Plan (SWPPP) for an 850-acre petroleum storage terminal in New England. The SPCC Plan involved the inventory of 50 bulk storage tanks and miscellaneous storage vessels and an assessment of barge loading areas, truck loading racks, additive loading areas, pumping stations, and a network of aboveground pipelines. The SWPPP encompassed an inventory and surveying of the existing storm sewer system, an evaluation of oil/water separator performance and identification of storm water management controls and practices.
- Project Engineer for the design of modifications to multiple discharge facilities along the Providence and Runnins Rivers in Rhode Island. Permitting activities were performed with the following agencies: Rhode Island Department of Environmental Management (RIDEM) Pollutant Discharge Elimination System (RPDES), RIDEM Division of Freshwater Wetlands, Coastal Resources Management Council (CRMC), and the Army Corps of Engineers.

Sanitary Experience

- Design Engineer for the evaluation of a municipal sanitary sewer system consisting of approximately 70 miles of piping ranging in size from 8 inches to 16 inches, in Garden City, New York. The sewer system was evaluated for existing and proposed flow capacity, surcharging, infiltration of groundwater, inflow of storm water, root encroachment, and sewer breaks. Evaluation methods consisted of hydraulic profile analysis, television inspection of piping, field inspection of manholes, and flow measurement. Sewer upgrading methods were evaluated including direct replacement, manhole restoration and pipe slip lining, and a rehabilitation program was implemented.
- Design Engineer for the City of Glen Cove's industrial wastewater pretreatment program which was established to monitor significant industrial users discharging to the city's wastewater treatment plant to minimize upsets to the

biological treatment mechanisms. The program work included annual facility inspections, wastewater discharge sampling, review and evaluation of quarterly self-monitoring results, calculation of discharge penalty fees, preparation of annual monitoring reports for each facility and development of wastewater discharge permits to comply with City regulations.

- Design Engineer for a heavy metals study for the municipal sanitary sewer system in the City of Glen Cove, New York. The heavy metals study consisted of the development and performance of a city-wide sewer sampling program to identify the sources of heavy metals loadings on the wastewater treatment plant. The evaluation included industrial sources, scavengers, non-industrial sources, the plant operation itself, and review of existing heavy metal studies. Recommendations were provided for minimization of loadings and pretreatment to protect the plant operations.

Stormwater Experience

- Design Engineer for the evaluation and conceptual design of a water management plan for a 200-acre proposed office complex in Bethpage, New York. The design included inlets, piping and recharge basin sizing for peak storm water runoff flows as well as a system of architectural ponds and level control structures. For dry periods, the design included flow controls connected to an existing cooling water system to maintain pond levels and for utilization as a water supply for an irrigation sprinkler system during the growing season.
- Design Engineer for the design of a municipal storm drainage system for a 200-acre contributing area in Garden City, New York. The purpose of the drainage system was to alleviate severe flooding problems for eight homes located in a local low point of a residential neighborhood. The system included over 4,800 linear feet of reinforced concrete piping ranging in size from 12 to 60 inches. Design considerations included hydraulic gradient analysis, inlet capacity, utility crossings, minimization of removals of established trees, a county road crossing, utilization of existing structures and piping, and a headwall discharge to a recharge basin. Additional design items included pavement restoration, service line relocations, curbs and sidewalks, and maintenance and protection of traffic.

Site Assessment Experience

- Senior Engineer for coordination and review of Phase I environmental site assessments for five large research and development complexes located throughout the eastern United States for a major chemical company. The site assessments were performed for due diligence prior to engaging in long-term property lease agreements. The site assessments evaluated chemical storage and handling areas and previous site usage.
- Senior Engineer for coordination and review of Phase I environmental site assessments for 12 properties associated with tennis centers acquisition on Long Island, New York. The properties were either active tennis center facilities or vacant parcels available for new construction. All site assessments were conducted in accordance with ASTM standards for commercial real estate transactions. Primary concerns identified were USTs, drum storage areas, and unauthorized dumping.
- Project Manager representing a group of banks investing in a 20 acre commercial property in Westchester, New York. The onsite soil was contaminated with several volatile and semi volatile organics. Performed an evaluation of the remediation plan which included onsite biological treatment of soils and aeration and oil water separation of groundwater.

Water Main Experience

- Project Engineer for the design of over 6,000 feet of ductile iron water main in sizes from 4 to 16 inches for Town of Hempstead, New York Department of Water and the Nassau County, New York Department of Public Works. The designs included wet and dry connections to existing mains, fittings, valves, copper services and fire hydrants. Restoration work included replacement of asphalt pavement, concrete sidewalk and curbs, and grass areas.
- Design Engineer for the design and construction management of over 10,000 feet of ductile iron water main in sizes from 6 to 12 inches for the Town of Wallkill, New York. The designs included booster pump station upgrades, a stream crossing, a wetlands crossing, jacking of 36-inch casing beneath a state highway, air release chambers, copper service re-connections, fire hydrants, valves, and appurtenances. Restoration work included wetlands restoration, backfilling, and regrading within a NYSDOT right-of-way and grass and pavement replacement.
- Design Engineer for the design and construction management of upgrades to a 3.7 mgd potable water booster pump station for the Town of Wallkill, New York. The design featured the replacement of a hydropneumatic tank and pump system with three larger capacity centrifugal pumps. The upgrades were performed while maintaining the pump station service. The pump station revisions included piping, pump pads, shut-off valves, silent check valves, pressure relief valves, gauges, ventilation equipment and a motor control center.

Feasibility Study Experience

- Senior Engineer for the performance of a feasibility study and remedial design of a free product containment and recovery system at a former refinery in New England. The areal extent of the free-product plume was approximately 10 acres with a measured thickness of up to eight feet. Pilot testing activities consisted of pump tests, baildown tests, and funnel and gate

systems with and without sheeting. The selected remedial alternative consisted of re-routing and repair of active storm sewer piping, closure-in place of a former 72-inch storm drain using clay fill material to form a barrier wall, and installation of multiple recovery trenches totaling 450 linear feet. The recovery trenches were installed to a depth of 14 feet using a deep trenching machine and were completed with gravel, horizontal perforated piping, recovery wells, and monitoring wells to accommodate both passive and active product recovery pumping equipment. Product recovery enhancement pilot testing was also performed by using non-ionic surfactants, mechanical reworking of soil and vacuum extraction methods.

- Project Engineer for the performance of a feasibility study for the containment of a free-product plume beneath a refinery site in Rhode Island. The feasibility study included analysis of groundwater modeling, bench and pilot scale treatability studies, groundwater quality characterization, identification and screening of discharge alternatives, and treatment process evaluations. The work also included the evaluation of the discharge of treatment system effluent to several receptors including groundwater, wetlands, sanitary sewers, and storm sewers. Discharge requirements were evaluated for process water, off-gas air, and residual wastes. Several treatment processes were also evaluated including metals precipitation and sludge dewatering, VOC and SVOC removal, and off-gas treatment. Preferred alternatives for each process were selected for remedial design development.
- Project Engineer for the performance of a feasibility study for a hazardous waste landfill located at a Superfund site in Tennessee. The feasibility study focused on the characterization and quantification of landfill leachate consisting of chlorinated organic compounds as well as proprietary pesticide compounds. The remedial technologies which were evaluated included leachate collection alternatives, onsite treatment alternatives and offsite disposal methods. An analysis was performed for onsite treatment technologies which included constructed wetlands, biological fluidized bed reactor, and granular activated carbon adsorption. The technologies were assembled into four feasible remedial alternatives and treatability studies were recommended to confirm the suitability of selected processes.

PROFESSIONAL AFFILIATIONS

National Society of Professional Engineers

American Society of Civil Engineers

WEF Hazardous Waste Committee, 1996 – 1998

PUBLICATIONS

Assessment and Remediation of Off-Spec Asphalt Disposal Areas - Co-authored, Contaminated Soils, Volume 3, Amherst Scientist Publishers, 1998

Use of a Subsurface Flow Constructed Wetlands for Collection and Removal of Water Containing BTEX, Co-authored, Proceedings of the 2000 Petroleum Hydrocarbons and Organic Chemicals in Groundwater Conference, National Ground Water Association

PROFESSIONAL PROFILE



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EDUCATION
BS, Environmental Resources/Geology, Hofstra University, 2006

PROFESSIONAL LICENSES
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Jeff Wills, PG

Principal Geologist | Operations Manager

EXPERIENCE SUMMARY
Sixteen years of experience: Staff Assistant Geologist, Staff Geologist, Project Geologist, Senior Geologist, and Principal Geologist/Office Manager with Roux, Islandia, New York.

TECHNICAL SPECIALTIES
Design, implementation, and management of remedial investigations and Phase II Environmental Site Assessments including New York State Brownfields Clean-up Program; New York State Inactive Hazardous Wastes Site Program; New York State Spills; and New York City Office of Environmental Remediation Voluntary Clean-up Program.

REPRESENTATIVE PROJECTS

- **Project Principal, New York City Voluntary Cleanup Program (VCP) Site, New York, New York.** Responsibilities included client management, due diligence Phase I ESAs, and designed and implemented Phase II ESAs, VCP enrollment support, remedial investigations, negotiation with NYCOER to limit remediation to mitigation of vapor intrusion of chlorinated volatile organic compounds (CVOCs), prepared and implemented a Remedial Action Plan including the design and installation of a sub-slab depressurization system.
- **Project Principal Support, Multiple Projects Supporting Investigation and Remediation Activities, 130+-acre Amtrak Sunnyside Yard State Superfund Site, Queens, New York.** Responsibilities included client management, overseeing construction/remediation activities for the Acela Ready Tracks construction project, include the characterization and excavation of over 40,000 cubic yards (CY) of soil for onsite reuse and offsite disposal, site-wide community air monitoring, NYSDEC interaction/reporting and construction associated with MTA's massive East Side Access project on and beneath Sunnyside Yard. Additional yard-wide responsibilities included the monitoring of site-wide groundwater, separate-phase hydrocarbon, and the on-site sewer system as well as overseeing the implementation of remediation activities, including excavation and offsite disposal of petroleum-impacted soil, TSCA polychlorinated biphenyl (PCB) hazardous soil and hazardous lead soil.
- **Senior Project Manager for a New York State Brownfields Cleanup Program Redevelopment of a Former Chemical Manufacturing Facility, Long Island City, New York.** The project required consistent communication with the NYSDEC, a local development corporation, and concerned citizens regarding sensitive construction issues such as community air monitoring. Services included due diligence environmental investigations (on-site and off-site); remediation of 45 subsurface chemical vaults/kettles structures; an in-situ waste characterization sampling program and remedial actions, which included the removal of over 90,000 cubic yards (CY) of soil intended for off-site disposal, design, and installation; operation of a recovery well; and an in situ chemical oxidation (ISCO) program.
- **Senior Project Manager, New York State Brownfields Cleanup Program, Affordable Housing Redevelopment Project, Bronx, New York.** The Site was formerly used as a juvenile detention center. This project included due diligence environmental investigations, remedial investigations (soil, groundwater, and soil vapor), demolition oversight, site-wide in situ waste characterization sampling program, Community Air Monitoring Program and a Remedial Action Work Plan and management of soil excavations with NYSDEC oversight.

- **Senior Project Manager, Former Dry Cleaner Site within Fully Occupied Center, Plainview, New York.** This project included a remedial investigation to identify source(s) of impacted soil, groundwater, soil vapor and indoor air as well as the preparation of Remedial Investigation/Feasibility Study Report, Interim Remedial Measure Work Plan and Remedial Action Work Plan.
- **Senior Project Manager, 13-acre Brownfield Redevelopment New Mall Site, Norwalk, Connecticut.** The Site was formerly used for multiple gasoline service stations, automotive repair shops, and a waste hauler and storage. Services included due diligence environmental investigations, a site-wide in situ waste characterization sampling program, and excavation management of over 70,000 CY of soil, including lead and PCB-contaminated soil.
- **Senior Project Manager, Investigation and Remediation of CVOCs, Former Dry Cleaner within Active Shopping Center, Enfield, Connecticut.** Services included the completion of soil, groundwater, soil vapor, and indoor air sampling activities, as well as groundwater monitoring and injection well installations. Other services included the completion of multiple ISCO injection events in occupied spaces at the Site.
- **Senior Project Manager, Multiple projects to Support Remediation Activities at Amtrak Sunnyside Yard State Superfund Site, Long Island City, New York.** Responsibilities included characterization of subsurface conditions, including PCB and cPAH soil and groundwater contamination. Mr. Wills was responsible for overseeing the implementation of remediation activities, including soil excavation and offsite disposal, and surfactant injections.
- **Senior Project Manager for 11-acre Redevelopment Site in the former New York State Volunteer Cleanup Program, Steel Factory, Manorhaven, New York.** Completed multiple soil and groundwater investigations as well as utilized Membrane Interface Probe (MIP) technology and Cone Penetration Test (CPT) to delineate both the extent of contamination plume and subsurface geology; Responsibilities included MIP/CPT oversight, monitoring well installation, collection of soil and groundwater samples and construction of geological cross-sections; Supervised a challenging four phase ISCO injection program that utilized RegenOx™ oxidant compound, which was injected into over 120 injection points throughout the site; Responsibilities included: Site management, budgeting, implementation of a pressure pulse technology (Sidewinder tool) pilot study, scheduled and coordinated with subcontractors, post-injection groundwater monitoring, USEPA and NYSDEC compliance, review and evaluation of laboratory data and reporting.
- **Manager for 40,000-square-foot Facility in New York State Brownfields Cleanup Program, Williamsburg, Brooklyn.** The Site was formerly a storage and distributer of dry cleaner chemicals. Remedial investigation work included the collection of soil, groundwater, and soil vapor samples as well as the installation of multiple groundwater monitoring wells. Responsibilities included the oversight of all field work, site management, scheduling and coordination with Subcontractors, invoicing, and compliance with NYSDEC regulations.
- **Manager for Former Used Car Dealership Site in the New York State Brownfields Cleanup Program, Corona, Queens, New York.** This project included an ISCO program utilizing RegenOx™ oxidant compound, which was injected into 40 injection points throughout the site. Responsibilities included: Site management; budgeting; scheduling, coordination, and negotiations with subcontractors; post-injection groundwater monitoring, and USEPA and NYSDEC compliance, review and evaluation of laboratory data and reporting.
- **Manager, Phase II Remedial Investigations Associated with Petroleum Contamination, Waterfront Former Petroleum Refinery and Terminal, Brooklyn, New York.** The field investigations included the completion of cone penetrometer test (CPT) and laser induced fluorescence (LIF) soil borings, a membrane interface probe (MIP) investigation, installation and development of over 50 groundwater monitoring wells, installation of 30 permanent soil vapor monitoring points, completion of trial borings, design/installation of product recovery wells, abandonment of multiple groundwater monitoring and product recovery wells, and delineation of PCB impacted soil with NYSDEC oversight.
- **Manager, Investigations and Remediations at Various Mixed Development Sites Containing Hazardous and Non-hazardous Soils, New York, New York.** These projects included the implementation of Remedial Investigation Work Plans, in situ waste characterization sampling program and a Remedial Action Work Plans, which included excavation of soils below grade and management of soils including transportation and disposal, and coordination with various disposal facilities. Some of these sites were accepted into the New York City Office of Environmental Remediation and Brownfield Cleanup Program.
- **Manager at 100+ Facilities Owned and/or Operated by Various City Agencies, New York City, Brooklyn, Queens, and Staten Island.** Responsibilities included supervising and conducting soil, groundwater, and soil vapor sampling work under NYSDEC-approved work plans. Responsible for the preparation of quarterly/ semiannual monitoring reports and construction of groundwater contour maps and geologic cross-

sections for submittal to NYSDEC. Evaluation of field data and preparation of soil boring and well construction logs using gINT© software. Assisted in scheduling and coordinating with subcontractors (drillers, surveyors, enhanced fluid recovery [EFR] events) as well as review subcontractors work invoices. Provided oversight during the installation of several monitoring wells at multiple Sites throughout Brooklyn, Queens, and Staten Island, New York. Responsibilities included health and safety supervision for utility clearances, soil sampling, recording of lithology, well development, and groundwater sampling.

- **Manager, Investigation and Remediation of CVOCs, Active Shopping Center, Parsippany, New Jersey.** Field activities included the completion of soil and groundwater sampling activities as well as groundwater monitoring well installations and abandonments. Remedial action activities included the injection of zero valent iron and emulsified vegetable oil (ZVI/EVO) at 28 temporary injection borings throughout the impacted portion of the site. Responsibilities included: site management, oversight for all field work; budgeting, scheduled and coordinated with subcontractors, post-injection groundwater monitoring, compliance with NJDEP regulations, review and evaluation of laboratory data and reporting.
- **Manager, Annual Soil Vapor Monitoring Program, Former Petroleum Refinery and Terminal, Brooklyn, New York.** Field work included the sampling and screening of 100 permanent soil vapor monitoring points and the screening of indoor air within multiple buildings for soil vapor intrusion monitoring.
- **Manager, Multiple Soil Investigations, Department of Sanitation (DOS) Garages, Staten Island, New York.** Responsibilities included negotiating the scope of work with the DOS Supervisor, scheduling of work and collection of soil and groundwater samples; Supervised surveying of monitoring wells and geophysical surveying using ground penetrating radar to locate petroleum underground storage tanks and piping.

PROFESSIONAL TRAININGS

OSHA 40-Hour HAZWOPER Training: 2006

OSHA 8-Hour Refresher: 2021

OSHA 10-Hour Training: 2018

Loss Prevention Systems Training Certification: 2008

Loss Prevention Systems Training Refresher: 2014

Amtrak Contractor Training: 2021

PUBLICATIONS

Co-author, *Post-Alleghenian Deformation of the Shawangunk Ridge in New York and New Jersey*, 2005

PROFESSIONAL PROFILE



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209 Shafter Street
Islandia, NY 11749

EDUCATION
BS, Civil Engineering, Hofstra University, 2006

PROFESSIONAL LICENSES
Professional Engineer (NY), 2017
Fundamentals of Engineering EIT, 2006

David E. Kaiser, PE

Senior Engineer I

EXPERIENCE SUMMARY
Seventeen years of experience: Senior Engineer, Project Engineer, Staff Engineer with Roux; previously Design Engineer with Bohler Engineering.

TECHNICAL SPECIALTIES
Engineering services including development and review of design drawings, implementation of design, development of technical specifications, review of construction submittals, development of SWPPPs, field management and site safety of various heavy construction projects, and civil/remediation engineering construction management. Designs have included sub slab depressurization systems, soil vapor extraction systems, stormwater drainage systems, NYCDEP sewer system, NYCDOB/DOT sidewalk project, and remedial system design. Additional services including budget management, permitting, project coordination, project scheduling, development of bid packages and cost estimating. Field management and construction oversight of heavy equipment construction including sewer construction, drainage construction, crane lift activities and remedial construction activities. Environmental site assessments focusing on soil, soil vapor, groundwater, and excavation dewatering investigations.

REPRESENTATIVE PROJECTS

- **Soil Vapor Mitigation Systems Design.** Senior Engineer for the design and development of sub slab depressurization systems (SSDS) and soil vapor extraction systems (SVES) for various sites including residential, commercial, and industrial in Suffolk County, Nassau County and New York City Boroughs. Project sites have included system design for new construction buildings, retrofit system for existing buildings and existing system takeovers with troubleshooting and optimization. Designs included strategic layouts and coordination with architects and MEPs to reduce piping conflicts; head loss calculations to ensure adequate vacuum influence on the sub slab via SSDSs comprised of solid headers, perforated laterals and suction points; blower and in-line fan design and sizing appropriate for anticipated head loss and building configuration; and accompanying vapor barrier system to prevent vapor intrusion.

- **Suffolk County Drywell Closure.** Senior Engineer for the planning and coordination of closing existing drywell structures serving as sanitary and industrial retention basins for an industrial facility. The project consisted of developing a sampling plan for the site, coordinating sampling and inspection of existing sanitary and industrial drywells in accordance with Suffolk County Department of Health Services Article 12, SOP No. 9-95 Pumpout and Soil Cleanup Criteria. Following the sampling event, a summary of results was prepared and sent to the SCDHS for review. Due to exceedances that were present within the septic tanks, a remedial action work plan was developed to identify the required steps for successful closure which included coordinating the SCDHS field inspection, extraction of contaminated liquids and solids, and proper disposal of the waste.

- **SPDES Outfall Control Structure Design and Construction.** Senior Engineer for the design and construction of a new SPDES outfall control structure utilizing a precast concrete vault formerly used as a subgrade tank enclosure in Brooklyn, NY. Design included retrofitting an existing precast concrete tank vault to serve as an effluent control structure; and a poured in place concrete compound weir wall to allow control of effluent, flow monitoring to SPDES outfall as well as prevent tidal influx from backflowing into the system. Construction required the management of several trades both landside and waterside to perform an SOE, custom concrete pour for compound weir, dewatering, new steel bulkhead penetration, and sealing of the entire system.

- **NYSDEC Spills Project Remediation.** Senior Engineer for the development, implementation and reporting of Remedial Action Work Plan for a former gasoline retail facility in Greenwich, NY. Remediation included: UST removal, excavation and disposal of approximately 7,000 tons of petroleum hydrocarbon impacted soil via a complex slide rail SOE system, and application of approximately 8,000 pounds of oxygen release compound (ORC) to the groundwater zone across the excavation to enhance the *in situ* aerobic bioremediation.
- **Shooting Range Lead Sampling and Abatement.** Senior Engineer for the development, implementation and reporting of Lead Sampling and Abatement of an indoor state government operated shooting range. Sampling and abatement included: review of surface wipe sampling, live fire air monitoring, assessment of results in accordance with OSHA Action Levels and Permissible Exposure Limits, coordination and management of cleaning and abatement of the range with post-cleaning clearance sampling.
- **Property Drainage System Design and Construction.** Project Engineer for the design and development of a new on-site stormwater treatment system located at a former petroleum terminal in Brooklyn, NY. Design included drainage improvements and modifications for the former petroleum terminal to support ongoing remediation activities that were being conducted to facilitate the future closure of an existing in-ground oil/water separator and removal of associated piping, and to support the anticipated long-term remedy for, and potential future redevelopment of, the subject property. The proposed drainage modifications included the installation of new drainage structures, Contech treatment structures and conveyance piping to collect and treat stormwater runoff within the property, and bypass the existing in-ground oil/water separator, prior to discharging the stormwater via an existing SPDES outfall.
- **Oil/Water Separator Closure.** Project Engineer for engineering support and review for the closure of an existing in-ground oil/water separator at a former petroleum terminal in Brooklyn, NY. The closure and abandonment of the oil/water separator was deemed the long-term remedy as approved by the NYSDEC. The oil/water separator was originally constructed in the early 1900s and has served the property by providing stormwater runoff treatment. The closure project includes the following tasks: dewatering and treatment of separator water; excavation of existing sludge in separator; dewatering and drying/stabilization of the sludge removed; power washing of interior; backfill and compaction of clean fill inside separator; removal of all existing above grade structures including catwalks, guardrails and piping; proper shipping and disposal of sludge contents; installation of a final cover system consisting of a geosynthetic clay liner (GCL) and filter fabric barrier; and final site grading.
- **Utility Tunnel Extension.** Project Engineer for construction management of a utility tunnel extension and modification project. The project consisted of installation of a precast concrete stairway access to an existing utility tunnel, installation of a structural slab to span the tunnel extension, installation of a new base slab, installation of cast-in-place concrete walls and top slab, installation of sidewalks and relocation of all existing system piping and conduits. The work was performed in accordance with the requirements of the New York City Department of Buildings (NYCDOB) and the New York City Department of Transportation (NYCDOT).
- **Treatment System Building Upgrades.** Project Engineer for the review and implementation of engineering drawings for a metals removal system upgrade to an existing 450-gpm groundwater treatment system. The upgrades consisted of: relocating and reinstalling the existing oil/water separator tank on a steel spacer via crane; lifting and installing the existing 10,000 gallon equalization tank to be repurposed as a filter backwash solids removal tank; lifting and installing prefabricated concrete pads with a subbase of Geogrid BX1200 and 6” of aggregate size number 57 (as per NYCDDC Highway Specifications and ASTM C33) compacted to 95% Standard Proctor, under proposed tank locations; locating a new 20,000 gallon equalization/aeration tank on the new pad; installing of new blower motor and enclosure; and installing of new piping and appurtenances.
- **Recovery Well Construction.** Staff Engineer for the construction of aspects of a dual-phase free-phase petroleum product (free-product) and groundwater recovery well at a former petroleum terminal in Brooklyn, NY. Groundwater extracted from the recovery well would be conveyed through 4-inch diameter high density polyethylene standard dimension ratio 11 (HDPE SDR 11) piping and connected to an existing 6-inch HPDE SDR 11 force main piping network that transports the groundwater to an existing on-site groundwater treatment system. Any free-product recovered would be sent to an existing 2,000 gallon above ground storage tank (AST) via 1-inch double wall product piping. Electrical and signal conduits were routed to an existing well house where the system control components were housed.
- **Treatment System Building Roof Rehabilitation and Platform Installation.** Project/Staff Engineer for providing engineering design, review, and construction management of the rehabilitation of a roof and installation of an internal platform in an existing remediation groundwater treatment system building located at a former petroleum terminal in Brooklyn, NY. The roof rehabilitation project included the

replacement of approximately 1,200 square feet of stainless steel decking, insulation and waterproofing. The project also included the construction of three new skylights and access ladders. The platform installation project included the installation of new steel members and fiberglass reinforced polymer (FRP) molded grating within the existing remediation groundwater treatment to provide a working platform for on-site technicians. The new steel members were bolted to existing infrastructure to limit on-site welding and the platform was installed with tubular steel handrails. Responsibilities included: ensuring that the development of the plans and technical specifications were in accordance with the New York City Construction Codes, New York State Building Standards and Codes, various ASTM standards, American Institute of Steel Construction (AISC) "Code of Standard Practice for Steel Buildings and Bridges," and Steel Structures Painting Council (SSPC) Publications.

- **NYCDEP Private Storm and Sanitary Sewer System.** Project/Staff Engineer for the design and development of a New York City Department of Environmental Protection (NYCDEP) Private Storm and Sanitary Sewer System located at a former petroleum terminal in Brooklyn, NY. The sewer system comprised of over 2,600 LF of sewer in Greenpoint Brooklyn over two phases of construction. During the duration of this project responsibilities included: develop/revise NYCDEP sewer design plans and construction notes, address NYCDEP comments and markups, develop Bill of Materials, develop cost estimates, develop technical specifications, develop bid package, ensure compliance with NYCDEP and NYCDOT specifications and requirements, develop/revise NYCDOT Builder's Pavement Plan (BPP), develop NYCDOT Maintenance and Protection of Traffic plans, conduct/participate in design construction meetings, review subcontractor submittals and cut sheets, address NYCDEP punch list items, management/oversight/coordination of subcontractor construction activities.
- **NYCDOB/NYCDOT Sidewalk Installation.** Project/Staff Engineer for the design, development, and installation of over 4,000 linear feet of new sidewalks over various phases located at a former petroleum terminal in Brooklyn, NY. The design, development, and installation of these sidewalks were in accordance with the New York City Department of Buildings and New York City Department of Transportation specifications and details of construction. During the duration of these projects my major responsibilities included: develop/revise NYCDOT Builder's Pavement Plans, develop cost estimates, develop technical specifications, develop bid package, ensure compliance with NYCDOB and NYCDOT specifications and requirements, develop NYCDOT Maintenance and Protection of Traffic plans, conduct/participate in design construction meetings, ensure proper installation and testing of sidewalks in accordance with NYCDOB and NYCDOT, management/oversight/coordination of subcontractor construction activities.
- **Sub Slab Depressurization System.** Staff Engineer for the design and construction of two sub slab depressurization systems (SSDS) located within the footprint of a petroleum remediation site where a new building was proposed to be built. These projects were part of an Interim Remedial Measure (IRM) Action Plan as approved by the NYSDEC to provide a preventative proactive measure to address potential soil vapor issues. The SSDSs were designed to operate passively; however, header piping was installed to allow for the installation of the necessary equipment if an active system was required. The SSDSs consisted of ¾-inch gravel with 4-inch diameter polyvinyl chloride (PVC) schedule 40 well screen used as soil gas collection piping and 6-inch diameter solid PVC used as the header piping. A vapor barrier/waterproofing membrane and nonwoven geotextile fabric were installed between the venting layer and the floor slab. All penetrations through the floor slab were sealed using a silicone based waterproof sealant. The scope of work included excavation and trench work for the SSDS; placement of pipe bedding; jointing and installation of the pipe fittings, valves, and appurtenances; installation of pipe sleeves and mechanical seals; and installation of nonwoven geotextile fabric and silicone based waterproof sealant.
- **Remediation System Signal Network Utility Expansion Oversight and Management.** Staff Engineer and Field Manager for the completion of a signal communication network expansion as part of a petroleum remediation system. My responsibilities included oversight of a subcontractor while installing level sensors within the product pull boxes to improve the safety of the system operations by continuously monitoring the underground product piping network for potential leaks, and programming, testing and verification of operation of sensors. The scope of work also included the installation of signal and control wiring from recovery well houses to subsurface vaults through existing conduit located beneath New York City streets located in Greenpoint Brooklyn. The signal expansion was part of an effort to integrate the sensor/components within the vaults with the existing remediation system's programmable logic controllers (PLCs). The scope of work also included: development of programming to integrate input infrastructure to existing PLCs, development of human machine interface (HMI) screens to allow for remote viewing at the system control buildings, and installation of power supplies and other apparatuses as required for the operation of the new infrastructure. My responsibilities for this work included: subcontractor management, submittal and cut

sheet review, scheduling management, 3rd party coordination, and construction meetings.

- **New York City Transit Plan Submission.** Staff Engineer for researching, preparing, and submitting New York City Transit (NYCT) Plans for various sites to seek approval for drilling and other subsurface activities in proximity to NYC Subways. The scope of work included visiting the Microfilm Room at the NYCT Office to obtain copies of the as-built plans, roof plans, profiles, sections, and alignments adjacent to the properties that our clients were proposing to perform subsurface work. Using these plans, develop proposed boring location plans and cross section plans, overlaying the NYCT plans to determine the proposed distance to adjacent NYCT structures. Ensured that these plans had the most up to date NYCT construction notes since these drawing became part of the projects' contract drawings. Submitted the plans and fees to the NYCT and coordinated with the NYCT inspectors assigned to each project ensuring that all requirements and questions were satisfied. Procured the associated NYCT approvals and distributed to the client so that they may proceed.
- **Stormwater Pollution Prevention Plan (SWPPP) Reports.** Staff Engineer for preparing and submitting Stormwater Pollution Prevention Plans (SWPPP) for various residential and commercial development sites in New York City and Long Island. The scope of work included preparation of SWPPP Reports in accordance with the most current New York State Department of Environmental Conservation (NYSDEC) regulations at the time including the 'General Permit for Stormwater Discharges from Construction Activity' and the 'New York State Stormwater Management Design Manual.' Preparation of the SWPPP Reports included: summarizing the site history and project description, soil geology, potential pollutants, erosion and sediment control practices, inspection and maintenance procedures, water quantity and water quality control plans, construction sequence scheduling, and the Notice of Intent (NOI) for each project as required by the NYSDEC.
- **Former Petroleum Storage Wetland and Canal Remediation Site.** Staff Engineer for daily construction oversight of subcontractors as a field manager and implementation of the site-specific health and safety plan as a Community Air Monitoring Program manager. The scope of work included conducting an on-site Community Air Monitoring Program monitoring for airborne dust and VOCs that were potentially generated by remedial and construction work activities. Stopping work and implementing best engineering/control practices if action levels were exceeded. Recording and providing QA/QC analysis of on-site weather and air monitoring data, as well as ensuring the proper operation of all instruments/monitors on a daily basis. Inspections were conducted of three on-site aboveground API concrete oil/water separators. Stormwater Pollution Prevention Plan (SWPPP) inspections were performed, ensuring compliance with NYSDEC State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity and daily reports were generated which would comprehensively document daily work activities and CAMP data and exceedances.
- **Land Development Site Plan Preparation.** Design Engineer for the design and development of residential, commercial, and industrial site plan packages for Suffolk County, Nassau County and New York City Boroughs. Site plan packages for the various municipalities within Suffolk County, Nassau County and New York City included components such as: zoning analysis, site removals plan, site design and construction documents, water, and sewer system design (detention and retention systems), site grading and drainage plans, and lighting analysis and design.

PROFESSIONAL TRAININGS

OSHA 40-Hour HAZWOPER Training: 2008

OSHA 30-Hour Construction Safety Training: 2011

OSHA 10-Hour Construction Safety Training: 2018

NYSDOT Hazardous Materials Awareness Training: 2017

NYSDEC Erosion and Sediment Control Training: 2016

Loss Prevention Systems Training Certification: 2008

JUDY V. HARRY
P. O. Box 208
120 Cobble Creek Rd.
North Creek, NY 12853

Occupation: Data Validator/Environmental Technical Consultant

Years Experience: 48

Education: B.S., Chemistry, Magna cum laude, 1976, Phi Beta Kappa

Certifications: New York State Woman-Owned Business Enterprise (WBE)

Relevant Work History:

Data Validation Services: September 1989 - present

Sole proprietor of Data Validation Services, a woman-owned small business registered with SAM, providing consultation/validation services to regulatory and commercial clients.

These services include the review of analytical laboratory data for compliance with respect to specific protocols, accuracy and defensibility of data, verification of reported values, and evaluation of quality parameters for analytical usability of results. Approved by USEPA, NYSDEC, NJDEP, NYSERDA, and NYCDEP as a data validator for projects, including USEPA Superfund, Brownfield, and lead sites, and those contracted through the NYSDEC Division of Hazardous Waste Remediation, Division of Solid Waste, and Division of Water Quality.

Performed validation for compliance with laboratory analytical protocols including USEPA OLM, USEPA OLC, USEPA ILM, USEPA DFLM, USEPA SOW3/90, USEPA SOW 7/87 CLP, USEPA SOW 2/88 CLP, USEPA SW846, RCRA, AFCEE, NYS 6 NYCRR Part 360, 40 CFR, Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, including TO-15, 1989/1991/1995/2000/2005 NYSDEC ASPs, and 1987 NYSDEC CLP.

Performed validation according to the USEPA National and Regional SOPs and Functional Guidelines, AFCEE requirements, NYSDEC Validation Scope of Work, NYS DUSR, and NJDEP Division of Hazardous Site Mitigation/Publicly Funded Site Remediation SOPs.

Performed validation for USEPA Superfund Sites including Salem Acres, York Oil, Port Washington L-4 Landfill, Bridgeport Rental and Oil Services, GE-MRFA, MMR/ OTIS AFB, LCP, and Peter Cooper site; and for USEPA lead sites including SJ&J Piconne, Maska, Bowe System, Jones Sanitation, and Syossett Landfill, involving CLP, RAS, and SAS protocols.

Contracted for NYSDEC Superfund Standby Contracts with LMS Engineers/HDR, CDM Smith, Malcolm-Pirnie/ARCADIS, Ecology & Environment, Shaw Environmental/APTIM, CG&I, O'Brien & Gere Engineers, and EC Jordan, involving samples collected at NYS Superfund Sites and analyzed under the NYSDEC ASP.

Performed validation services for NYSDEC Phase II remedial investigations, RI/FS projects, Brownfield sites, and PRP over-site projects for hazardous waste sites.

Performed validation services for clients conducting RI/FS activities involving samples of many matrices, including waste, air, sludges, leachates, solids/sediments, aqueous, and biota.

Clients have included AECOM, Arcadis, Barton & Loguidice, Benchmark Engineering, Bergmann Associates, Blasland, Bouck & Lee, Brown and Caldwell, CDM Smith, CB&I Shaw Environmental, C&S Consulting Engineers, Chazen Companies, Clough Harbour & Associates, Columbia Analytical Services, C.T. Male, Dames & Moore, Day Engineering, EA Engineering, EcolSciences, Ecology & Environment, Ecosystems, EC Jordan, Environmental Chemical Corporation, EHRT, ENSR Consulting, ELM, ERM-Northeast, Fagan Engineers, Fanning Phillips & Molnar, FluorDaniel GTI, Frontier, Foster Wheeler Environmental Corp, Frontier Technical, Galson Consultants, GEI, GE&R, Geomatrix Consultants, GZA Environmental, Handex of N, Hazard Evaluations, H2M Group, HDR, HRP, IT Corp, Jacques Whitford, JTM Associates, JMT, LaBella Associates, Langan Engineers, Leader Environmental, Lockwood, Kessler & Bartlett, LMS Engineers, Malcolm-Pirnie, Metcalf & Eddy, NWEC&C, O'Brien & Gere Engineers, Pace, Parsons Engineering-Science, Plumley Engineering, Prescott Environmental, P. W. Grosser, Ramboll, Rizzo Associates, Roux Associates, Sear Brown Group, SECOR, Sovereign Consulting, Shaw Environmental, Stantec, ThermoRemediation Inc., TRC Environmental, Turnkey Environmental Restoration, TVGA Engineering, URS Consultants, Wehran Emcon, Weston, Wittman Geosciences, YEC, and private firms.

Provided consultation services to laboratories regarding analytical procedures and protocol interpretation, and to law firms for litigation support.

Provided services to firms involving audits of environmental analytical laboratories to determine analytical capability, particularly for compliance with NYSDEC ASP and AFCEE requirements.

Guest speaker on a panel discussing Data Review/Compliance and Usability, for an analysis workshop for the New York Association of Approved Environmental Laboratories, 1993.

Adirondack Environmental Services: June 1987 - August 1989

Senior mass spectroscopist for AES. Responsible for GC/MS analyses of environmental samples by USEPA and NYSDEC protocols, development of the GC/MS laboratory, initiating the instrumental and computer operations from the point of installation, and for implementing the procedures and methodologies for Contract Laboratory Protocol.

CompuChem Laboratories: May 1982 - January 1987

Managed a GC/MS production laboratory; developed, implemented, and supervised QA/QC criteria at three different levels of review; and was responsible for the development and production of the analysis of environmental and clinical samples. Directed a staff of 23 technical and clerical personnel, and managed the extraction and GC/MS labs and data review operations.

Research Triangle Institute (RTI): December 1979 - May 1982

Worked as an analytical research chemist responsible for development of analytical methods for the EPA Federal Register at RTI. This involved analysis of biological and environmental samples for priority pollutants, primarily relating to wastewaters and to human sampling studies. Method development included modification and interfacing of the initially developed Tekmar volatile purge apparatus to GC/MS, development and refinement of methods for entrapment and concentration of the air medium for subsequent volatile analysis, and the analysis and resolution/ identification of individual PCB congeners within Aroclor mixtures by capillary column and mass spectra.

Guardsman Chemical Company: February 1977 - November 1979

Performed all quality control functions for the manufacturing plant. Performed research and development on coatings and dyes.

Almay Cosmetics: May 1976 - December 1976

Product evaluation chemist. Responsible for analytical QC of manufactured products.

Publication

Pellizzzari, E.D., Moseley, M.A., Cooper, S.D., Harry, J.V., Demian, B., & Mullin, M. D. (1985). Recent Advances in the Analysis of Polychlorinated Biphenyls in Environmental and Biological Media. *Journal of Chromatography*, 334(3) 277-314.

ATTACHMENT 2

Eurofins Standard Operating Procedures

eurofins	Always check on-line for validity. **EPA Methods TO-15 and TO-3, Determinations of VOCs in Ambient Air**	Level: **Standard Operating Procedure**
Document number: **AIR-SOP48257**		
Old Reference: **BR-AT-004**		
Version: **16**		Organisation level: **4-Business Unit**
Approved by: **J8TG, YE6O** Effective Date: **13-FEB-2024**	Document users: **6_EUUS80_BUR_Organic Inst_GCMS VOA_Air**	Responsible: **5_EUUS80_BUR_GCMS VOA and Air Supervisor**

The information contained herein is of a highly confidential and proprietary nature. Eurofins Environment Testing specifically prohibits the dissemination, copy, disclosure, transfer, or modification of this information without the express written approval of Eurofins Environment Testing Burlington QA.

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12) Method Performance
12.1) Method Detection Limit Study (MDL)
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13) Pollution Control
14) Waste Management
15) Method Modifications
16) Appendices
16.1) Routine Compound List, Reporting Limit, Internal Standard and Ion Assignments
16.2) TO-3 Analyte List, Reporting Limit, Internal Standard and Ion Assignments
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16.5) In-house LCS limits
16.6) Appendix A: Terms and Definitions
16.7) Appendix B: Standard Preparation Tables

Revision Log

Revision: 16.0	**Effective Date**	This version
Section	**Justification**	**Changes**
Throughout	Added	Cross-reference links to related documents in D4
Section 5	Updated	Current standard Safety language
Sections 6 & 7	Added	Catalog # disclaimer and storage conditions
Section 10.2.2.1	Added	Percent Error acceptance criteria for individual points in the calibration

Revision: 15.0	**Effective Date**	21 April 2023
Section	**Justification**	**Changes**
Entire Document	Format	Update to D4 format
Section 10.2.4	Updated	Removed reference to DoD specific QA requirements.
Section 10.3.4	Added	Client specific QA requirements

Previous revisions maintained by QA Department

References

- EPA Compendium Method TO-15, "Determination of Volatile Organic Compounds in Ambient Air using Specially Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry", US EPA, January, 1999.
- USEPA Compendium Method TO-3 “Method for the Determination of Volatile Organic Compounds In Ambient Air Using Cryogenic Pre Concentration Techniques and Gas Chromatography with Flame Ionization and Electron Capture Detection”, USEPA, April 1984
- New Jersey Department of Environmental Protection Site Remediation Program Vapor Intrusion Technical Guidance, Version 3.1, March 2013.

Cross References

- *SOP52862 Quality Assurance Manual*
- *SOP48255 Canister Cleaning, Certification and Sampling Kit Preparation*
- *QP46060 NDSC HSE Manual*
- *SOP49961 Burlington Corporate Safety Manual Addendum*
- *SOP52272 Traceability, Handling and Storage of Standards and Reagents*
- *SOP49959 Sample Management*
- *SOP49967 Nonconformance and Corrective Action Procedures*
- *SOP43862: Manual Integrations*
- *SOP49966 Management, Retention Storage and Archive of Data Records*
- *SOP52264 Employee Training and Analyst Demonstration of Proficiency*
- *SOP47863 Tracking and Collecting of Hazardous Waste*
- *SOP48269 Procedure for Acceptance and Handling of USDA Regulated Domestic and Foreign Soil*

1) Scope and Application

This SOP describes the laboratory procedure for the analysis of polar and non-polar volatile organic compounds (VOCs) in ambient and non-ambient air. The procedure is applicable to those VOCs that have been evaluated by the laboratory for their consistent performance in meeting the control criteria put forth in Compendium Method TO-15.

While the compendium method is specifically written for the analysis of ambient air samples collected in leak-free passivated stainless-steel canisters, it may be applied to the analysis of samples that have employed the use of other collection devices such as Tedlar bags and are from sources other than ambient air such as indoor air, vapor intrusion impacted air, soil gas, landfill gas, gas cleaning apparatuses and stack emissions.

This procedure may also be used to report a variety of carbon ranges, constituent groups like TVOC (total volatile organic compounds), or as unresolved complex mixtures (e.g. Total Hydrocarbons).

1.1) Analytes, Matrix(s), and Reporting Limits

The target compound list and reporting limits for each compound are provided in the Appendix.

2) Summary of Method

An aliquot of sample is pulled from the canister through a solid multi sorbent bed trap which reduces the water content of the sample. The sample is thermally desorbed, and the VOCs are carried onto a GC column coupled to a mass spectrometer. Compounds are identified by comparison of the mass spectra for individual peaks in the total ion chromatogram to the fragmentation patterns of ions corresponding to VOCs including the intensity of primary and secondary ions as well as the patterns of stored spectra acquired under similar conditions.

The concentration of the target compound is calculated by internal standard technique using the average response factor or slope and intercept of that compound as determined by the initial calibration.

If the laboratory has modified the method, a list of these adjustments may be found in the Method Modifications section of this SOP.

3) Definitions

A list of terms and definitions are provided in the Appendix. Refer to the Laboratory *SOP52862 Quality Assurance Manual* (QAM) for additional Glossary of Terms, Definitions, and Acronyms.

4) Interferences

Contamination may occur if canisters or other equipment is not properly cleaned before use. The laboratory procedures for canister and flow controller cleaning are provided in *SOP48255 Canister Cleaning, Certification and Sampling Kit Preparation*.

5) Safety

Employees must abide by the policies and procedures in the Eurofins NDSC-US EHS-*QP46060 NDSC HSE Manual*, the *SOP49961 Burlington Corporate Safety Manual Addendum* and this document. This procedure may involve hazardous material, operations and equipment.

This SOP does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of the method to follow appropriate safety, waste disposal and health practices under the assumption that all samples and reagents are potentially hazardous. Safety glasses, gloves, lab coats and closed-toe, nonabsorbent shoes are a minimum.

A complete list of materials used in the method can be found in the reagents and materials section. Employees must review the information in the SDS for each material before using it for the first time or when there are major changes to the SDS.

5.1) Specific Safety Concerns or Requirements

The analytical system contains zones with elevated or depressed temperatures that are capable of causing injury upon direct contact. The analyst needs to be aware of the locations of those zones and allow them to return to room temperature prior to maintenance activities or take measures to avoid contact with hot and/or cold surfaces. There are areas of high voltage in the analytical system. Depending on the type of work involved, either turn the power to the instrument off, or disconnect it from its source of power.

Liquid nitrogen (LN2) is used for cryogenic purposes. In addition to avoiding contact with LN2 cooled surfaces, analysts must be aware of the potential for oxygen depletion in a confined space in the event of an unexpected large release of the product. Users should evacuate a confined space in which large amounts of LN2 have been released.

Sample canisters are occasionally pressurized for cleaning or sample dilution purposes. Lab systems are designed to ensure that the cans are not pressurized above 40 psi. Eye protection must be worn when cans are pressurized in the event of a canister failure.

5.2) Primary Materials Used

There are no materials used in this method which have a serious or significant hazard rating.
NOTE: This section does not include all materials used in the method. A complete list of materials used in the method can be found in the reagents and materials section. Employees must review the information in the SDS for each material before using it for the first time or when there are major changes to the SDS.

6) Equipment and Supplies

Catalog numbers listed in this SOP are subject to change at the discretion of the vendor. Analysts are cautioned to be sure equipment meets the specification of this SOP.

6.1) Sampling Equipment

- 6L and 1L SUMMA® Canisters: Leak-Free, Passivated Stainless Steel, with Swagelok DSS4 Valves, or equivalent. Maximum rated pressure 40 psig.
- 6L SUMMA® Canisters: Silicon Lined-Leak-Free, Passivated Stainless Steel, with Swagelok DSS4 valves or equivalent. Maximum rated pressure 40 psig.
- Flow Controllers: Restek Catalog #24239 or equivalent.
- Flow Controller Orifice: Various sizes ranging from 0.008” to 0.060”, Restek or equivalent.
- Flow Controller Vacuum Gauges: Capable of measuring vacuum to an absolute vacuum of -30” Hg, and pressure up to 30 psi, Grainger Catalog #5WZ37 or equivalent
- Rain Guard: Stainless Steel Tubing ¼”, 10ft. Grainger or Equivalent. Cut 8” and bend into a J shape using a pipe bender.
- Stainless Steel Pre-Filter (7 um): Swagelok Catalog# SS-4F-T7-7 or equivalent
- Teflon Tape: Home Depot Brand or equivalent.

6.2) Analytical System

- Mass Spectrometer: Agilent 5973, 5975, 5975B, 5977C MSD or equivalent.
- Gas Chromatograph: Agilent 6890, 7890, 8890 or equivalent.
- VOC Autosampler: Entech 7016CA or equivalent.
- Cryogenic Concentrator: Equipped with an electronic mass flow controller that maintains a constant flow for carrier gas and sample over a range of 0-200 cc/min. Entech 7100A, 7200, 7200A or equivalent.
- Low Pressure Liquid Nitrogen: Air Gas or equivalent.
- Glass Bead Cryotrap: Capable of effectively removing water while trapping polar and non-polar compounds. Entech catalog# 01-04-11320.
- TENAX Sorbent Trap: Capable of removing CO2 and trapping the polar and non-polar compounds. Entech catalog # 01-04-11330.Primary Column: Fused silica capillary column (60 m x 0.32 mm x 1.8 µm), Restek RTX-624 or equivalent.
- Data System: PC software for Entech instrumentation. Hewlett-Packard ChemStation data acquisition software, Environment Testing Chrom and Environment Testing LIMS (TALS).
- NIST Mass Spectral Library and Search Program, 2020 release or newer

6.3) Cleaning System

- Canister Cleaner Module and Software: Capable of filling canisters with humidified air and evacuating canisters to 50 mtorr, Entech Model 3100A or equivalent.
- Vacuum Pump: Capable of evacuating sample canisters to full vacuum. Vacuubrand or equivalent.
- Cleaning Manifold: Equipped with stainless steel and Teflon transfer lines and connections for cleaning up to twelve canisters simultaneously.
- Heating Belts: Individual thermal-stated heating belts used to heat canisters to 100ºC during the manifolds cleaning cycles. Entech or equivalent.
- Cleaning oven: Capable of cleaning 6 Summa Cans simultaneously at a temperature of 100ºC. Entech or equivalent.
- Flow Controller Cleaning Manifold: Capable of flushing hot Nitrogen through 24 flow controllers simultaneously for cleaning.

6.4) Miscellaneous Supplies

- Mass Flow Controller, NIST Traceable: Capable of flow rate of 70 mL/min, Alicat MC5005CCM or equivalent. Use for the preparation of calibration and working standards.
- Syringes: Gas tight with a Luer-Lok tip, assorted sizes ranging from 1.0 mL to 1.0 L, SGE or equivalent.
- Digital Pressure Gauges, NIST Traceable: Capable of measuring pressure in the range of -30" Hg to 100 psi, Dwyer Models DPGA-12 and 67100 or equivalent
- Digital Flow Meter, NIST Traceable: Alltech or equivalent.

- Nitrogen Gas
- Digital Stop watch, NIST traceable, Thomas Scientific or equivalent

7) Reagents and Standards

Catalog numbers listed in this SOP are subject to change at the discretion of the vendor. Analysts may use equivalent-quality materials based on factors including availability. Permanent changes will be noted in future SOP revisions. All reagent and standards must be labeled with their Name and/or ID #; the Expiration Date; and the Date Prepared.

All reagents and standards are stored at room temperature in the Air Lab work area, unless noted otherwise.

For additional information refer to the *SOP52272 Traceability, Handling and Storage of Standards and Reagents*

7.1) Reagents

- Argon - Gas off bulk Liquid Argon tank. UHP Air Gas or equivalent vendor
- Nitrogen- Gas off bulk Liquid Nitrogen tank. UHP Air Gas or equivalent vendor
- Helium- UHP from Airgas or equivalent
- VOA free water

7.2) Standards

Certified stock standard solutions are purchased from approved commercial vendors. From these, intermediate and working standard solutions are prepared by diluting a known volume of standard in an appropriate solvent to the desired final concentration.

Formulations for the preparation of intermediate and working standard solutions are provided in the Appendix. Unless otherwise specified, assign an expiration date of 12 months from date of preparation, unless the parent component expires earlier in which case use the earliest expiration date.

There are small variations in analyte concentrations in the preparation of air standards. For simplicity, the nominal concentrations are referenced in this SOP.

Note: *When entering the concentrations of source standards in TALS, use the nominal concentration and not the actual concentration. Unless the actual has a > 15% difference from the nominal value. In these cases, use the actual value.*

Purchase the following stock standard mixtures from commercial vendors:

- Mixed Gas Stock Standard: - Commercially prepared standard that includes internal standard and tune standard compounds: Bromofluorobenzene, Bromochloromethane, 1,4-Difluorobenzene, and Chlorobenzene-d5, at a concentration of 100 ppbv each. Linde or equivalent.
- Calibration Stock Standard: - Commercially prepared custom gaseous stock standard that includes all target analytes except ethanol at a concentration of 1.0 ppmv. Linde or equivalent.
- Calibration Ethanol Neat Material. >99.5%
- ICV / LCS Stock Standard: - Custom made gaseous stock standard prepared from a different lot(s) of the source material(s) used to manufacture the calibration stock standard. The ICV/LCS stock standard includes all target analytes at a concentration of 1.0 ppmv. Linde.
- ICV/LCS Ethanol Neat material. >99.5% from a source other than the calibration source.

Prepare calibration and working standards mixtures by diluting a known volume of the stock standard with nitrogen to a specified volume into a humidified summa canister. The summa canister is humidified by adding 100ul of VOA free reagent water. The volume of the standard added to the canister is calculated using the set flow rate of 70mL/min using a mass flow meter multiplied by the time of the standard addition, plus the inclusion of the 25ml volume for the tubing connecting the mass flow meter to the summa canister. The formulations for standard preparation are provided in the Appendix along with recommended expiration dates and storage conditions.

Each stock standard is assigned a 1-year expiration date from manufacture and recertified annually. See *SOP52272 Traceability, Handling, and Storage of Standards and Reagents* for details on the recertification process. The ethanol neat material is assigned the expiration date given by the manufacturer.

If a new standard cannot be received prior to the expiration of the standard presently in use, the lab will notify the QA manager. The QA manager will perform a control chart review (see *SOP49965 Control Charts*). If the standard is determined to be acceptable, the lab may assign a new expiration date of not more than 30 days from the date of the last data point in the control chart review. When the new standard ID is created in TALS, the COA and the Control Chart verifying the standards stability will be attached to the reagent ID.

8) Sample Collection, Preservation, Shipment and Storage

The laboratory does not perform sample collection, so these procedures are not included in this SOP. Sampling requirements may be found in the published reference method.

Matrix	Sample Container	Minimum Sample Size	Preservation	Holding Time	Reference
Air	1L or 6L Passivated Summa Canister	1L	NA	30 days from collection	EPA TO-15

1-liter Tedlar bags are only provided upon client request; however, clients are discouraged from using Tedlar bags due to the shortened holding time of 72 hours from collection.

All samples should be collected in passivated stainless-steel canisters that have been certified clean prior to sampling. The laboratory will provide certified clean canisters to the client upon request. The procedures for clean canister certification are provided in Laboratory SOP 48255: Canister Cleaning, Certification and Sampling Kit Preparation.

The laboratory can also provide flow controllers set to the appropriate flow rate for the sampling time required by the client.

The laboratory ships air canisters in custom made boxes. The boxes are equipped with custom-made foam inserts to hold the pre-set flow-controllers. The shipping materials are designed to prevent damage of equipment to and from the sampling site. The laboratory checks the equipment to ensure it is in proper working order before shipment to the client and additional checks are performed on return of the equipment to the laboratory. Sampling instructions are provided with each sampling kit. The sampling crew is advised to handle the sampling equipment using the instructions provided by the laboratory to ensure optimum performance.

The laboratory's sample acceptance policy for air samples in canisters requires that the sampling crew record the ID of the flow controller used for sample collection on the tag attached to each canister, but the association may also be recorded on the Field Test Data Sheet or a COC. With this information the laboratory can review the history of use of the FC as needed to troubleshoot potential equipment problems. Without the association, the history of use of the FC is unknown. The laboratory strongly recommends that field samplers be instructed to provide this information for each sampling event.

The return pressure of each canister should be between -10" Hg to -1"Hg, except for "grab" samples or samples with a collection rate of 100 or 200 mL/min, which must have a pressure greater than or equal to -10" Hg. The residual vacuum criteria ensure that the sample was collected over the time period the flow controller was calibrated for.

9) Quality Control

9.1) Sample QC

The following quality control samples are prepared with each batch of samples.

QC Item	Frequency	Acceptance Criteria
Method Blank (MB)	1 in 20 or fewer samples	See QC Summary Table
Laboratory Control Sample (LCS)	1 in 20 or fewer samples	See QC Summary Table
Internal Standard (ISTD)	Every Sample	See QC Summary Table
Laboratory Control Sample Duplicate (LCSD)	Client request or if insufficient sample for Sample Duplicate	See QC Summary Table
Sample Duplicate (SD)	1 in 20 or fewer samples if sample volume allows	See QC Summary Table
Trip Blank (TB)	Client Request	See QC Summary Table

NOTE: *The compendium reference method does not require the analysis of a laboratory control sample (LCS) or provide criteria for the evaluation of an LCS. The laboratory performs an LCS at the above-mentioned frequency as an evaluation of percent recovery in a blank matrix. The laboratory uses statistically derived control limits for the LCS.*

Unless otherwise specified by the client during project initiation, the LCSD will be used to measure precision only. The LCS will be used for evaluations for percent recovery and to determine if corrective action is necessary.

9.2) Instrument QC

The following instrument QC is performed:

QC Item	Frequency	Acceptance Criteria
Tune Standard (BFB)	Each Analytical Window	See Appendices
Initial Calibration (ICAL)	Initially; when ICV or CCV fail	See Appendices
Initial Calibration Verification (ICV)	Once, after each ICAL	See Appendices
RT Window Establishment	Once per ICAL	See Appendices

Relative Retention Time (RRT)	With each sample	See Appendices
Continuing Calibration Verification (CCV)	Daily, after each BFB	See Appendices

10) Procedure

10.1) Support Equipment Calibration

Verify the calibration is valid for the following;

- Mass flow controller used to prepare standards.
- Digital flow meter used to set and check the flow rates of the FC(s) used for sample collection.
- Digital pressure gauges used to check return canister pressure.
- Stopwatch used to measure standard addition time is current to the year.

Immediately notify the QA department if the calibration is not current and wait for further instruction. Equipment whose calibration has expired may not be used without documented approval from the QA department.

NOTE: *The QA department schedules the annual calibrations of the support equipment and maintains all Certificates of Calibration. The flow controllers are checked against a NIST traceable standard. This check is performed by the manufacturer of the equipment, when possible, or by an approved vendor that provides certification service.*

10.2) Instrument Calibration

All Calibration Standards and Quality Control samples have the same concentration of Internal Standards and Surrogates that are added for field sample analysis. Refer to the Analytical Sequence section for additional information.

10.2.1) Tune Standard

Analyze a tune standard (BFB) prior at the beginning of each analytical window. The tune standard is a commercially prepared mixed gas stock standard that includes Bromofluorobenzene (BFB) at a concentration of 100 ppbv.

To analyze the tune standard:

1. Establish the instrument operating conditions specified in the Sample Analysis section of this SOP. Once established these settings must be maintained for the analysis of all quality control and environmental samples.
2. Attach the mixed gas stock standard to the Entech concentrator by attaching the cylinder to the line dedicated for introduction of the internal standard (ISTD). The concentrator directly injects 20 mL of the 100 ppbv stock standard onto the instrument to yield an on-column concentration of 10 ppbv.
3. Acquire the data and evaluate the results against the acceptance criteria in the Tune Standard Criteria table in the appendix.
4. Criteria must be met prior to further analysis.
5. The official start time of the 24-hour analytical window is the injection time of a passing tune standard. All samples must be injected within 24 hours of that time.

NOTE: *The data processing system averages three scans (apex scan, scan prior, and scan following) and performs background subtraction of the single scan prior to the elution of BFB.*

10.2.2) Initial Calibration (ICAL)

The instrument must be calibrated with a minimum of five calibration standards for each target analyte at concentrations that span the working range of the method.

The laboratory routinely analyzes 8 standards at the recommended concentrations of 0.035, 0.20, 0.50, 5.0, 10.0, 15.0, 20 and 40 ppbv, except for Ethanol. For Ethanol, a 6-point curve is analyzed at the following concentrations: 5, 10, 15, 20, 40, and 100 ppbv.

Note: *These are nominal concentrations, dependent on parent can stock concentrations. The nominal 0.035 ppbv concentration is prepared to ensure the actual low calibration standard is below the reporting limit (RL).*

Even though eight calibration standards are routinely analyzed not every calibration standard is used for each analyte. Each analyte has been assigned to an analyte group that includes a calibration range of at least five standards. The analyte group associations for each target analyte are provided in Tables in the appendix. The calibration range for each analyte group is as follows:

- Group A: This analyte group is associated with a seven-point calibration curve. The calibration range is 0.20 to 40 ppbv with the 0.035 ppbv standard excluded. The limit of quantitation (LOQ) for this group of analytes is 0.20 ppbv

- Group B: This analyte group is associated with a six-point calibration curve. The calibration range is 0.50 to 40 ppbv with the 0.04 and 0.20ppbv standards excluded. The limit of quantitation (LOQ) for this group of analytes is 0.50 ppbv.

- Group C: This analyte group is associated with a five-point calibration curve. The calibration range is 5.0 to 40 ppbv with the 0.04, 0.20, and 0.50ppbv standards excluded. The limit of quantitation (LOQ) for this group of analytes is 5.0 ppbv.

- Group D: This analyte group is an eight-point calibration curve. The calibration range is 0.035 to 40 ppbv. The limit of quantitation (LOQ) for this group of analytes is 0.035 ppbv.

- Group E: (Ethanol): This analyte has a six-point calibration curve. The calibration range is 5 to 100 ppbv. The limit of quantitation (LOQ) for this analyte is 5 ppbv.

Prepare the calibration standards using the formulations provided in Appendix B.

Analyze the standards in a sequence from lowest to highest concentration using the instructions provided in the Sample Analysis section.

10.2.2.1) Initial Calibration Acceptance Criteria

The data processing system calculates a relative response factor (RRF), for each analyte and isomer pair using the assigned internal standard. The internal standard associations for each target analyte are provided in tables in the Appendix. The data processing system also calculates a mean relative response factor, relative standard deviation (RSD), relative retention time (RRT) and the mean RRT.

The following criteria must be met for a calibration to be considered acceptable:

- The RSD for each target analyte must be <30% with at most 2 exceptions up to a limit of 40%. If linear regression is used the R2 must be greater than 0.996

- The area response for the primary quantitation ion for the internal standard for each ICAL standard must be within 40% of the mean area response over the calibration range for each internal standard.

    - The RRT for each target compound at each calibration level must be within 0.06 RRT units of the mean RRT for the compound. The retention time shift for each of the internal standards at each calibration level must be within 20 seconds of the mean retention time over the initial calibration range for each internal standard.

If these criteria are not met inspect the system for problems and perform corrective action. See the corrective action section and the QC Summary Table in the appendix for guidance.

Whichever calibration model is selected, it must be subjected to an additional check to establish the representativeness of the data that were used to produce it. This check is the refitting of each calibration point response back to the calibration model, or the comparison of the calculated amount of the standard against the expected amount.

Calculate the concentration of each calibration standard from the final calibration curve. Calculate the %Error for each point. All points must have an absolute %Error of < 30%, except the low point % Error must be < 50%.

If these conditions are not met, perform corrective action and recalibrate the instrument.

The laboratory CHROM software provides an Initial Calibration %Drift report which shows the % Error for each calibration point. This report must be reviewed in addition to the %RSD / Linear Response Factor.
%Error is the absolute value of the difference between the calculated concentration and the true concentration divided by the true concentration x100%.

- For example, if the 0.20mg/L standard reads back as 0.17mg/L:
  $[(0.20 - 0.17)/0.20] \times 100\% = 15\%$

Repeat initial calibration whenever instrument operating conditions are changed, a new column is installed, when significant instrument maintenance has been performed, and when the result of the CCV indicate the calibration is no longer valid.

10.2.3) Second Source Calibration Verification (ICV)

Immediately following an acceptable initial calibration verify the accuracy of the calibration by the analysis of the second source calibration verification standard (ICV).

Prepare the ICV following the formulation provided in the Appendix.

Analyze the ICV following the instructions provided in Sample Analysis section.

The percent recovery (%R) for each target analyte must be within 70-130%. If criteria are not met, perform corrective action. Recommended corrective actions are provided in QC Summary Table. If corrective action is not successful, remake your standards and recalibrate.

If after successful analysis of the ICV, time remains in the 24-hour analytical window, QC and field samples may be analyzed without analysis of a continuing calibration verification check standard. If time does not remain in the analytical window, a new analytical sequence must be initiated with a Tune Standard followed by daily calibration (CCV).

10.2.4) Continuing Calibration Verification (CCV)

Analyze the CCV immediately after the tune standard unless the analytical window includes ICAL, in which case, a CCV is not required.

Prepare the CCV standard using the formulation given in the Appendix. The recommended concentration of the CCV for each target analyte is 10.0 ppbv.

Analyze the CCV following the instructions provided in Sample Analysis section. The data system calculates a response factor for each analyte and calculates the percent difference (%D) of the RRF relative to the mean RRF in the most recent initial calibration.

- The %D for each target analyte must be within ±30%. If the above criteria are not met, repeat the analysis of the CCV once. If the second CCV meets criteria, continue with the analytical sequence. If it fails, evaluate the data to determine if one of the following conditions is met. If these conditions are not met corrective action must be taken. Guidance for troubleshooting is provided in the Troubleshooting and Corrective Action sections. After corrective action the analytical sequence may be continued only if two immediate, consecutive CCVs at different concentrations are within acceptance criteria. If these two CCVs do not meet the criteria, recalibration is required prior to further analysis.

- If the CCV criteria are exceeded high, indicating a high bias, and the associated samples have non-detects for those analytes, the analytical data may be considered usable. In the absence of instructions otherwise, proceed with analysis.

- If the CCV criteria are exceeded low, indicating a low bias, analytical results may be reported if those results exceed the project's regulatory decision level. In other words, if the analytical results are sufficiently high to counter the low bias, results may be reported. Consult with the project manager to determine if the exception is allowable for each project.

10.2.5) Troubleshooting

Check the following items in case of calibration failures:

- Loss of sensitivity or unstable ISTD recoveries are usually the result of a leak. Check the union between the GC column and Entech transfer line.
- Loss of sensitivity for individual compounds may be a result of either an active site in a transfer line or a bad trap. Troubleshoot and perform maintenance as necessary.
- Poor chromatography usually requires GC column maintenance, perform as necessary.
- Carryover is usually caused by excessive amounts of analyte introduced to the system. Analyze blanks until the system is cleaned or replace the traps and transfer lines if necessary.

10.3) Sample Preparation

10.3.1) Post Sampling Canister Pressure Check Procedure

The post-sampling canister pressure check is performed at the time of sample login by sample management staff so that any problems found are quickly identified and communicated to the client.

Refer to the current version of *SOP49959 Sample Management* for the procedure to take and record the post sampling canister pressure check.

10.3.2) Sample Screening

At the laboratory's discretion unknown samples may be screened prior to initial analysis to determine if the sample requires dilution. Unless otherwise requested by the client the laboratory does not provide screen data with the data package report even when primary dilutions are performed based on the results of the screen analysis.

To prepare a sample for screen analysis, connect the sample canister to the autosampler connected to screening instrument and analyze 20 mL of sample. Acquire and evaluate the results. If the results of screen analysis indicate that a target compound is above its upper range of calibration, calculate a recommended dilution factor (DF) by dividing the concentration of analyte found by 30. Record the recommended DF on the screen worksheet.

NOTE: *Samples are screened on a GC/MS instrument that is programmed with the operating conditions referenced in this SOP. The calibration is checked weekly with a single point calibration standard at a concentration of 10 ppbv for all target analytes. The calibration is checked more frequently when the results of instrument analysis do not correlate well with the results of the screen analysis.*

10.3.3) Sample Dilutions & Pressure Adjustment

Field samples should be diluted prior to initial analysis when the screen results indicate that the concentrations are above calibration range or when the laboratory has sufficient knowledge of the sample (history) to know that the sample will require dilution. Field samples must be reanalyzed at a dilution when the concentration of target compounds in initial analysis exceed of the upper range of calibration.

When the return negative pressure of a canister is greater than -10” Hg, make-up gas may be added to provide sufficient volume of make-up gas in order to have an adequate sample volume for analysis. The addition of make-up gas is considered a canister dilution. Some concentrators are able to pull full sample volume even if the residual vacuum is lower than -10” Hg so make-up air may not be necessary.

For samples analyzed for constituent groups (e.g., TVOC as Toluene), ranges, and or unresolved complex mixtures (Total Hydrocarbons), samples must be diluted such that the maximum peak height of any sample constituent under consideration does not exceed the equivalent peak height generated by highest calibration level standard. For evaluation it may be useful to graphically overlay sample chromatograms with that of the high point calibration standard.
To dilute the sample:

1) Attach the sample canister to the nitrogen gas line equipped with a pressure gauge that reads negative pressure in (“Hg) and positive pressure in (psig).

2) Ensure the valve of the nitrogen gas line is closed then open the valve of the sample canister. Record the negative pressure reading in the Canister Dilution Worksheet or on the canister’s tag.

3) Slowly open the valve of the nitrogen gas line and fill the canister until canister pressure gauge reads -10” Hg. Do not open the valve to such an extent that the nitrogen gas line pressure drops below 15 psig and do not allow the nitrogen gas line to reach equilibrium otherwise you will contaminate the nitrogen gas line.

4) When the desired pressure is achieved, close the canister valve and the valve on the nitrogen gas line; wait 15 seconds. The pressure should not exceed 40 psig.

5) Open the canister valve and record the final pressure reading in psig.

6) Close the canister valve and remove the valve from the zero air-line.

7) Record the initial and final pressure readings in the TALS canister dilution tracking module. If the final pressure is below ambient, the pressure will be in “Hg. Be sure to change the units in the TALS dilution tracking module.

When the return pressure of a canister is positive, the pressure must be adjusted to near ambient (0” Hg) prior to analysis. To adjust the pressure to ambient, vent the canister to ambient in a fume hood by opening the canister value for ~4-5 seconds, close the valve. For higher pressure canisters, open the valve and listen for a release of air then close the valve when the sound recedes.

If a trip blank is provided under vacuum, pressurize the trip blank canister to 10 psig. The pressurization of the trip blank is not considered a dilution.

10.3.4) QC Sample Preparation

To prepare the method blank (MB): Fill a clean canister that has never been used to collect environmental samples and has never left the laboratory to 20 psig with nitrogen gas. Continue to use this canister as the MB until the pressure of the canister reaches 0 psig, at which time, recharge with nitrogen gas to 20 psig and reuse.

To prepare the LCS: Follow the instructions provided in the Appendix for preparation of the working ICV/LCS standard. If an LCSD is requested, analyze the LCSD from the same canister as the LCS, unless client makes a specific request for an independent LCSD can.

10.4) Sample Analysis

10.4.1) Instrument Operating Conditions

Optimize the GC and MS conditions for compound separation and sensitivity.

The recommended operating conditions are as follows:

Thermal Desorb:	Initial Trap #1 Temperature: -110ºC. Desorb Temperature from Trap #1 to #2: 0 ºC. Total Volume Transfer by Mass Flow Controller: 40 mL Initial Trap #2 Temperature: -15 ºC Desorb Temperature from Trap #2 to #3: 200ºC. Transfer time 3.5 minutes Initial Trap #3 Temperature: -165 ºC Injection Trap #3 Temperature: 70ºC Injection Time: 1.5 minutes Trap #3 Temperature after Injection: -165 ºC
Carrier Gas:	Helium, Ultra High Purity
Cryogenic Focusing Gas:	Liquid Nitrogen
Flow Rate:	~1.5 mL/min
Temperature Program:	Initial Temperature: 40ºC Initial Hold Time: 4 minutes Ramp1 Rate: 20ºC/min. to 200ºC. Ramp 2 Rate: 40ºC/min. to 220ºC Final Temperature: 220ºC Final Hold Time: 6.5 minutes
Electron Energy:	70 electron volts
Mass Range:	35-265 amu
Scan Time:	≥1 scan per second.

These operating conditions may be changed but once the operating conditions are established for initial calibration the same conditions must be used until a new calibration is performed.

The mass spec tune profile may be changed to optimize the BFB tune analysis but once set, it cannot be changed until another BFB tune is analyzed.

10.4.2) Daily Instrument Maintenance

Prior to analysis initiate the flushing sequence using the Entech software. Then initiate the bake program using the Entech software.

10.4.3) Bi-Weekly Instrument Maintenance

At a minimum frequency of once every two weeks, perform an autosampler leak check. Cap all autosampler ports and initiate the leak check program using the Entech software. Record this check in the instrument maintenance log.

10.4.4) Analytical Sequence

All Calibration Standards, batch QA and field samples, except for the BFB analysis, have 20mls of the Mixed Gas Stock Standard added in conjunction with any other additions. This addition adds the internal standards and surrogates.

An example analytical sequence that includes initial calibration (ICAL) is provided below. When ICAL is not performed, the sequence begins with the tune standard and is followed by the CCV, LCS, LCSD, and method blank. If sufficient time remains in the 24 hours analytical window after initial calibration, QC and field samples may be analyzed without the CCV and the ICV will serve as the LCS for the sequence. The MB, LCS and LSCD must be analyzed at a frequency of every 20 samples or with each analytical sequence whichever is more frequent.

1. Tune Standard (BFB)
2. ICAL
3. ICV
4. CCV
5. LCS (repeat every 20 samples)
6. LCSD (when requested)
7. MB (repeat every 20 samples)
8. Field Samples (including trip blanks)

Attach the canisters to the autosampler inlet in the order of the analytical sequence then initiate the analytical sequence. The autosampler introduces 200 mL of sample volume from each canister to the instrument system and adds 20 mL of the mixed gas

standard to each sample.

Acquire the data and evaluate the results to confirm qualitative identification and quantification.

10.5) Corrective Action

An out-of-control situation may occur that is not adequately addressed in the corrective action table or troubleshooting section. The analyst must use their best analytical judgment and available resources to determine the corrective action to be taken. The analyst should seek the assistance of their immediate supervisor, QA manager or other experienced staff if they are uncertain of the cause of the out-of-control situation.

The analysis must not be resumed until the source of the problem and an in-control status is re-established. All samples associated with the out-of-control situation must be reanalyzed after in-control status has been re-established.

If authorization is received from the Supervisor or QA Manager for release with data qualification, a Non-Conformance Memo (NCM) must be created to notify the project manager, who then notifies the client of the out-of-control situation. Also, the situation may be significant enough that the Supervisor or QA Manager would create a Corrective Action Report (CAR). Refer to the *SOP49967 Nonconformance and Corrective Action Procedures* for further guidance.

11) Calculations/Data Reduction

11.1) Qualitative Identification

The data processing system tentatively identifies target analytes by comparing the retention time of the peaks to the window set around the continuing calibration standard, and searches in that area for the primary ion and up to two secondary ions characteristic of the target analyte.

All tentative identifications made by the computer are reviewed and either accepted or rejected by the primary analyst. The identification made by the system is accepted when the following criteria are met:

- The target analyte is identified by comparison of its background subtracted mass spectrum to a reference spectrum in the NIST14 database. In general, all ions that are present above 10% relative abundance in the mass spectrum of the standard should be present in the mass spectrum of the sample component and their relative abundances should agree within 20%. For example, if an ion has a relative abundance of 30% in the standard spectrum, its abundance in the sample spectrum should be in the range of 10-50%. Some ions, particularly the molecular ion, are of special importance if a tentative identification is to be made and should be evaluated even if they are below 10% relative abundance.
- The GC retention time for the target analyte should be within 0.06 RRT units of the daily standard.

Identification requires expert judgment when sample components are not resolved chromatographically and produce mass spectra containing ions contributed by more than one analyte. When GC peaks obviously represent more than one sample component (i.e., broadened peak with shoulder(s) or valley between two or more maxima), appropriate analyte spectra and background spectra can be selected by examining plots of characteristic ions for tentatively identified components.

When analytes coelute (i.e., only one GC peak is apparent), the identification criteria can be met but each analyte spectrum will contain extraneous ions contributed by the coeluting compound. If the data system does not properly integrate a peak, perform manual integration. All manual integration must be performed and documented in accordance with corporate *SOP43862 Manual Integrations*.

11.2) Quantification of Target Analytes

After a compound has been identified, the data system quantifies the on-column concentration of the target compound based on the integrated abundance of the characteristic ion from the EICP. If there is matrix interference with the primary ion, a secondary ion may be used for quantification by calculating a mean RF factor for that ion and using that ion to quantify the analyte in the sample. When secondary ion calculations are required, include this information in the non-conformance report and project narrative.

Samples analyzed for constituent groups, ranges, and or unresolved complex mixtures are quantified as follows;

11.2.1) TVOC as Toluene

An internal standard type of quantification response factor is generated using the RIC peak response measured for Toluene and its associated internal standard (as detailed in the calculation section). That response factor is used to quantify all RIC chromatographic sample response with the exception of those peak responses associated with internal standards. The results are reported as 'TVOC (as Toluene)'.

Retention Time Range: Propene to Naphthalene

11.2.2) GRO as Octane

An internal standard type of quantification response factor is generated using the RIC peak response measured for Octane and its associated internal standard (as detailed in the calculation section). That response factor is used to quantify all RIC chromatographic sample response with the exception of those peak responses associated with internal standards that eluted within the retention time range as defined by the elution of 2-Methyl-Butane through Decane (C5-C10). The results are reported as 'GRO (as Octane).

Retention Time Range: 2-Methyl-Butane to n-Decane

11.2.3) Unresolved Complex mixtures

An internal standard type of quantification response factor is generated using the RIC peak response measured for the un-resolved complex mixture (i.e. the gasoline envelope) and its associated internal standard (as detailed in the calculation section). That response factor is used to quantify all similarly chromatographing RIC sample response with the exception of those peak responses associated with internal standards. The results are reported using the name of the unresolved complex mixture used in the calibration (e.g. Total Hydrocarbons).

Retention Time Range: Propene to Naphthalene

Final results are calculated in TALS

11.3) Calculations

Analytical results are calculated as follows:

Dilution Factor

DF = (V2/V1) x (V4/V3)

Where:
V1 = Pre-Dilution Canister Volume
V2 = Post-Dilution Canister Volume
V4 = Base Sample Amount (200 mL)

Relative Response Factor (RRF)

RRF = (Ax)(Cis)/(Ais)(Cx)

Where:
Ax = Area of the quantitation ion of the analyte
Ais = Area of the quantitation ion of the internal standard
Cx = Concentration of analyte in concentration units (ppbv)
Cis = Concentration of internal standard in concentration units (ppbv)

Sample Concentration

Cx = [(Ax)(Cis)/(Ais)(Mean RRF)] x (DF)

Where:
Cx = Compound concentration (ppbv)
Cis = Concentration of associated internal standard (ppbv)
Ais = Area of quantitation ion for associated internal standard
Ax = Area of quantitation ion for compound
DF = Dilution Factor
Mean RRF = Average Relative Response Factor from initial calibration.

Unit Conversion from ppbv to ugm3

Analytical Result(ug/m3) = Result(ppbv) x (MW/24.45)

Where:
MW = molecular Weight

Example:
Benzene Result = 56 ppbv
Benzene mw = 78.108

Analytical Result(ug/m3) = 56ppbv x (78.108/24.45)

Result(ug/m3) = 178.9 ug/m3 reported as 180 ug/m3

Percent Recovery (%R)

%R = (Cs/Cn) x 100

Where:
Cs = Concentration of the spiked sample (ppbv)
Cn = Nominal concentration of spike added (ppbv)

Precision (%RPD)

%RPD = [(|C1-C2|)/((C1+C2)/2) x 100

Where:
C1 = Measured concentration of the first sample aliquot
C2 = Measured concentration of the second sample aliquot

Formula of Standard Addition:

Volume (mL) = (FR x T) + 25 mL

Where:
FR = flow rate in mL/min
T= time in minutes

Example:
FR = 70ml/min
Time = 10.69 minutes
Volume = 25+ (70 x 10.69) = 773 mL

Total Volume of diluted standard

Volume (mL) = CV x P

Where:
CV = canister volume in mL
P = pressure in Bar (14.7psi per Bar)

Example:
CV = 6185 mL
P= 2.5 Bar
Volume = 15462 mL

11.4) Data Review

11.4.1) Primary Review (Performed by Primary Analyst)

Upload the data files to TALS. Enter batch editor information and add the standards and reagents to the TALS batch. Review the results against acceptance criteria. If acceptance criteria are not met, make arrangements to perform corrective action.

Check the results of samples analyzed immediately after high concentration samples for signs of carry-over. Reanalyze the sample if carry over is suspected.

Dilute and reanalyze samples whose results exceed the calibration range. The diluted analysis should result in a determination within the upper half of the calibration curve.

If samples are run at dilution, there should be a target peak that is at least 20% of the calibrated range but preferably in the upper half of the range or there should be an abundance of TICs which preclude a more concentrated analysis, or the sample should show matrix effects which preclude a more concentrated analysis. If a sample is diluted due to TICs or matrix, an NCM should be written explaining the reason for dilution.

Set results to primary, secondary, acceptable or rejected as appropriate.

Verify corrective action was taken for all results not within acceptance criteria. If corrective action is not taken or was unsuccessful, record all instances where criteria are not met with a nonconformance memo (NCM). Be sure to provide

explanation of your decision making in the internal comment section of the NCM. The internal comment section should list the reason the NCM is suspected, which action (if any) was taken and why, and the outcome of the action taken. Refer to the *SOP49967 Nonconformance and Corrective Action Procedures* for further guidance.

Review project documents such as the Project Plan (PP), Project Memo or any other document/process used to communicate project requirements to ensure those project requirements were met. If project requirements were not met, immediately notify the project manager (PM) to determine an appropriate course of action.

Review that QC links have been properly made and run the data review checker (DRC) and address any anomalies.

Set the batch to 1st level review and record your review on the data review checklist.

11.4.2) Secondary Review (Performed by Peer Reviewer)

Review the project documents such as the Project Plan (PP), Project Memo or any other document/process used to communicate project requirements and verify project requirements were met. If project requirements were not met, immediately notify the project manager (PM) to determine an appropriate course of action.

Review records (these records include but are not limited to the Pre-Shipment Clean Canister Certification Report, Flow Controller Set Flow Rate and Leak Check Record, Field Test Data Sheets, and the Air Canister Return Pressure Check Record) associated with release and return of air sampling equipment to ensure all anomalies are properly recorded. Compare any problems noted in these documents with the analytical results and record any findings in the narrative note program or otherwise communicate your findings to the PM for inclusion in the project narrative.

Review the TALS batch editor to verify information is complete. Review the batch to verify that the procedures in this SOP were followed. If discrepancy is found, resolve the discrepancy and verify any modifications to the SOP were approved and properly documented.

Spot-check 15% of samples in the batch to verify quantitative and qualitative identification. If the samples are being analyzed under DoD methods 100% of data must be checked during secondary review.

If manual integrations were performed:

- Review all integrations to verify that the integration meets the requirements for manual integration as specified in corporate SOP CA-Q-S-002. If an error is suspected or found, consult with the analyst that performed the integration and request correction or notify the Department Manager or QA Manager. Do not "fix" the integration. Reintegration by a secondary data reviewer must not be performed except in limited circumstances as approved by the department supervisor or other laboratory management. If those instances where the secondary reviewer performs the integration, this person is now considered the primary analyst and each integration performed by the secondary reviewer must be subsequently reviewed by a peer analyst or the department supervisor to verify the integration is consistent and compliant with the requirements specified in corporate SOP CA-Q-S-002.
- Check to ensure an appropriate technical reason code is provided for all manual integrations.

Verify that the performance criteria for the QC items listed in TO15 QC Summary & Recommended Corrective Action table in Appendix were met. If the results do not fall within the established limits, verify that corrective actions were performed. If corrective action was not performed; verify the reason is provided and that the situation is properly documented with an NCM. Set samples to 2nd level review. Record second level review on the data review checklist.

Run and review the deliverable. Fix any problems found. When complete set the method chain to lab complete and forward any paperwork to report/project management.

11.5) TO15 Poor Performing Analytes

NOTE: *Statistically derived limits will be no wider than 50-150%R for poor performing compounds.*

Compounds with a high boiling point which is beyond the range of typical gas compounds.

- Dodecane
- 1,2,4-Trichlorobenzene
- Hexachlorobutadiene
- Naphthalene
- 1,2,3-Trichlorobenzene

The following compounds change how they act on the traps depending on the humidity of the standard.

- 3-chloro-1-propene
- Bromoform

The following compounds are very polar and are linked to the water in the standard. Since we remove most of the water during the trapping process, a little change can produce a big result. For example removing 95% of the water instead of 94% of the water will have a negligible affect on non-polar compounds, but a 20% difference for polar compounds.

- Ethanol (made from neat material and is not part of the standard TO-15 calibration gas mix due to high reactivity
- Ethyl ether
- Acrolein
- Acetone
- Isopropyl alcohol
- 2-butanone
- Tetrahydrofuran
- 2-hexanone

11.6) Data Reporting

Report analytical results above the reporting limit (RL) as the value found. Report analytical results less than the RL, to the adjusted RL with a "U" data qualifier. If the data is to be reported to the method detection limit (MDL) the analytical results between the RL and the MDL are reported with an "estimated" footnote. Adjust the RL and MDL for sample dilution/concentration. The unadjusted RL for each target analyte is provided in Routine Compound List and TO-3 Analyte List tables. For Method TO3 the laboratory does not report values below the reporting limit.

Data reporting and creation of the data deliverable is performed by TALS using the formatters set by the project manager during project initiation.

Electronic and hardcopy data are maintained as described in laboratory *SOP49966 Management, Retention Storage and Archive of Data Records*.

12) Method Performance

12.1) Method Detection Limit Study (MDL)

Perform a method detection limit (MDL) study at initial method set-up following the procedures specified in laboratory SOP BR-QA-005,

12.2) Training Requirements and Demonstration of Capabilities

The Group Leader is responsible for ensuring that this procedure is performed by an associate who has been properly trained in its use and has the required experience. The Group Leader is also responsible for the documentation of this training.

All personnel are required to perform an initial demonstration of proficiency (IDOC) on the portion of the method they will be performing prior to working independently. Annually thereafter, the analyst must document continuing demonstration of capability (CDOC). See requirements for demonstration of analyst proficiency in *SOP52264 Employee Training and Analyst Demonstration of Proficiency*.

13) Pollution Control

It is Eurofins Burlington's policy to evaluate each method and look for opportunities to minimize waste generated (i.e., examine recycling options, ordering chemicals based on quantity needed, preparation of reagents based on anticipated usage and reagent stability). Employees must abide by the policies in NDSC-USEHS-*QP46060 NDSC HSE Manual*.

14) Waste Management

Waste management practices are conducted consistent with all applicable rules and regulations. Excess reagents, samples and method process wastes are disposed of in an accepted manner. Waste description rules and land disposal restrictions are followed. Waste disposal procedures are incorporated by reference to *SOP47863 Tracking and Collecting of Hazardous Waste* and *SOP48269 Procedure for Acceptance and Handling of USDA Regulated Domestic and Foreign Soil*.

The following waste streams are produced when this method is carried out:

- None

15) Method Modifications

- This SOP utilizes and alternative detector (mass spectrometer) vs that of a FID and/or ECD as listed in the published method. (TO3)

- This SOP describes a method where an aliquot of a whole air sample collected in a passivated stainless-steel canister is cryogenically trapped and concentrated prior to injection into the MS detector equipped GC. (TO3)
- This Method SOP utilizes an RTX-624 capillary column (60M x 0.32 mm ID x 0.18um). (TO3, TO15)
- Additional quality control aspects are employed in the use of this method based on the alternative detector type, specifically, the detector tune is verified at the beginning of each period of analysis prior to the acquisition on any standard, blank, QC sample or field sample. (TO3)
- This Method SOP does not utilize sub ambient column oven temperature programming. (TO3, TO15)
- Sample traps consist of a multi bed system employing Tenax and glass beads (see manufactures system description: Entech Model 7100 Sample Pre-Concentrator). (TO15)
- Sampling apparatus consists of passivated stainless-steel canister specifically design for the collection of ambient air samples for volatile analysis (TO3)
- Nafion dryers are not used. The analytical pre-concentration system employs a moisture control system consisting of multi sorbent bed traps. (TO15)
- System calibration is verified every 24 hours within which samples are analyzed. System linearity is not verified every 4-6 hours as described. (TO3)
- Published Method requires weekly multi-point calibration be performed. Laboratory performs multi-point calibrations as necessary see section 10.2 (TO3)
- System linearity is determined through multi point calibration utilizing average response factors and internal standard technique quantification (see Section 10).(TO3)
- This SOP is applied to more than just the ambient air listed as a matrix by the method (TO15)

16) Appendices

16.1) Routine Compound List, Reporting Limit, Internal Standard and Ion Assignments

Analyte	CAS #	6L RL (ppbv)	1L RL (ppbv)	Quantifier Mass	Qualifier Mass	Qualifier Mass	ISTD Group	Analyte Group
Dichlorodifluoromethane	75-71-8	0.5	5	85	87		1	B
Chlorodifluoromethane	75-45-6	0.5	5	51	67	69	1	B
1,2-Dichlorotetrafluoroethane	76-14-2	0.2	2	85	135	87	1	A
Chloromethane	74-87-3	0.5	5	50	52		1	B
n-Butane	106-97-8	0.5	5	43	41	58	1	B
Vinyl Chloride	75-01-4	0.035	0.35	62	64		1	D
1,3-Butadiene	106-99-0	0.035	0.35	54			1	D
Bromomethane	74-83-9	0.2	2	94	96		1	A
Chloroethane	75-00-3	0.5	5	64	66		1	B
Isopentane	78-78-4	0.2	2	43	57	56	1	A
Bromoethene (Vinyl Bromide)	593-60-2	0.2	2	106	108	81	1	A
Trichlorofluoromethane	75-69-4	0.2	2	101	103		1	A
Pentane	109-66-0	0.5	5	43	57	56	1	B
EthylEther	60-29-7	0.2	2	59	45	74	1	A
Acrolein	107-02-8	5	50	56	55	37	1	C
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.2	2	101	151	103	1	A
1,1-Dichloroethene	75-35-4	0.035	0.35	96	161	63	1	A
Acetone	67-64-1	5	50	43	58		1	C
Isopropyl Alcohol	67-63-0	5	50	45	43		1	C
Carbon Disulfide	75-15-0	0.5	5	76			1	B
3-Chloropropene (Allyl Chloride)	107-05-1	0.5	5	41	76		1	B
Acetonitrile	75-05-8	5	50	41	40	39	1	C
Methylene Chloride	75-09-2	0.5	5	49	84	86	1	B
tert-Butyl Alcohol	75-65-0	5	50	59	41	43	1	C
Methyl tert-Butyl Ether	1634-04-4	0.5	5	73	43		1	B
trans-1,2-Dichloroethene	156-60-5	0.2	2	61	96		1	A
n-Hexane	110-54-3	0.2	2	57	86		1	B
1,1-Dichloroethane	75-34-3	0.035	0.35	63	65	83	1	A
Methyl Ethyl Ketone	78-93-3	0.5	5	72	43		1	B
cis-1,2-Dichloroethene	156-59-2	0.035	0.35	96	98	83	1	A
Tetrahydrofuran	109-99-9	5	50	42	72		2	C
Chloroform	67-66-3	0.2	2	83	85		1	A

1,1,1-Trichloroethane	71-55-6	0.2	2	97	99	61	2	A
Cyclohexane	110-82-7	0.2	2	84	56		2	A
Carbon Tetrachloride	56-23-5	0.035	0.35	117	119		2	D
2,2,4-Trimethylpentane	540-84-1	0.2	2	57	41	43	2	A
1,2-Dichloroethene (total)	540-59-0	0.2	2	61	96		1	A
Benzene	71-43-2	0.2	2	78	77		2	A
1,2-Dichloroethane	107-06-2	0.2	2	62	98		2	A
n-Heptane	142-82-5	0.2	2	43	71		2	A
Trichloroethene	79-01-6	0.035	0.35	95	130	132	2	D
Methyl Methacrylate	80-62-6	0.5	56	69	41	39	2	B
1,2-Dichloropropane	78-87-5	0.2	2	63	41		2	A
1,4-Dioxane	123-91-1	5	50	88	58		2	C
Dibromomethane	74-95-3	0.2	2	174	93	172	2	A
Bromodichloromethane	75-27-4	0.2	2	83	85		2	A
cis-1,3-Dichloropropene	10061-01-5	0.2	2	75	110		2	A
Methyl Isobutyl Ketone	108-10-1	0.5	5	43	58		2	B
n-Octane	111-65-9	0.2	2	43	57	114	2	A
Toluene	108-88-3	0.2	2	92	91		3	A
trans-1,3-Dichloropropene	10061-02-6	0.2	2	75	110		2	A
1,1,2-Trichloroethane	79-00-5	0.2	2	83	97	85	3	A
Tetrachloroethene	127-18-4	0.035	0.35	166	168	129	3	D
Methyl Butyl Ketone	591-78-6	0.5	5	43	58		3	B
Dibromochloromethane	124-48-1	0.2	2	129	127		3	A
1,2-Dibromoethane	106-93-4	0.2	2	107	109		3	A
Nonane	111-84-2	0.2	2	57	71	128	3	A
Chlorobenzene	108-90-7	0.2	2	112	77	114	3	A
Ethylbenzene	100-41-4	0.2	2	91	106		3	A
Xylene (m,p)	1330-20-7	0.5	5	106	91		3	A
Xylene (o)	95-47-6	0.2	2	106	91		3	A
Styrene	100-42-5	0.2	2	104	78		3	A
Bromoform	75-25-2	0.2	2	173	175	171	3	A
Cumene	98-82-8	0.2	2	105	120	77	3	A
1,1,2,2-Tetrachloroethane	79-34-5	0.2	2	83	131	85	3	A
Xylene (total)	1330-20-7	0.2	2	106	91		3	A
n-Decane	124-18-5	0.5	5	57	71	142	3	B
n-Propylbenzene	103-65-1	0.2	2	91	120	92	3	A
1,2,3-Trichoropropane	96-18-4	0.5	5	75	110	112	3	B
4-Ethyltoluene	622-96-8	0.2	2	105	120		3	A
1,3,5-Trimethylbenzene	108-67-8	0.2	2	105	120		3	A
2-Chlorotoluene	95-49-8	0.2	2	91	63		3	A
tert-Butylbenzene	98-06-6	0.2	2	119	91	134	3	A
1,2,4-Trimethylbenzene	95-63-6	0.2	2	105	120		3	A
sec-Butylbenzene	135-98-8	0.2	2	105	134	91	3	A
4-Isopropyltoluene	99-87-6	0.2	2	119	134	91	3	A
1,3-Dichlorobenzene	541-73-1	0.2	2	146	111	148	3	A
1,4-Dichlorobenzene	106-46-7	0.2	2	146	111	148	3	A
n-Undecane	1120-21-4	5	50	57	71	156	3	C
Benzyl Chloride	100-44-7	0.2	2	91	126	65	3	A
n-Butylbenzene	104-51-8	0.2	2	91	134	92	3	A
1,2-Dichlorobenzene	95-50-1	0.2	2	146	111	148	3	A
n-Dodecane	112-40-3	5	50	57	71	170	3	C
1,2,4-Trichlorobenzene	120-82-1	0.5	5	180	182		3	B
1,3-Hexachlorobutadiene	87-68-3	0.2	2	225	223		3	A
Naphthalene	91-20-3	0.5	5	128			3	B
1,2,3-Trichlorobenzene	87-61-6	0.2	2	180	182	145	3	A
Propylene	115-07-1	5	50	41	42	39	1	C

Vinyl Acetate	108-05-4	5	50	43	86		1	C
Ethyl Acetate	141-78-6	5	50	43	74		1	C
Ethanol	64-17-5	5	50	46	45		1	E
Bromochloromethane	74-97-5	NA	NA	128	49	130	1	NA
1,4-Difluorobenzene	540-36-3	NA	NA	114			2	NA
Chlorobenzene-d5	3114-55-4	NA	NA	117			3	NA

16.2) TO-3 Analyte List, Reporting Limit, Internal Standard and Ion Assignments

Analyte	CAS No.	RL (ppbv)	Qualifier Ion	Qualifier Ion	Qualifier Ion	ISTD Group
n-Octane	111-65-9	0.2	43	57	114	2
Toluene	108-88-3	0.2	92	91		3
TVOC as Toluene	NA	11				NA
GRO as Octane	NA	14				NA
Total Hydrocarbons	NA	76 ug/m3				NA
Internal Standards						
Bromochloromethane	74-97-5	NA	128	49	130	1
1,4-Difluorobenzene	540-36-3	NA	114			2
Chlorobenzene-d5	3114-55-4	NA	117			3

16.3) Tune Standard Criteria

Mass	Ion Abundance Criteria
50	8.0 to 40.0 percent of mass 95
75	30.0 to 66.0 percent of mass 95
95	Base Peak, 100 percent relative abundance
96	5.0 to 9.0 percent of mass 95
173	Less than 2.0 percent of mass 174
174	50.0 to 120.0 percent of mass 95
175	4.0 to 9.0 percent of mass 174
176	93.0 to 101.0 percent of mass 174
177	5.0 to 9.0 percent of mass 176

16.4) QC Summary & Recommended Corrective Action (Routine and DoD)

QC Check	Frequency	Acceptance Criteria	Recommended Corrective Action
Tune Standard	Prior to calibration and every 24 hours	See Tune Standard Criteria table	Correct Problem. Reanalyze. No samples may be analyzed without a valid tune.
Initial Calibration	Prior to sample analysis and when CCV fails	RSD for each analyte ≤ 30% with 2 exceptions up to 40% (if allowed). Individual Calibration points: < 30% Error, except < 50% for the lowest calibration point	Correct problem and repeat calibration

RRT	With each calibration	RRT of each target analyte in each calibration standard within ± 0.006 RRT units	Correct Problem. Repeat ICAL
ICV	Once after each ICAL	%R 70-130 for all analytes	Correct Problem. Reanalyze, re-make, re-verify & re-analyze. If that fails, re-make all standards and repeat calibration
CCV	Daily before sample analysis after tune standard	%Difference ≤ 30	Correct Problem. Reanalyze once. If that fails, see Section 10.3.9 for instruction.
LCS	Each batch or every 20 samples, whichever is sooner.	%Recovery 70-130%	Reanalyze LCS, re-prep and reanalyze LCS, and all associated samples if sufficient sample volume is available. If corrective action not successful, initiate nonconformance report and qualify sample results.
LCSD	Each batch or every 20 samples, only if there is no Sample Duplicate, or per client request	Relative Percent Difference (RPD) ≤ 25%	Reanalyze LCSD, re-prep and reanalyze LCS, LCSD and all associated samples if sufficient sample volume is available. If corrective action not successful, initiate nonconformance report and qualify sample results.
Method Blank	Each batch or every 20 samples, whichever is sooner.	< Reporting Limit	Reanalyze along with associated samples, unless detects for same compounds found in blank are greater than 10X the concentration found in the blank.
Internal Standards	All standards, field and QC samples	+/- 40% area response from last acceptable calibration. RT +/- 0.33 min (20 seconds) from last acceptable calibration.	Inspect system for malfunction. Reanalyze samples. Qualify data.
Sample Duplicate	Each batch or every 20 samples, if volume allows	Relative Percent Difference (RPD) ≤ 25%	Consult with PM. Reanalyze or qualify data.

16.5) In-house LCS limits

Analyte	CAS #	In-House Lower Limit (%R)	In-House Upper Limit (%R)	Relative Percent Difference (%)
Dichlorodifluoromethane	75-71-8	61	142	25
Chlorodifluoromethane	75-45-6	60	147	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	76-14-2	71	141	25
Chloromethane	74-87-3	56	141	25
n-Butane	106-97-8	53	151	25
Vinyl Chloride	75-01-4	61	135	25
1,3-Butadiene	106-99-0	58	139	25
Bromomethane	74-83-9	72	124	25
Chloroethane	75-00-3	68	130	25
Isopentane	78-78-4	56	150	25
Bromoethene (Vinyl Bromide)	593-60-2	75	125	25
Trichlorofluoromethane	75-69-4	70	129	25
Pentane	109-66-0	59	152	25
EthylEther	60-29-7	71	143	25
Acrolein	107-02-8	50*	150*	25
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	70	121	25
1,1-Dichloroethene	75-35-4	68	120	25
Acetone	67-64-1	54	154	25
Isopropyl Alcohol	67-63-0	53	142	25
Carbon Disulfide	75-15-0	71	138	25
3-Chloropropene (Allyl Chloride)	107-05-1	50*	150*	25

Acetonitrile	75-05-8	60	154	25
Methylene Chloride	75-09-2	59	137	25
tert-Butyl Alcohol	75-65-0	66	132	25
Methyl tert-Butyl Ether	1634-04-4	70	127	25
trans-1,2-Dichloroethene	156-60-5	69	137	25
n-Hexane	110-54-3	63	138	25
1,1-Dichloroethane	75-34-3	66	130	25
Methyl Ethyl Ketone	78-93-3	72	124	25
cis-1,2-Dichloroethene	156-59-2	72	121	25
Tetrahydrofuran	109-99-9	60	149	25
Chloroform	67-66-3	73	124	25
1,1,1-Trichloroethane	71-55-6	72	127	25
Cyclohexane	110-82-7	76	124	25
Carbon Tetrachloride	56-23-5	71	133	25
2,2,4-Trimethylpentane	540-84-1	68	131	25
1,2-Dichloroethene (total)	540-59-0	73	126	25
Benzene	71-43-2	73	119	25
1,2-Dichloroethane	107-06-2	68	135	25
n-Heptane	142-82-5	60	142	25
Trichloroethene	79-01-6	73	122	25
Methyl Methacrylate	80-62-6	73	129	25
1,2-Dichloropropane	78-87-5	69	128	25
1,4-Dioxane	123-91-1	66	129	25
Dibromomethane	74-95-3	68	126	25
Bromodichloromethane	75-27-4	75	127	25
cis-1,3-Dichloropropene	10061-01-5	74	125	25
Methyl Isobutyl Ketone	108-10-1	58	144	25
n-Octane	111-65-9	62	144	25
Toluene	108-88-3	75	122	25
trans-1,3-Dichloropropene	10061-02-6	74	128	25
1,1,2-Trichloroethane	79-00-5	75	126	25
Tetrachloroethene	127-18-4	70	125	25
Methyl Butyl Ketone	591-78-6	57	143	25
Dibromochloromethane	124-48-1	73	125	25
1,2-Dibromoethane	106-93-4	78	122	25
Nonane	111-84-2	70	131	25
Chlorobenzene	108-90-7	76	119	25
Ethylbenzene	100-41-4	74	122	25
Xylene (m,p)	1330-20-7	76	121	25
Xylene (o)	95-47-6	73	123	25
Styrene	100-42-5	74	125	25
Bromoform	75-25-2	53	149	25
Cumene	98-82-8	73	123	25
1,1,2,2-Tetrachloroethane	79-34-5	74	126	25
Xylene (total)	1330-20-7	75	122	25
n-Decane	124-18-5	68	134	25
n-Propylbenzene	103-65-1	73	127	25
1,2,3-Trichoropropane	96-18-4	71	125	25
4-Ethyltoluene	622-96-8	75	129	25
1,3,5-Trimethylbenzene	108-67-8	72	126	25
2-Chlorotoluene	95-49-8	74	126	25
tert-Butylbenzene	98-06-6	71	125	25
1,2,4-Trimethylbenzene	95-63-6	71	129	25
sec-Butylbenzene	135-98-8	70	128	25
4-Isopropyltoluene	99-87-6	68	130	25
1,3-Dichlorobenzene	541-73-1	69	131	25
1,4-Dichlorobenzene	106-46-7	67	132	25
n-Undecane	1120-21-4	62	136	25
Benzyl Chloride	100-44-7	60	136	25
n-Butylbenzene	104-51-8	65	137	25

1,2-Dichlorobenzene	95-50-1	68	129	25
n-Dodecane	112-40-3	50*	150*	25
1,2,4-Trichlorobenzene	120-82-1	50*	150*	25
1,3-Hexachlorobutadiene	87-68-3	58	130	25
Naphthalene	91-20-3	50*	150*	25
1,2,3-Trichlorobenzene	87-61-6	50*	150*	25
Propylene	115-07-1	50*	150*	25
Vinyl Acetate	108-05-4	59	149	25
Ethyl Acetate	141-78-6	70	131	25
Ethanol	64-17-5	50*	150*	25

*These are poor performing compounds. Limits for poor performing compounds will be no wider than 50-150%.
**The limits in this table are those in effect as of the published date of this SOP. These limits are based on historical data and are subject to change. Current in-house limits are populated in the LIMS database. Contact a laboratory representative for the most current set of limits. Limit Ref: 2019CCTO15

16.6) Appendix A: Terms and Definitions

Acceptance Criteria: Specified limits placed on characteristics of an item, process or service defined in requirement documents.
Accuracy: The degree of agreement between an observed value and an accepted reference value. Accuracy includes a combination of random error (precision) and systematic error (bias) components which are due to sampling and analytical operations; a data quality indicator.
Analyte: The specific chemicals or components for which a sample is analyzed. (EPA Risk Assessment Guide for Superfund, OSHA Glossary).
Batch: Environmental samples that are prepared and/or analyzed together with the same process, using the same lot(s) of reagents. A preparation/digestion batch is composed of one to 20 environmental samples of similar matrix, meeting the above criteria. An analytical batch is composed of prepared environmental samples (extracts, digestates and concentrates), which are analyzed together as a group.
Calibration: a set of operations that establish, under specified conditions, the relationship between values of quantities indicated by a measuring instrument or measuring system, or values represented by a material measure or a reference material and the corresponding values realized by the standards.
Calibration Curve: the graphical relationship between the known values or a series of calibration standards and their instrument response.
Calibration Standard: A substance or reference used to calibrate an instrument.
Continuing Calibration Verification (CCV): An analytical standard gas mixture containing all target analytes and internal standard compounds that is used to evaluate the performance of the instrument system with respect to a defined set of method criteria.
Corrective Action: the action taken to eliminate the cause of an existing nonconformity, defect or other undesirable occurrence in order to prevent recurrence.
Cryogen: A refrigerant used to obtain very low temperatures in the cryogenic trap of the analytical system. A typical cryogen is liquid nitrogen (bp -195.8°C) or liquid argon (bp -185.7°C).
Demonstration of Capability (DOC): procedure to establish the ability to generate acceptable accuracy and precision.
Holding Time: the maximum time that a sample may be held before preparation and/or analysis as promulgated by regulation or as specified in a test method.
Initial Calibration: Analysis of analytical standards for a series of different specified concentrations used to define the quantitative response, linearity and dynamic range of the instrument to target analytes.
Initial Calibration Verification (ICV): An analytical standard mixture containing all target analytes and internal standard compounds that are prepared from a source independent of the source of the initial calibration standards. The purpose of the ICV is to verify that the initial calibration is in control.
Intermediate Standard: a solution made from one or more stock standards at a concentration between the stock and working standard. Intermediate standards may be certified stock standard solutions purchased from a vendor and are also known as secondary standards.
Internal Standards (IS): Non-target analytes that are similar to the target analytes but are not expected to be found in environmental media (generally, isotopically labeled target analytes are used for this purpose). IS are added to every standard, quality control sample, and field sample at a known concentration prior to analysis. IS responses are used as the basis for quantitation of target analytes.
Laboratory Control Sample (LCS): A QC sample of known composition spiked with analytes of interest. The LCS evaluates method performance and ability to successfully recover target analytes from a clean matrix. LCS recovery is typically expressed as percent recovery and provides a measure of accuracy. A LCSD is a duplicate LCS prepared and analyzed from a separate canister to provide a measure of replicate precision.
Method Blank (MB): A canister of humidified ultra pure zero air that is treated exactly as a sample. The MBLK is used to determine if method analytes or other interferences are present in the laboratory environment, the reagents, or the apparatus.
Method Detection Limit (MDL): the minimum amount of a substance that can be measured with a specified degree of confidence that the amount is greater than zero using a specific measurement system. The MDL is a statistical estimation at a specified confidence interval of the concentration at which relative uncertainty is ±100%. The MDL represents a range where qualitative detection occurs. Quantitative results are not produced in this range.
Non-conformance: an indication, judgment, or state of not having met the requirements of the relevant specification, contract or regulation.

Precision: the degree to which a set of observations or measurements of the same property, obtained under similar conditions, conform to themselves.
Quality Control Sample (QC): a sample used to assess the performance of all or a portion of the measurement system.
Reporting Limit (RL): the level to which data is reported for a specific test method and/or sample.
Stock Gas Mixture: A Commercially purchased concentrated gas mixture containing one or more method analytes

16.7) Appendix B: Standard Preparation Tables

The standard formulations contained in this appendix are recommended and are subject to change. If the concentration or volume of any of the stock standard changes, the standard preparation instructions must be adjusted accordingly. See laboratory *SOP52272 Traceability, Handling, and Storage of Standards and Reagents* for further guidance on the preparation of standard solutions.

Prepare all standards using the McMillan Company 80SD mass flow controller. Prepare the standard in zero air, demonstrated to be analyte free. Store the standard at ambient temperature. Unless otherwise specified, assign an expiration date of 30 days from date of preparation unless the parent standard expires earlier, in which case, use the earliest expiration date.

Intermediate Calibration Standard

Parent Standard	Vendor	Stock Standard Concentration (ppmv)	Volume Added (mL)	Final Volume (L)	Final Concentration (ppbv)
Custom Calibration Stock Standard	Spectra Gases Custom Made	1.0	7500	37.5	200

Prepare in 15 L Summa Canister. Expiration Period 3months
This standard contains all the target analytes listed in the Routine Compound Table.

Working Calibration Standards

Parent Standard	Calibration Standard	Parent Standard Concentration (ppbv)	Volume Added (mL)	Final Volume (L)	Final Concentration (ppbv)
Cal Standard 20 ppbv	Cal Standard 0.2 ppbv	20	155	15.46	0.2
Cal Standard 20 ppbv	Cal Standard 0.5 ppbv	20	386	15.46	0.5
Intermediate Calibration Standard	Cal Standard 5 ppbv	200	386	15.46	5
Intermediate Calibration Standard	Cal Standard 10 ppbv	200	773	15.46	10
Intermediate Calibration Standard	Cal Standard 15 ppbv	200	1160	15.46	15
Intermediate Calibration Standard	Cal Standard 20 ppbv	200	1546	15.46	20
Intermediate Calibration Standard	Cal Standard 40 ppbv	200	3092	15.46	40

Prepare in 6 L Summa Canister Expiration Period 3 months
Each calibration standard contains all the analytes listed in the Routine Compound Table at the above concentrations.

Intermediate ICV/LCS Standard

Parent Standard	Vendor	Stock Standard Concentration (ppmv)	Volume Added (mL)	Final Volume (L)	Final Concentration (ppbv)
ICV Stock Standard	Spectra Gases Custom Made	1.0	7500	37.5	200

Prepare in 15L Summa Canister Expiration period 3 months
This standard contains all target analytes listed in Routine Compound Table.

Working ICV/LCS Standard

Parent Standard	Calibration Standard	Stock Standard Concentration (ppbv)	Volume Added (mL)	Final Volume (L)	Final Concentration (ppbv)
Intermediate ICV/LCS Standard	ICV Standard 10 ppbv	200	773	15.46	10

Prepare in 6L Summa Canister Expiration period 3 months
This standard contains all target analytes listed in Routine Compound Table.

Calibration Level	Working Calibration Standard	Volume Analyzed (mL)	Concentration on Column (ppbv)
Calibration Level 1	Cal Standard 0.2 ppbv	40	0.04
Calibration Level 2	Cal Standard 0.2 ppbv	200	0.2

Calibration Level 3	Cal Standard 0.5 ppbv	200	0.5
Calibration Level 4	Cal Standard 5 ppbv	200	5
Calibration Level 5	Cal Standard 10 ppbv	200	10
Calibration Level 6	Cal Standard 15 ppbv	200	15
Calibration Level 7	Cal Standard 20 ppbv	200	20
Calibration Level 8	Cal Standard 40 ppbv	200	40
ICV	Intermediate ICV 10ppb	200	10

Prepare in 6L Summa Canister

Intermediate Ethanol Calibration Standard at 500ppbv/v

1. Fill a 44 ml VOA vial with VOA free water. Remove 197ul of water from the vial.
2. Add 197 ul of >99.5% Ethanol neat material
3. Cap and shake/roll vial for 1 minute
4. Inject 10ul of the prepared water/ethanol mix into a fully evacuated 15 liter summa canister
5. Pump the syringe plunger 5 times to insure complete transfer of material
6. Immediately fill the canister to 22 psig with zero air.

Calibration Level	Working Calibration Standard	Volume added (mL)	Concentration on Column (ppbv)
Calibration Level 1	Cal Standard 0.5 ppbv	124	5
Calibration Level 2	Cal Standard 5.0 ppbv	309	10
Calibration Level 3	Cal Standard 10ppbv	464	15
Calibration Level 4	Cal Standard 15 ppbv	618	20
Calibration Level 5	Cal Standard 20 ppbv	1237	40
Calibration Level 6	Cal Standard 40 ppbv	3092	100

DC-SOP49966 Management, Retention, Storage and Archive of Data Records
EHS-SOP47863 Tracking and Collecting of Hazardous Waste
EHS-SOP48269 Procedure for Acceptance and Handling of USDA Regulated Domestic and Foreign Soil
EHS-SOP49961 Burlington Laboratory Corporate Safety Manual Addendum and Contingency Plan
EQ-SOP48255 Canister Cleaning, Certification and Sampling Kit Preparation
EQ-SOP52272 Traceability, Handling, & Storage of Standards & Reagents
ML-SOP49965 Procedures for Control Charts, Trend Analysis and In-House Limits
NC-SOP49967 Nonconformance and Corrective Action Procedures
QA-QM52862 Quality Assurance Manual
SM-SOP49959 Sample Management
TR-SOP52264 Employee Training and Analyst Demonstration of Competence
NDSC-ETHC-SOP43862 Manual Integrations
NDSC-US-EHS-QP46060 NDSC HSE Manual

End of document

Version history

Version	Approval	Revision information	
14	03.FEB.2022		
15	21.APR.2023	Conversion to HTML format and full review	
16	29.JAN.2024	SOP Review & Update. Due to database migration, some review by analysts and approval by supervisors are documented outside of D4 in QA SOP directory.	

Title: Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS), SW846 Methods 8270E

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Approvals (Signature/Date):

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1.0 Scope and Application

1.1 Analytes, Matrix(s), and Reporting Limits

USEPA Method 8270E is an analytical method which employs the use of GC/MS to determine the concentration of semivolatile organic compounds in extracts prepared from many types of solid waste matrices, soils, and water samples

Eurofins Edison has the capability to analyze and report the compounds listed in Table 1 via Method 8270E.

Table 1

Compound	CAS No.	Compound	CAS No.
1,1'-Biphenyl	92-52-4	Anthracene **(1)**	120-12-7
1,2,4,5-Tetrachlorobenzene	95-94-3	Atrazine	1912-24-9
1,2,4-Trichlorobenzene	120-82-1	Benzaldehyde	100-52-7
1,2-Dichlorobenzene	95-50-1	Benzidine	92-87-5
1,2-Diphenylhydrazine	122-66-7	Benzo[a]anthracene **(1)**	56-55-3
1,3-Dichlorobenzene	541-73-1	Benzo[a]pyrene **(1)**	50-32-8
1,3-Dimethylnaphthalene	575-41-7	Benzo[b]fluoranthene **(1)**	205-99-2
1,4-Dichlorobenzene	106-46-7	Benzo[g,h,i]perylene **(1)**	191-24-2
1,4-Dichlorobenzene-d4 **(ISTD)**	3855-82-1	Benzo[k]fluoranthene **(1)**	207-08-9
1,4-Dioxane **(1) (2)**	123-91-1	Benzoic acid	65-85-0
1-Methylnaphthalene	90-12-0	Benzyl alcohol	100-51-6
1-Naphthylamine	134-32-7	Bis(2-chloroethoxy)methane	111-91-1
2,2'-oxybis[1-chloropropane]	108-60-1	Bis(2-chloroethyl)ether **(1)**	111-44-4
2,3,4,6-Tetrachlorophenol	58-90-2	Bis(2-ethylhexyl) phthalate	117-81-7
2,3,7,8-TCDD	1746-01-6	Bisphenol-A	80-05-7
2,3-Dihydroindene	496-11-7	Butyl benzyl phthalate	85-68-7
2,3-Dimethylaniline	87-59-2	Caprolactam	105-60-2
2,4,5-Trichlorophenol	95-95-4	Carbamazepine	298-46-4
2,4,5-Trimethylaniline	137-17-7	Carbazole	86-74-8
2,4,6-Tribromophenol **(Surrogate)**	118-79-6	Chrysene **(1)**	218-01-9
2,4,6-Trichlorophenol	88-06-2	Chrysene-d12 **(ISTD)**	1719-03-5
2,4-Dichlorophenol	120-83-2	Coumarin	91-64-5
2,4-Dimethylphenol	105-67-9	Dibenz(a,h)anthracene **(1)**	53-70-3
2,4-Dinitrophenol	51-28-5	Dibenzofuran	132-64-9
2,4-Dinitrotoluene	121-14-2	Diethyl phthalate	84-66-2
2,4-Xylidine	95-68-1	Dimethyl phthalate	131-11-3
2,6-Dinitrotoluene	606-20-2	Di-n-butyl phthalate	84-74-2
2-Chloronaphthalene	91-58-7	Di-n-octyl phthalate	117-84-0
2-Chlorophenol	95-57-8	Fluoranthene **(1)**	206-44-0
2-Ethylaniline	578-54-1	Fluorene **(1)**	86-73-7
2-Fluorobiphenyl **(Surrogate)**	321-60-8	Hexachlorobenzene **(1)**	118-74-1
2-Fluorophenol **(Surrogate)**	367-12-4	Hexachlorobutadiene	87-68-3
2-Methylnaphthalene	91-57-6	Hexachlorocyclopentadiene	77-47-4
2-Methylphenol	95-48-7	Hexachloroethane	67-72-1
2-Naphthylamine	91-59-8	Indeno[1,2,3-cd]pyrene **(1)**	193-39-5
2-Nitroaniline	88-74-4	Isophorone	78-59-1
2-Nitrophenol	88-75-5	n,n'-Dimethylaniline	121-69-7
2-tertbutyl-4-methylphenol	2409-55-4	Naphthalene **(1)**	91-20-3
2-Toluidine	95-53-4	Naphthalene-d8 **(ISTD)**	1146-65-2

Table 1

Compound	CAS No.	Compound	CAS No.
3 & 4 Methylphenol	15831-10-4	n-Decane	124-18-5
3,3'-Dichlorobenzidine	91-94-1	Nitrobenzene	98-95-3
3,4-Dimethylaniline	95-64-7	Nitrobenzene-d5 **(Surrogate)**	4165-60-0
3,5-di-tert-butyl-4-hydroxytol	128-37-0	N-Nitrosodimethylamine **(1)**	62-75-9
3-Nitroaniline	99-09-2	N-Nitrosodi-n-propylamine	621-64-7
4,6-Dinitro-2-methylphenol **(1)**	534-52-1	N-Nitrosodiphenylamine	86-30-6
4-Bromophenyl phenyl ether	101-55-3	n-Octadecane	593-45-3
4-chloro-2-methylaniline	95-69-2	o-Toluidine-d9 **(Surrogate)**	194423-47-7
4-Chloro-3-methylphenol	59-50-7	Pentachloronitrobenzene	82-68-8
4-Chloroaniline	106-47-8	Pentachlorophenol **(1)**	87-86-5
4-Chloroaniline–d4 **(Surrogate)**	191656-33-4	Perylene-d12 **(ISTD)**	1520-96-3
4-Chlorophenyl phenyl ether	7005-72-3	Phenanthrene **(1)**	85-01-8
4-Methylphenol	106-44-5	Phenanthrene-d10 **(ISTD**)	1517-22-2
4-Nitroaniline	100-01-6	Phenol	108-95-2
4-Nitrophenol	100-02-7	Phenol-d5 **(Surrogate)**	4165-62-2
Acenaphthene **(1)**	83-32-9	Phenyl ether	101-84-8
Acenaphthene-d10 **(ISTD)**	15067-26-2	Pyrene **(1)**	129-00-0
Acenaphthylene **(1)**	208-96-8	Pyridine	110-86-1
Acetophenone	98-86-2	Terphenyl-d14 **(Surrogate)**	1718-51-0
Aniline	62-53-3	Total Cresols	STL00160
Aniline-d5 **(Surrogate)**	4165-61-1		

(1) Compound can be analyzed by full scan or Selected Ion Monitoring (SIM).
(2) Compound can also be analyzed by Isotope Dilution/SIM.

1.2 For a listing of method detection limits (MDLs) and Reporting Limits (RLs) please refer to the currently active Method 8270 Method Limit Groups in TALS (Eurofins LIMS).

1.3 On occasion clients may request modifications to this SOP. These modifications are handled following the procedures outlined in Section 7 (*Review of Work)*, and Section 19 (*Test Methods and Method Validation)* in Eurofins Edison's Quality Assurance Manual (Eurofins Edison Document No. ED-QA-LQM).

1.4 Any variation in procedure shall be completely documented using an NCM. The NCM is approved by the supervisor and then automatically sent to the laboratory Project Manager by e-mail so that the client can be notified as appropriate. The QA department also receives NCMs by e-mail for tracking and trending purposes. The NCM process is described in more detail in SOP ED-GEN-003. The NCM shall be filed in the project file and addressed in the case narrative. Any unauthorized deviations from this procedure must also be documented as a nonconformance, with a cause and corrective action described.

2.0 Summary of Method

2.1 This method is used for the analysis of aqueous and solid matrices for semi-volatile base, neutral and acid organic compounds that are extracted from the sample matrix with an organic solvent.

2.2 An aliquot of sample containing surrogate spiking compounds is extracted with an organic solvent. The extract is concentrated on a steam bath to a suitable volume. Internal standards are added to the extract.

2.3 Sample extraction techniques are specified for each matrix in the following Eurofins Edison SOPs:

- ED-ORP-002 (*Extraction of Semivolatile Organic Compounds in Water by Separatory Funnel, SW846 Method 3510C*);
- ED-ORP-043 (*SW846 Method 3580A - Waste Dilution Prep for Analysis of BNAs by SW846 Method 8270);*
- ED-ORP-0044 (*Microwave Extraction for Solids, SW846 Method 3546*);

2.4 A small aliquot of the extract is injected into a gas chromatograph (GC) equipped with a capillary column. The GC is temperature programmed to separate the compounds which were recovered during the extraction step by boiling point. The effluent of the gas chromatograph is interfaced to a mass spectrometer (MS) which is used to detect the compounds eluting from the GC. The detected compounds are fragmented with an electron beam to produce a mass spectrum which is characteristic of the compound introduced into the MS. Identification of target analytes is accomplished by comparing their mass spectra with the electron ionization spectra of authentic standards. Quantitation is accomplished by comparing the response of a major ion (quantitation ion) relative to an internal standard established through a five-point calibration (six points for second order regression). Specific calibration and quality control steps are included in the method that must be performed and must meet the specifications of SW846 Method 8270E as applicable.

2.5 The standard preparation procedure for aqueous samples involves use of a Reduced Volume Extraction (250 ml) (RVE) followed by analysis using a Large Volume Injection (LVI). Optionally, a full volume (1000 ml nominal) may be employed. The details of the extractions are outlined in the applicable prep SOPs while the analytical details for 8270E is presented in this SOP.

2.6 These methods are also applicable to the analysis of samples by Selected Ion Monitoring (SIM) for the purpose of obtaining lower reporting limits for the following compounds:

Table 2 – SIM Analytes

SIM Analytes	CAS #
1,4-Dioxane	123-91-1
4,6-Dinitro-2-methylphenol	534-52-1
Acenaphthene	83-32-9

Table 2 – SIM Analytes	
SIM Analytes	**CAS #**
Acenaphthylene	208-96-8
Anthracene	120-12-7
Benzo[a]anthracene	56-55-3
Benzo[a]pyrene	50-32-8
Benzo[b]fluoranthene	205-99-2
Benzo[g,h,i]perylene	191-24-2
Benzo[k]fluoranthene	207-08-9
Bis(2-chloroethyl)ether	111-44-4
Chrysene	218-01-9
Dibenz(a,h)anthracene	53-70-3
Fluoranthene	206-44-0
Fluorene	86-73-7
Hexachlorobenzene	118-74-1
Indeno[1,2,3-cd]pyrene	193-39-5
Naphthalene	91-20-3
N-Nitrosodimethylamine	62-75-9
Pentachlorophenol	87-86-5
Phenanthrene	85-01-8
Pyrene	129-00-0

2.7 An isotope dilution selected ion monitoring (SIM) technique for the analysis of 1,4-dioxane in water at a reporting level of 0.2 ug/l is also described in this SOP. Using this technique 1,4-dioxane-d8 is added prior to sample extraction and is used as an internal standard to calculate the concentration of 1,4-dioxane present. Additionally, 1,4-dichorobenzene-d4 is added to the extract prior to analysis to monitor the recovery of 1,4-dioxane-d8.

3.0 Definitions

For a complete list of definitions refer to Appendix 2 in the most current revision of the Quality Assurance Manual (ED-QA-LQM).

4.0 Interferences

4.1 GC/MS data from all blanks, samples, and spikes must be evaluated for interferences. Analysts must take steps to determine the source of the interference and take corrective action to eliminate the problem.

4.1.1 Contamination by carryover can occur whenever high-concentration and low-concentration samples are sequentially analyzed. To reduce

carryover, the sample syringe is automatically rinsed with solvent between sample injections. Whenever an unusually concentrated sample is encountered, it should be followed by the analysis of a solvent blank to check for cross-contamination. Alternately, verify that the sample analyzed after the high concentration sample does not show any carryover through inspection of chromatogram and target results.

4.1.2 Contaminants from the extraction process detected in the method blank should be evaluated to determine the impact on the analysis. Interferences from any target analyte must not be present in the method blank above the reporting limit for that compound. If these types of interferences occur, corrective action is required. The source should be identified and corrective action initiated to eliminate the interference from the extraction process. Affected samples must be re-extracted and re-analyzed.

4.1.3 The analyst must take precautions to make sure that contaminants do not enter the analytical system. These precautions include systematic procedures designed to eliminate interferences.

4.2 Some compounds analyzed by this method are unstable or sensitive to extraction and/or instrument conditions:

- Benzidine is easily oxidized during extraction. Neutral extraction may enhance the recovery of this compound.
- Hexachlorocyclopentadiene breaks down photochemically and can decompose from high temperatures, particularly in the injection port of the GC. This compound can also react with acetone in solution.
- 1,2-Diphenylhydrazine is unstable even at room temperature and readily converts to azobenzene.
- Phenols are sensitive to active sites and can give a low response or exhibit poor chromatography by tailing. Therefore, it is important the GC is maintained in the best possible condition. See Section 10.1 for proper daily maintenance.
- N-Nitrosodiphenylamine decomposes in the gas chromatographic inlet and cannot be distinguished from diphenylamine.
- 3-Methylphenol cannot be separated from 4-methylphenol by the conditions specified in this method. They are reported as 3 and 4-methylphenol.
- Pyridine may perform poorly at the GC injection port temperatures listed in this SOP. Lowering the injection port temperature may reduce the amount of degradation.

5.0 Safety

Employees must abide by the policies and procedures in the Corporate Environmental Health and Safety Manual (CW-E-M-001) and this document. This procedure may involve hazardous material, operations and equipment. This SOP does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of the method to follow appropriate safety, waste disposal and health practices under the assumption that all samples and reagents are potentially hazardous. Safety glasses, gloves, lab coats and closed-toe, nonabsorbent shoes are a minimum.

5.1. Specific Safety Concerns or Requirements

The gas chromatograph and mass spectrometer contain zones that have elevated temperatures. The analyst needs to be aware of the locations of those zones, and must cool them to room temperature prior to working on them.

The mass spectrometer is under deep vacuum. The mass spectrometer must be brought to atmospheric pressure prior to working on the source.

There are areas of high voltage in both the gas chromatograph and the mass spectrometer. Depending on the type of work involved, either turn the power to the instrument off, or disconnect it from its source of power.

5.2. Primary Materials Used

The following is a list of the materials used in this method, which have a serious or significant hazard rating. **Note: This list does not include all materials used in the method. The table contains a summary of the primary hazards listed in the MSDS for each of the materials listed in the table.** A complete list of materials used in the method can be found in the reagents and materials section. Employees must review the information in the MSDS for each material before using it for the first time or when there are major changes to the MSDS.

Material (1)	Hazards	Exposure Limit (2)	Signs and symptoms of exposure
Methanol	Flammable Poison Irritant	200 ppm-TWA	A slight irritant to the mucous membranes. Toxic effects exerted upon nervous system, particularly the optic nerve. Symptoms of overexposure may include headache, drowsiness and dizziness. Methyl alcohol is a defatting agent and may cause skin to become dry and cracked. Skin absorption can occur; symptoms may parallel inhalation exposure. Irritant to the eyes.
Methylene Chloride	Carcinogen Irritant	25 ppm-TWA 125 ppm-STEL	Causes irritation to respiratory tract. Has a strong narcotic effect with symptoms of mental confusion, light-headedness, fatigue, nausea, vomiting and headache. Causes irritation, redness and pain to the skin and eyes. Prolonged contact can cause burns. Liquid degreases the skin. May be absorbed through skin.
Toluene	Flammable Poison Irritant	200 ppm-TWA 300 ppm-Ceiling	Inhalation may cause irritation of the upper respiratory tract. Symptoms of overexposure may include fatigue, confusion, headache, dizziness and drowsiness. Peculiar skin sensations (e. g. pins and needles) or numbness may be produced. Causes severe eye and skin irritation with redness and pain. May be absorbed through the skin.
Dimethyl-dichloro-silane	Flammable	none	Can be corrosive to the respiratory tract causing severe irritation and tissue damage. Harmful if absorbed through the skin. May cause severe irritation and systemic damage. Severely irritating to the skin and eyes. Harmful if swallowed. Can cause abdominal discomfort, nausea, vomiting, diarrhea, and irritation to the mouth, throat and stomach.
1 – Always add acid to water to prevent violent reactions.			
2 – Exposure limit refers to the OSHA regulatory exposure limit.			

6.0 Equipment and Supplies

6.1 Gas chromatograph/mass spectrometer system

6.1.1 Gas chromatograph: An Agilent/HP 6890/7890/900 Intuvo (or equivalent) houses the capillary column. The GC provides a splitless injection port and allows the column to be directly coupled to the mass spectrometer. The oven is temperature programmable to meet the requirements of the method. An HP/Agilent 7673/7683/7963 autosampler (or equivalent) with a 10 ul syringe provides automatic injection of sample extracts while the instrument is unattended.

6.1.2 Analytical Column: 30m x 0.25mm ID, 0.25 um film thickness, Restek Rxi-5Sil MS, Catalog #13623

6.1.3 Mass spectrometer: Agilent (HP) 5972, 5973, 5975 or 5977A Mass Selective Detector (MSD) Capable of scanning from 35 to 500 amu every 1 sec or less, using 70 volts electron energy in the electron ionization mode. The mass spectrometer must be capable of producing a mass spectrum for 50 ng of decafluorotriphenylphosphine (DFTPP) which meets the criteria in Section 9.2.1 when 2 ul of the 25 ug/ml GC/MS tuning standard is injected through the GC.

6.1.4 GC/MS interface: Any GC-to-MS interface may be used that gives acceptable calibration points at 50 ng per injection for each compound of interest and achieves acceptable tuning performance criteria.

6.1.5 Data system: The data system is interfaced to the mass spectrometer and accommodates continuous acquisition and storage of GC/MS data throughout the duration of the chromatographic program. The data system consists of a Hewlett-Packard Chemstation equipped with Mustang software used for instrument control and data acquisition. This, in turn, is interfaced to Eurofins's Chrom software for data processing. Data from sample extract analysis can be accessed in real-time, while sample data reports and library searches can be performed on data files from previously run samples. The software is also capable of searching any GC/MS data file for ions of a specific mass whose abundances can be plotted versus time or scan number which allows integration of abundances for any extracted ion between specified times or scan-number limits. Library searches utilize a NIST 02.1 Mass Spectral Library.

6.2 Bottles, glass with polytetrafluoroethylene (PTFE)-lined screw caps or crimp tops.

6.3 Injection port liners, splitless

6.4 Injection port septa

6.5 Injection port graphite seals

6.6 Pre-silanized glass wool (Supelco 2-0411 or equivalent)

6.7 Syringes, Assorted sizes 10ul - 1000ul; gas-tight

6.8 Bottles, 10 and 5ml amber screw cap with Teflon liner

6.9 Vials, 2ml amber screw cap with Teflon liner

6.10 Wheaton microvials 100ul (or equivalent)

6.11 Volumetric Flasks, Class A with ground glass stoppers (2ml - 100ml)

6.12 Analytical balance, ASP Model SP-180 (or equivalent), capable of accurately weighing to 0.0001 gr.

7.0 Reagents and Standards

The following items are recommended for performing this procedure. Equivalent items should only be used when they result in an improvement in quality, efficiency, productivity, or cost. An item can be considered equivalent if with its use, the analytical and QA/QC requirements in this SOP can be met. Please refer to the MSDS prior to the use of any reagent or standard.

The preparation of standards, surrogates and spiking solutions is documented in the TALS Reagent Module. Formulary reports can be generated upon request.

7.1. Reagents:

7.1.1. Methylene Chloride: J.T.Baker Resi-Analyzed, used for Organic Residue Analysis (P/N 9266-V8 or equivalent).

7.1.2. Methanol: J.T.Baker Purge and Trap Grade (P/N 9077-02 or equivalent).

7.1.3. Sylon-CT: Supelco (P/N 33065-U or equivalent). Sylon-CT is a highly reactive silanizing reagent consisting of 95% Toluene and 5% Dimethyldichlorosilane (DMDCS).

7.1.4. Each lot of solvent is screened for contaminants before being used for analysis as detailed in Eurofins Corporate Quality SOP No. CA-Q-S-001 (*Solvent & Acid Lot Testing & Approval*) and Eurofins Edison SOP No. ED-GEN-023 (*Bulk Solvent Testing and Approval*).

7.2. Standards:

7.2.1. **Calibration Standards (Full Scan Analysis)**: Stock analytical standard solutions are purchased mainly from Restek Corporation. Other standards are prepared in the laboratory as needed using neat compounds or prepared solutions purchased from Agilent, SPEX CertiPrep, Chem Service,

Accustandard, Supelco or other suppliers. Standards prep instructions are detailed for the following full scan analyte list options:

- Full Volume Aqueous Prep; and,
- Reduced Volume Aqueous Prep and Soils

Secondary dilutions are either made from purchased stock solutions as listed below or from prepared solutions as listed in the following table:

NOTE: Second sources (from certified separate lots) are used for ICV standards.

Table 3 – Full Scan Stock Standards			
Target Analyte Standard Name	**Conc. (PPM)**	**Vendor**	**Catalog #**
1,2,3,4-TCDD	50	SPEX	SVO-TANJ-12
Agilent Mix (contains compounds listed in Table 4 below)	2000 *	Agilent	Cus 0456
8270 List 1/ Std #1 Megamix	Varied	Restek	571995
8270 List 1/ Std#9	2000	Restek	569730
8270 List 1/ Std#11	2000	Restek	569732
8270 Surrogate Standard	5000*	Restek	567685
8270 Internal Standard	2000	Restek	567684
8270 List 1/ Std#10	2000	Restek	569731
Bisphenol-A	1000	Agilent	Cus-0457

*Agilent Mix, 8270 list1/std#9 and 8270 Surrogate standard are diluted to 100ppm prior to the preparation of the 1.0ppm and 0.5ppm standards.

Table 4	
Agilent Mix Catalog No. Cus-0456	
Analyte	**Concentration (PPM)**
Pentachloronitrobenzene	2000
2 -tert-butyl-4-Methylphenol	2000
2,6-Di-tert-butyl-4-Methylphenol	2000
Coumarin	2000
Phenyl ether	2000
N,N'-Dimethylaniline	2000
N-Methylaniline	2000
Carbamazepine	2000
Benzonitrile	2000
1,3-Dimethylnaphthalene	2000

7.2.1.1. Individual calibration standards for full scan analysis are prepared in one of several ways depending upon the technique (full volume aqueous prep, soils prep, reduced volume prep with LVI) as well as the target analyte list. The following tables detail the preparation of calibration standard solutions for each of these techniques and analyte lists. Prepare by combining the indicated volumes of each stock solution using volumetric flask. Dilute to the volume marker with methylene chloride.

Table 5
Full Volume Aqueous Prep and Soils
Working Standards Preparation

Solution Name	120 PPM	80 PPM	50 PPM	20 PPM	10 PPM	5 PPM	2 PPM	1 PPM	0.5 PPM
8270 List 1/ Std #1 Megamix	3000 ul	2000 ul	2500 ul	500ul	250ul	250ul	100ul	50ul	25ul
8270 List 1/ Std #9	1500 ul	1000 ul	1250 ul	250ul	125ul	125ul	50ul	500ul*	250ul *
8270 List 1/ Std #10	1500 ul	1000 ul	1250 ul	250ul	125ul	125ul	-	-	-
Agilent custom Mix	1500 ul	1000 ul	1250 ul	250ul	125ul	125ul	50ul	500ul*	250ul *
1,2,3,4-TCDD	-	-	500ul	-	-	-	-	-	-
8270 Surrogate Standard	600ul	400ul	500ul	100ul	50ul	50ul	20ul	500ul*	250ul *
8270 Internal Standard	500ul	500ul	1000 ul	500ul	500ul	1000 ul	1000 ul	1000 ul	1000 ul
Bisphenol-A	3000 ul	2000 ul	2500 ul	500ul	250ul	250ul	100ul	-	-
8270 List 1/ Std #11	400ul	300ul	500ul	200ul	125ul	125ul	50ul	25ul	-
Final Volume (ml)	**25**	**25**	**50**	**25**	**25**	**50**	**50**	**50**	**50**

Note: The 1.0ppm and 0.5pmm standards (above) are prepared using the 100ug/ml standard for Agilent custom Mix, 8270 List1/std#9 and 8270 Surrogate Standard.

Table 6
Reduced Volume Extraction/LVI
Working Standards Preparation

Solution Name	24 PPM	16 PPM	10 PPM	4 PPM	2 PPM	1 PPM	0.4 PPM	0.2 PPM	0.1 PPM
120 ppm (see Table 5)	2.0mL								
80 ppm (see Table 5)		2.0 mL							
50 ppm (see Table 5)			2.0 mL						
20 ppm (see Table 5)				2.0 mL					

Table 6 Reduced Volume Extraction/LVI Working Standards Preparation									
Solution Name	**24 PPM**	**16 PPM**	**10 PPM**	**4 PPM**	**2 PPM**	**1 PPM**	**0.4 PPM**	**0.2 PPM**	**0.1 PPM**
10 ppm (see Table 5)					2.0 mL				
5.0 ppm (see Table 5)						2.0 mL			
2.0 ppm (see Table 5)							2.0mL		
1.0 ppm (see Table 5)								2.0 mL	
0.5 ppm (see Table 5)									2.0mL
Final Volume (ml)	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**

7.2.1.2. **Initial Calibration Verification (full scan)**: Second source ICVs for full scan analysis are prepared in one of several ways depending upon the technique (full volume aqueous prep, soils prep, reduced volume prep with LVI) as well as the target analyte list. The following tables detail the preparation of ICVs for each of these techniques and analyte lists. Prepare by combining the indicated volumes of each stock solution using volumetric flask. Dilute to the volume marker with methylene chloride.

Table 7 8270/625 ICV Working Standards Preparation	
Solution Name	**25 PPM**
8270 List 1/ Std #1 Megamix (2nd Lot)	250ul
8270 List 1/ Std #9 (2nd Lot)	125ul
8270 List 1/ Std #10 (2nd Lot)	125ul
Agilent custom Mix (2nd Lot)	125ul
8270 Internal Standard	200ul
8270 List 1/ Std#11	125ul
Bisphenol-A (2nd Lot)	250ul
Final Volume (ml)	**10**

7.2.1.3. **Surrogate Standards (Full Scan Analysis):** A 5000ppm Surrogate Standard is purchased from Restek for use in spiking blanks, samples and associated QC prior to extraction (reference the applicable sample prep SOPs for spiking instructions).

Table 8 Full Scan Surrogate Standards Solution Restek Catalog No. 567685	
Surrogate Standard Compounds	**Concentration (PPM)**
Nitrobenzene-d5	5000
p-Terphenyl-d14	5000
2,4,6-Tribromophenol	5000
Phenol-d5	5000
2-Fluorobiphenyl	5000
2-Fluorophenol	5000

7.2.1.4. **Internal Standards** (**Full Scan Analysis**): The Internal Standards Solution at 2000ppm is purchased from Restek (Catalog # 567684). The Internal Standard solution is stored in 10ml amber screw cap bottles with Teflon liners in the dark at 4°C. The Internal standard solution is used in preparing all analytical standards. Inject 20ul of this solution (2000ppm) per ml of sample extract prior to analysis resulting in a concentration of 40ppm (ug/ml) in the extract.

Table 9 Full Scan Internal Standards Solution Restek Catalog No. 567684	
Internal Standard Compounds	**Concentration (PPM)**
1,4-Dichlorobenzene-d4	2000
Phenanthrene-d10	2000
Naphthalene-d8	2000
Chrysene-d12	2000
Acenaphthene-d10	2000
Perylene-d12	2000

7.2.2. **Calibration Standards (SIM analysis)**: The Edison lab currently analyzes only a select list of compounds by 8270E SIM (see Sections 1.0 and 2.0). Stock analytical SIM standard solutions are purchased mainly from Agilent. Working standards are prepared from these solutions as listed in the tables in Section 7.2.2.1:

Table 10 Stock SIM Standards			
Standard Name	**Concentration**	**Vendor**	**Catalog #**
Pentachlorophenol	1000ppm	AGILENT	PH-180-1
n-Nitrosodimethylamine	100ppm	AGILENT	NS-100-1
Hexachlorobenzene	100ppm*	AGILENT	CH-151-1
PAH Mix	100ppm	AGILENT	PAH-605-1
Bis(2-chloroethyl)ether	100ppm*	AGILENT	BEC-110-1
4,6-Dinitro-2-methylphenol	1000ppm**	AGILENT	PH-150
1,4-Dioxane	1000ppm**	AGILENT	NV-152-1

*Hexachlorobenzene and Bis(2-chloroethyl)ether are diluted to 10ppm prior to SIM Standards prep

** 4,6-Dinitro-2-methylphenol and 1,4-Dioxane is diluted (10x) to 100ppm prior to SIM Standards prep

NOTE: Second sources (from separate lots are used for ICV standards).

7.2.2.1 Individual calibration standards for SIM analysis are prepared in one of two ways depending upon the technique (full volume aqueous prep or reduced volume prep with LVI) as well as the target analyte list. The following tables detail the preparation of calibration standard solutions for each of these techniques and analyte lists. Prepare by combining the indicated volumes of each stock solution using volumetric flask. Dilute to the volume marker with methylene chloride.

Table 11
Full Volume Aqueous Prep – SIM
Working Standards Preparation

	0.025 PPM	0.05 PPM	0.1 PPM	0.5 PPM	1.0 PPM	5.0 PPM
Pentachlorophenol	2.5uL	2.5uL	12.5uL	10uL	20uL	50uL
n-Nitrosodimethylamine	25uL	25uL	125uL	100uL	200uL	500uL
PAH mix	6.25uL	5uL	25uL	50uL	100uL	200uL
Hexachlorobenzene	25uL	25uL	250uL	1000uL	2000uL	500uL*
Bis(2-chloroethyl)ether	25uL	25uL	250uL	1000uL	2000uL	500uL*
4,6-dinitro-2-methylphenol	50ul	50ul	250ul	200ul	400ul	1000ul
1,4-Dioxane	25ul	50ul	250ul	200ul	400ul	1000ul
ISTD	500uL	200uL	500uL	200uL	200uL	200uL
Final Volume (ml)	**25**	**10**	**25**	**10**	**10**	**10**

*For Hexachlorobenzene and Bis(2-chloroethyl)ether the 5.0 ppm level is prepared using the 100ppm standard.

Table 12
Reduced Volume Extraction/LVI – SIM
Working Standards Preparation

	0.005 PPM	0.01 PPM	0.02 PPM	0.10 PPM	0.20 PPM	1.0 PPM
0.025 PPM Std (see Table 11)	1.0 mL					
0.05 PPM Std (see Table 11)		1.0 mL				
0.1 PPM Std (see Table 11)			1.0 mL			
0.5 PPM Std (see Table 11)				1.0 mL		
1.0 PPM Std (see Table 11)					1.0 mL	
5.0 PPM Std (see Table 11)						1.0 mL
Final Volume (ml)	**5**	**5**	**5**	**5**	**5**	**5**

7.2.2.2 Initial Calibration Verification (SIM): A 0.1 ppm separate lot SIM ICV is prepared as detailed in Table 13 using the stock standards detailed in Section 7.2.2 (above)

Table 13 0.1ppm SIM ICV preparation	
Pentachlorophenol	25uL
n-Nitrosodimethylamine	25uL
PAH mix	5uL
Hexachlorobenzene	5uL
1,4-Dioxane	5ul
4,6-Dinitro-2-methylphenol	100ul
ISTD	**100uL**
Final Volume	**5 ml**

7.2.2.3 Internal Standard solution (SIM): A 50 ppm Internal Standard solution for SIM analysis is prepared by adding 125ul of the 2000ppm stock ISTD (see Section 7.2.1.4) and bringing to volume with Methylene Chloride in a 5ml volumetric flask.

7.2.2.3.1 For SIM analysis inject 20ul of this solution (50ppm) per ml of sample extract prior to analysis resulting in a concentration of 1ppm (ug/ml) in the extract.

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7.2.3. Calibration Standards (Isotope Dilution SIM – 1,4-Dioxane): The Edison lab currently analyzes only for 1,4-dioxane by 8270E isotope dilution SIM (see Sections 1.0 and 2.0). Stock analytical isotope dilution SIM standard solutions are purchased mainly from Accustandard and Restek. Working standards are prepared from these solutions as listed in the tables below.

Table 14 - Stock 1,4-Dioxane Isotope Dilution SIM Standards			
Standard Name	**Concentration**	**Vendor**	**Catalog #**
1,4-Dioxane	1000ppm*	Accustandard	APP-9-096

* 1,4-Dioxane is diluted (10x) to 100ppm prior to SIM Standards prep

Table 15 - Stock Labeled 1,4-Dioxane SIM Surrogate/Internal Standard (added at prep)			
Standard Name	**Concentration**	**Vendor**	**Catalog #**
1,4-Dioxane-d8	2000ppm	Restek	30614

Table 16 - Stock 1,4-Dioxane Isotope Dilution SIM Internal Standard (added to extract)			
Standard Name	**Concentration**	**Vendor**	**Catalog #**
1,4-Dichlorobenzene-d4	2000ppm	Accustandard	AZ-014J-3

7.2.3.1 Individual calibration standards for 1,4-dioxane isotope dilution SIM analysis are prepared at the concentrations detailed in the following tables. Prepare by combining the appropriate volumes of each stock solution using volumetric flask. Dilute to the volume marker with methylene chloride.

Table 17 Reduced Volume Extraction/LVI – 1,4-Dioxane Isotope Dilution SIM ICAL Standard Concentrations (ug/ml)									
	Lev 1	**Lev 2**	**Lev 3**	**Lev 4**	**Lev 5**	**Lev 6**	**Lev 7**	**Lev 8**	**ICV***
1,4-Dioxane	0.02	0.04	0.1	0.2	0.5	1	2	10	0.2
1,4-Dioxane-d8	4	4	4	4	4	4	4	4	4
1,4-Dichlorobenzene-d4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2

***:** The ICV is prepared from the second source stock in Table 13.

7.2.4. GC/MS Instrument Performance Check (DFTPP): The DFTPP standard is prepared by is prepared at 25 ppm by adding 2.5ml of EPA 8270 GC/MS Tuning Solution II (Restek Catalog # 31615) to a 100ml volumetric flask and bringing to volume with Methylene Chloride.

7.2.5. Information on prepared standard solutions must be recorded in the TALS Reagent Module. Information such as standard supplier, lot number, original concentration, a description of how the standard was made, are required along with the laboratory lot number, analyst's initials, date prepared, expiration date and verification signature. Standards must be remade every 6 months, or sooner, if the standards expire or begin to show signs of unacceptable degradation. Class "A" volumetric must be used at all times and syringes, preferably gas-tight syringes when available, should be checked for accuracy using an analytical balance. Class "A" pipettes should also be used if volumes permit.

7.2.6. Please refer to Eurofins Edison SOP No. ED-GEN-008, Standard Operating Procedure for Preparation, Purity and storage of Reagents and Standards.

- Shelf Life of Standard: 1 year after preparation or stock standard manufacture expiration, whichever comes first;
- Storage Requirements: Stock standards are stored at 4°C and Working Standards stored at -10°C to -20°C.

8.0 Sample Collection, Preservation, Shipment and Storage

8.1 Samples from chlorinated water sources must be treated with sodium thiosulfate (0.008% solution) at the time of collection to remove chlorine. NOTE: containers pre-preserved with sodium thiosulfate must be requested in bottle orders for samples from chlorinated water sources.

8.2 All samples must be stored at 4ºC (± 2ºC) upon receipt.

8.3 Sample Extract Storage. Samples extracts must be protected from light and refrigerated at 4ºC (± 2ºC) from time of extraction until analysis.

8.4 Sample Extract Holding Time. All sample extracts must be analyzed within 40 days of extraction.

Matrix	Sample Container	Min. Sample Size	Preservation	Holding Time	Reference
Waters	Amber glass, 1L	1000 ml or 250 ml (1)	Cool 4 ± 2ºC	7 days to extraction; Analyze within 40 days of extraction	EPA Method SW846 8270E
Solids	Wide mouth glass, 8 or 16 oz.	50g	Cool 4 ± 2ºC	14 days to extraction; Analyze within 40 days of extraction	EPA Method SW846 8270E

(1) : Reduced volume extraction (RVE) LVI option

9.0 Quality Control

9.1. **Sample QC** - The following quality control samples are prepared with each batch of samples.

Quality Controls	Frequency	Control Limit
Method Blank (MB)	1 in 20 or fewer samples	< Rpt. Limit
Laboratory Control Sample (LCS)[1]	1 in 20 or fewer samples	Statistical Limits [4]
Matrix Spike (MS)[2]	1 in 20 or fewer samples	Statistical Limits [4]
MS Duplicate (MSD)[2]	1 in 20 or fewer samples	Statistical Limits [4]
Surrogates	every sample[3]	Statistical Limits [4]
Internal Standards	Every sample	Response within -50% to +100% of CCV

[1] LCS Duplicate (LCD) is performed only when insufficient sample is available for the MS/MSD or when requested by the client/project/contract.

[2] The sample selection for MS/MSD are randomly selected, unless specifically requested by a client….predetermined by the extraction lab.
[3] Analytical and QC samples (MB, LCS, MS/MSD, Method Blank)
[4] Statistical control limits are determined annually and are updated into TALS limit group..

9.1.1. Method blanks are extracted with every sample batch on each day that samples are extracted. To be considered acceptable, the method blank must contain less than the reporting limit of all target compounds except for phthalates, which can be present at up to 5x the MDL. For method 8270E the method blank is generally acceptable if target analyte concentrations are less than the one half the reporting limit.

If method blanks are unacceptably contaminated with target compounds that are also present in field samples, all affected samples must be re-extracted and re-analyzed. Corrective action must be taken to identify and eliminate the contamination source. Demonstrate that acceptable blanks can be obtained before continuing with sample extraction and analysis. Method blanks must be analyzed on each instrument on which the associated samples are analyzed.

9.1.1.1. Surrogate recoveries for the method blank are compared to laboratory generated limits. If two or more surrogates for any one fraction (base-neutral or acid) are outside of recovery limits or if any one surrogate recovers at <10%, the sample must be re-extracted and re-analyzed to confirm matrix interference.. If any surrogate is still outside limits, all samples and QC samples associated with that method blank must be re-extracted (volume permitting).

9.1.2. Matrix Spike (MS)/Matrix Spike Duplicate (MSD): A matrix spike/matrix spike duplicate (MS/MSD) pair is extracted and analyzed with every 20 environmental samples of a specific matrix (defined as a sample batch). Full compound list spiking is employed for MS/MSDs and LCSs. These spikes are prepared and extracted concurrent with sample preparation. MS and MSD recoveries are calculated and compared to lab generated acceptance criteria. See the current active TALS 8270 Method Limit Group for QC limits. The MS/MSD spiking solution should the same as used for the calibration standards.

9.1.2.1 A Laboratory Control Sample Duplicate (LCSD) is extracted and analyzed only when insufficient client sample is available for preparation of an MS/MSD pair. The LCS/LSCD is evaluated in the same manner as the MS/MSD (see Section 9.1.2)

9.1.2.2 An LCS/LCSD may be substituted for the MS/MSD if insufficient sample volume is available.

9.1.3. Laboratory Control Sample (LCS)/Laboratory Control Sample Duplicate (LCSD): A Laboratory Control Sample (LCS) (aka blank spike) must be extracted and analyzed with each batch of 20 environmental samples. The LCS data is used to assess method performance if the MS/MSD recoveries fall outside of the lab generated limits (See the current active TALS 8270 Method Limit Group for QC limits). If the LCS recovery is within the current lab generated limits, the MS/MSD recoveries are attributed to matrix interference.

9.1.3.1 A Laboratory Control Sample Duplicate (LCSD) is extracted and analyzed only when insufficient client sample is available for preparation of an MS/MSD pair. The LCS/LSCD is evaluated in the same manner as the MS/MSD (see Section 9.1.2)

9.1.3.2 Spike recovery limits are lab generated and are updated annually. Certain state regulatory programs have defined recovery limits which, where applicable, are used for spike recovery evaluations. The TALS Method Limit Groups detail these regulatory program criteria.

9.1.4. Surrogate Standards: All full scan samples, blanks and QC samples are spiked with a six (6) component surrogate standard mix (see Section 7.2.1.3). The percent recovery of the surrogate standards is calculated and compared to lab generated limits (See the current active TALS 8270 Method Limit Group for QC limits).

If any two or more surrogates for any one fraction (base-neutral or acid) are outside of recovery limits or if any one surrogate recovers at <10%, the sample must be re-extracted and re-analyzed to confirm matrix interference. If a surrogate is diluted to a concentration below that of the lowest calibration standard, no corrective action is necessary.

9.1.4.1 Surrogate recovery limits are lab generated and are updated annually. Certain state regulatory programs have defined recovery limits which, where applicable, are used for spike recovery evaluations. The TALS Method Limit Groups detail these regulatory program criteria.

9.1.5. Internal Standards: The response (area count) of each internal standard in the sample must be within -50 +100% of its corresponding internal standard in the CCV or, the ICAL midpoint for samples analyzed under the initial calibration range. Failure to meet these criteria is indicative of sample matrix effects. All samples failing these criteria must be reanalyzed to confirm matrix effects.

9.2. Instrument QC

9.2.1 GC/MS Instrument Performance Check (DFTPP): (**Note**: the DFTPP performance check applies only to full scan analyses and is not evaluated for SIM analysis). The GC/MS system is tuned using Perfluortributylamine

(PFTBA) such that an injection of 50ng of Decafluorotriphenylphosphine (DFTPP) meet the abundance criteria listed in the table below. Prior to the analysis of any calibration standards or samples, the GC/MS system must meet all DFTPP key ion abundance criteria. This analysis will verify proper tuning of the system for a period of 12 hours post-injection. After 12 hours, the instrument performance must again be verified prior to the analysis of standards, QC or samples. Daily tune verification is not required for 8270E CCV.

DFTPP Key Ions and Abundance Criteria	
Mass	**Ion Abundance Criteria**
51	30-60% of mass 198
68	<2% of mass 69
69	reference only
70	<2% of mass 69
127	40-60% of mass 198
197	<1% of mass 198
198	Base Peak, 100% relative abundance
199	5-9% of mass 198
275	10-30% of mass 198
365	>1% of mass 198
441	present but less than mass 443
442	>40% of mass 198
443	17-23% of mass 442

9.2.1.1. Evaluate DFTPP using three scan averaging and background subtraction techniques. Select the scan at the peak apex, add +1 scan from the apex and -1 scans from the apex.

9.2.1.2. The mass spectrum of DFTPP may be background subtracted to eliminate column bleed or instrument background ions. Background subtract DFTPP by selecting a scan for subtraction ≤20 scans before the apex scan of DFTPP.

9.2.1.3. Check column performance using pentachlorophenol and the benzidine peaks (these compounds are included in the DFTPP solution). Benzidine & Pentachlorophenol should respond normally without significant peak tailing (Tailing Factor should be <2 measured at 10% peak height). If responses are poor and excessive peak tailing is present, corrective action for the GC/MS instrument may be required. Corrective actions may include:

9.2.1.3.1 Retune the GC/MS;
9.2.1.3.2 Clip the injector end of the GC column;
9.2.1.3.3 Replace the septum and injection port liner;
9.2.1.3.4 Change the injection port seal;

9.2.1.3.5 Replace the GC column;
9.2.1.3.6 Clean the injection port with MeCl2
9.2.1.3.7 Clean the MS ion source;
9.2.1.3.8 Place a service call.

9.2.1.4. The breakdown of 4, 4-DDT into 4,4-DDD and 4,4'DDE may also be used to assess GC column performance and injection port inertness. If so evaluated the breakdown must be <20%.

9.2.1.5. DFTPP parameter settings are stored in a tune file, which will be used in all subsequent analysis of standards and sample extracts.

9.2.2 Initial Calibration Range and Initial Calibration Verification

9.2.2.1. Initial Calibration: The initial calibration range consists of a minimum of five concentration levels of analytical standards (six for second order regression) prepared as described in Section 7.2. and analyzed once the DFTPP instrument performance check has met the criteria in Section 9.2.1. .

9.2.2.2. Initial Calibration Verification (ICV): An Initial Calibration Verification (ICV) standard is analyzed immediately after the Initial Calibration Range and before any samples are analyzed. The ICV is prepared as detailed in Section 7.2. The ICV must be from a source (or lot) separate from the standards used in the Initial Calibration Range.

9.2.3 Continuing Calibration Verification (CCV) and Low Level Continuing Calibration Verification (LLCCV): A mid-point Continuing Calibration Verification (CCV) must be analyzed every 12 hours after the DFTPP instrument performance check (when applicable).. The CCV is prepared as detailed in Section 7.2. (typically, 50 ug/ml for full volume aqueous and soils, 10 ug/ml for LV, 0.02 ug/ml for LVI SIM) and 0.2 for isotope dilution SIM). Additionally a Low Level Continuing Calibration Verification (LLCCV) is analyzed after the CCV for full scan analysis. The LLCCV is the same as the lowest calibration level analyzed with the initial calibration range (See Section 7.2).

9.2.4 Calibration Acceptance Summary

9.2.4.1. Retention Time Windows: Retention time windows must be established to compensate for minor shifts in absolute retention times as a result of sample loading and normal chromatographic variability. Obtain the retention time for all compounds from the analysis of the midpoint standard for the calibration curve. Establish the center of the retention time window by using the absolute retention time for each analyte, internal standard and surrogate from the calibration verification standard at the beginning of the analytical shift. For samples run during the

same shift as an initial calibration, use the retention time of the mid-point standard of the initial calibration. For qualitative identification to be acceptable the retention time of the relative retention time (automatically calculated in Chrom) must be within 0.8 - 1.2 RRT units of its assigned internal standard. The relative retention times of each compound in the five calibration standards must agree within .06 relative retention time units.

9.2.4.2. Initial Calibration Range: Internal standard calibration is employed for this method. After the initial calibration range has been analyzed the relative response factor (RRF) for each target/surrogate compound at each concentration level is determined using the following equation.

$$RRF = \frac{A_x}{A_{is}} \times \frac{C_{is}}{C_x}$$

Where:
A_x = Area characteristic ion (see Table 21) for the compound
Ais = Area characteristic ion (see Table 21) of associated internal standard
Cis = Concentration of internal standard
Cx = Concentration of compound in standard

9.2.4.2.1. Determine the mean RRF for each compound. Minimum response factors must be met for each of the compounds listed in Table 18 (below). Any compound that fails the minimum response factor must be reported as estimated for detects and must have a demonstration of sensitivity in the analytical batch to report non-detects. To demonstrate adequate sensitivity for out of criterion compounds analyze the low level point of the calibration (LLCCV) in the analytical sequence. The criterion for the LLCCV is detection only but the standard qualitative identification criteria in the method must be met.

Table 18:
Minimum Response Factors

Compound	Minimum Response Factor
Benzaldehyde	0.010
Phenol	0.800
Bis(2-chloroethyl) ether	0.700
2-Chlorophenol	0.800
2-Methylphenol	0.700
2,2-Oxybis-(1-chloropropane)	0.010
Acetophenone	0.010
4-Methylphenol	0.600

Table 18: Minimum Response Factors	
Compound	**Minimum Response Factor**
N-Nitroso-di-n-propylamine	0.500
Hexachloroethane	0.300
Nitrobenzene	0.200
Isophorone	0.400
2-Nitrophenol	0.100
2,4-Dimethylphenol	0.200
Bis(2-chloroethoxy)methane	0.300
2,4-Dichlorophenol	0.200
Naphthalene	0.700
4-Chloroaniline	0.010
Hexachlorobutadiene	0.010
Caprolactam	0.010
4-chloro-3-methylphenol	0.200
2-Methylnaphthalene	0.400
Hexachlorocyclopentadiene	0.050
2,4,6-Trichlorophenol	0.200
2,4,5-Trichlorophenol	0.200
1,1'-Biphenyl	0.010
2-Chloronaphthalene	0.800
2-Nitroaniline	0.010
Dimethyl phthalene	0.010
2,6-Dinitrotoluene	0.200
Acenaphthylene	0.900
3-Nitroaniline	0.010
Acenaphthene	0.900
2,4-Dinitrophenol	0.010
4-Nitrophenol	0.010
Dibenzofuran	0.800
2,4-Dinitrotoluene	0.200
Diethyl phthalate	0.010
1,2,4,5-Tetrachlorobenzene	0.010
4-chlorophenyl-phenyl ether	0.400
Fluorene	0.900
4-Nitroanailine	0.010
4,6-Dinitro-2-methylphenol	0.010
4-Bromophenyl-phenyl ether	0.100
N-Nitrosodiphenylamine	0.010
Hexachlorobenzene	0.100
Atrazine	0.010
Pentachlorophenol	0.050
Phenanthrene	0.700
Anthracene	0.700
Carbazole	0.010
Di-n-butyl phthalene	0.010

Table 18: Minimum Response Factors	
Compound	**Minimum Response Factor**
Fluoranthene	0.600
Pyrene	0.600
Butyl benzyl phthalate	0.010
3,3'-Dichlorobenzidine	0.010
Benzo(a)anthracene	0.800
Chrysene	0.700
Bis-(2-ethylhexyl)phthalate	0.010
Di-n-octyl phthalate	0.010
Benzo(b)fluoranthene	0.700
Benzo(k)fluoranthene	0.700
Benzo(a)pyrene	0.700
Indeno(1,2,3-cd)pyrene	0.500
Dibenz(a,h)anthracene	0.400
Benzo(g,h,i)perylene	0.500
2,3,4,6-Tetrachlorophenol	0.010
Pentachloronitrobenzene	0.050

9.2.4.2.2. Calculate the Standard Deviation (SD) and Percent Relative Standard Deviation (% RSD) of the response factors for each compound:

$$\% \text{ RSD} = \frac{\text{Standard Deviation of RRFs}}{\text{Mean RRF}}$$

9.2.4.2.3. The % RSD of the RRF's must be ≤20% for each target analyte listed in Table 18. The % RSD of each target analytes must be ≤20% in order for the calibration range to be acceptable. Additionally for 8270E, the calculated concentration or amount of each analyte of interest in the CCV standard should fall within ±20%. If more than 10% of the compounds included with the initial calibration exceed the 20% RSD limit or do not meet the minimum correlation coefficient (0.99) or Relative Standard Error (≤20%) for alternate curve fits (see below) then appropriate corrective maintenance action must be performed. If more than 10% of the compounds included with the initial calibration exceed the 20% RSD limit **AND** do not meet the minimum correlation coefficient (0.99)) or Relative Standard Error (≤20%) then recalibration is necessary.

9.2.4.2.4. If the above listed criteria is met, the system can be assumed to be linear and sample analysis may begin and the average RF from the initial calibration range is used to quantitate all samples.

9.2.4.2.4.1 Certain state regulatory programs have defined calibration acceptance limits which, where applicable, are used for calibration evaluations. The TALS ICAL Limit Groups detail these regulatory program criteria.

9.2.4.2.5. An alternative calibration technique may be employed for those any compounds exceeding the 20% RSD criteria:

9.2.4.2.5.4 Calculate the first order linear regression for any compound which did not meet the 20% criteria. First order linear regression calibration may be employed if alternative average response calibration procedures were not applicable. The r value (Correlation Coefficient) of the equation must be ≥0.99 or the Relative Standard Error (RSE) (≤20%) for the calibration to be employed.

9.2.4.2.5.2 Second order regression calibration can be used for any compound that has an established history as a non-linear performer.

9.2.4.2.5.3 If second order regression calibration is used a minimum of six (6) calibration levels must be analyzed.

9.2.4.2.5.4 If second order regression calibration is used, the r^2 (Correlation Coefficient) value must be ≥ 0.99 or the Relative Standard Error (RSE) (≤20%) for the calibration to be employed.

9.2.4.2.5.5 Any compound that fails to meet the 20% RSD or 0.99 correlation coefficient or RSE (≤20%) criteria must be flagged as estimated for detects (or must be noted in the narrative). If there are non-detects the compounds may be reported if there is adequate sensitivity to detect at the quantitation limit. To demonstrate adequate sensitivity analyze the low level point of the initial calibration in each analytical batch (LLCCV) The criteria for demonstrating adequate sensitivity is detection in the LLCCV using the standard qualitative identification criteria.

9.2.4.2.5.6. When calculating the calibration curve using the linear calibration model a minimum quantitation check on the viability of the lowest calibration point should be performed by re-fitting the response from the low concentration back into the curve. The recalculated concentration of the low calibration point should be within ±50% of the

standard's concentration. This evaluation can be checked using the Initial Calibration %Drift Report in Chrom. Any detects for analytes calibrated using the linear model and failing this readback criterion must be flagged as estimated or detailed in the narrative.

9.2.4.3. **Calibration Point Read-back Criteria**: Whichever calibration model above is selected, it should be subjected to an additional check to establish the representativeness of the data that were used to produce it. This check is the refitting of each calibration point response back to the calibration model, or the comparison of the calculated amount of the standard against the expected amount.

- CHROM software provides an Initial Calibration %Drift report which shows the % Error for each calibration point. This report must be reviewed in addition to the %RSD / Linear Response Factor.

- The absolute value of the % Error for each calibration point should be < 30%. For the lowest calibration point, the % Error may be <50%.

- See Section 11.8 for the Calculation of Percent (%) Error.

9.2.4.4. **Initial Calibration Verification (ICV):**.Once the initial calibration has been analyzed and has met the above criteria, a second source Initial Calibration Verification (ICV) (as prepared in Section 7.2) must be analyzed and evaluated. The ICV must meet the criteria of 70-130% recovery for all compounds with the exception of the poor performing compounds listed in Attachment 1 which are allowed to be within 50-150% : An NCM must be initiated to denote any ICV non-conformances.

9.2.4.5. The ICV must meet the criteria of 70-130% recovery for all compounds however up to 10% of the compounds are allowed to exceed these criteria as long as their recoveries are within 65-135%. For the poor performers (see Attachment 1) the range is 50-150%. If the criterion is not met, a second ICV may be analyzed after corrective measures are taken. If a second ICV analysis fails to meet criteria proceed with corrective action and the analysis of a new initial calibration range. Flagging: If the ICV limits are outside of criteria (high) for an analyte and that analyte is undetected in the sample, no flagging or narration is required. If the ICV limits are outside of criteria (low) for an analyte and that analyte is undetected in a sample, narrate the non-conformance in an NCM. When that out of spec analyte is detected in a sample, describe the issue in the narrative, or flag as estimated.

9.2.4.6. Continuing Calibration Verification (CCV): A CCV consisting of a standard at or near the midpoint of the Initial Calibration Range is analyzed every 12 hours of instrument operation or at the beginning of an analytical sequence to verify the initial calibration. The calibration verification consists of a DFTPP instrument performance check (not required for 8270E), and analysis of a calibration verification standard. **Note:** Certain state regulatory programs have defined calibration acceptance limits which, where applicable, are used for calibration evaluations. The TALS ICAL Limit Groups detail these regulatory program criteria.

9.2.4.5.1 Tune Verification: Follow the procedure for verifying the instrument tune described in section 9.2.1 using a 50 ng injection of DFTPP. If the tune cannot be verified, analysis must be stopped, corrective action taken and a return to "control" demonstrated before continuing with the calibration verification process. For 8270E analysis only, tune verification is required just prior to ICAL.

9.2.4.5.2 Calibration Verification: Analyze the calibration verification standard immediately after a DFTPP that meets criteria. Daily analysis of the DFTPP is not required as part of the CCV for 8270E analysis. .When samples are analyzed after an ICAL the last ICAL standard may be used as the starting time reference for evaluation. Use the mid point calibration standard (approximately 50ug/l). NOTE: The calibration standard contains internal standards; Dichlorobenzene d_4, Naphthalene d_8, Acenaphthene d_{10}, Phenanthrene d_{10}, Chrysene d_{12}, and Perylene d_{12} at 40ug/l (0.1ug/L for SIM). The calibration check standard must also include all the target analytes from the original calibration.

9.2.4.5.3 The RFs must meet the criteria for the compounds in Table 18. Any compound that fails the minimum response factor must be reported as estimated for detects and must have a demonstration of sensitivity to report non-detects. To demonstrate adequate sensitivity for out of criterion compounds analyze the low level point of the calibration (LLCCV) in the analytical sequence. The criterion for the LLCCV is detection only but the standard qualitative identification criteria in the method must be met

9.2.4.5.4 The percent difference (when using average response factor) or percent drift (when using linear regression) of the compounds in Table 18 must be ≤20% for at least 80% of the total analyte list. If more than 20% of the compound list fail to 20% difference or drift criterion then appropriate corrective action must be taken prior to the analysis of the samples. Any individual compound that fails must be reported as estimated for detects and must have a demonstration of sensitivity to report non-detects. To demonstrate adequate sensitivity for out of criterion compounds analyze the low level point of the calibration (LLCCV) in the analytical sequence. The criterion for the LLCCV is detection only (%D criteria are not applied) but the standard qualitative identification criteria in the method must be met.

9.2.4.5.5 **CCV Poor Performers**: Refer to Attachment 1 for the identification of poor and/or erratic performing analytes. These analytes are allowed a %D >20% but must be <50 %D to be acceptable. If there are poor performers that exceed 50%D, the data may be reported provided results are noted as estimated. An NCM must be initiated to denote this situation.

9.2.4.5.6 The retention times of the internal standards from the calibration check must be within ±30 seconds of the internal standards from the mid point standard of the original calibration. If the retention time for any internal standard changes by more than 30 seconds from the latest daily (12 hour) calibration standard, the chromatographic system is inspected for malfunctions, and corrections made as required. If corrective action does not result in the retention time criteria being achieved, the system must be re-calibrated using four additional standards.

9.2.4.5.7 The response (area count) of each internal standard in the calibration verification standard must be within 50 - 100% of its corresponding internal standard in the mid-level calibration standard of the active calibration curve. If the EICP area for any internal standard changes by more than a factor of two (-50% +100%), the mass spectrometer system must be inspected for malfunction and corrections made as appropriate. When corrections are made, re-analysis of samples analyzed while the system was malfunctioning is required.

9.2.4.5.8 The relative retention times of each compound in the calibration verification standard must agree within .06 relative retention time units of its value in the initial calibration.

9.2.4.5.9 Use the average response factors from the original five-point calibration for quantitative analysis of target analytes identified in field samples.

9.2.4.5.10 Prepare a calibration summary or list indicating which compounds did not meet the 20% average percent difference criteria. Record this information in that run log.

9.2.4.7. Low Level Continuing Calibration Verification (LLCCV): An LLCCV consisting of the low level standard from the initial calibration range is analyzed every 12 hours of instrument operation after the CCV. The purpose and evaluation of the LLCCV is described in Section 9.2.4.4.4.

10.0 Procedure

10.1. Gas Chromatograph/Mass Spectrometer Operation

10.1.1. The sequence of events for GC/MS analysis involves many steps. First the injection system and column performance and calibration must be verified. Maintenance operations are performed as needed.

10.1.2. Preparation of the Injection Port Liner and Installation Procedure: Prior to the start of initial calibration and each daily analysis of sample extracts, a new liner for the injection port must be prepared. Once a liner has been used it is no longer inert and will cause serious chromatography problems with phenols and other compounds. When preparing the liner, proper laboratory protection must be worn and the liner must be prepared in a well-ventilated hood. When the procedure is completed all traces of toluene, Sylon-Ct and methanol will be removed immediately so that extraction solvents and preparation of sample extracts will not come into contact with these solvents and become contaminated.

10.1.2.1 Remove one liner from a 40ml VOA bottle containing other liners immersed in Sylon-Ct solution. Rinse off the liner with Toluene and wipe dry. Insert 1cm of pre-silanized glass wool partially into one end of the liner and trim neatly. Push the glass wool into the center of the liner so that it is 1 1/4" from the bottom. Do not use glass wool or solvents that are dirty (i.e. suspended particles) or use liners which are chipped on the ends, deformed or fractured. Inspect the glass wool for cleanliness after it has been inserted.

10.1.2.2 Using a Pasteur pipette flush out the interior of the liner containing the glass wool with Sylon-Ct. Rest the liner horizontally on a small beaker and allow the Sylon-Ct to re-deactivate the interior surfaces and the glass wool. There should be no air bubbles caught in the glass wool. After several

minutes flush out the Sylon-Ct with toluene and finally with methanol. Dry the outer surface of the liner and rest it on the injection port housing until the remaining methanol is boiled off

10.1.2.3 Insert the liner with the newly silanized glass wool plug into the injection port. Verify that the column extends up into the injection port and is perpendicular. Inspect the graphite seal and replace it if the edges are knife-shaped.

10.1.2.4 The septum is always replaced daily. Bake out the column at 300°C for 15 minutes after the vacuum in the analyzer has returned to normal.

10.1.2.5 Performance may enhanced by clipping a small portion of the column at the injection port end. Document this activity in the maintenance record.

10.1.3. Prior to calibration or sample analysis always verify that the analyzer is under sufficient vacuum and that the column has proper carrier gas flow.

10.1.4. Establish the following GC/MS operating conditions:

10.1.4.1 Full Scan Operating Mode

Full Scan Mode – Standard Injection Volume
Mass Range: 35 to 500amu
Scan Time: 1 sec/scan
Transfer Line Temperature: 300°C
Source Temperature: Preset by H.P. at 280°C
Scan start time: 1.0 minutes
Initial Column Temperature and Hold Time: 45°C for 0.5 minutes
Column Temperature Program: 20°C /min to 100°C 25°C/min to 270°C 10° C/min to 310°C
Final Column Temperature Hold: 310°C for 5 minutes
Carrier Gas: Ultra High Purity Grade Helium at 1.3ml/min
Injector Temperature: 275°C
Injector: Grob-type, pulse, splitless
Injection Volume: 1ul
Splitless Valve Time: 0.3 minutes

Full Scan Mode – Large Volume Injection (LVI)
Mass Range: 35 to 500amu
Scan Time: 1 sec/scan
Transfer Line Temperature: 300°C
Source Temperature: Preset by H.P. at 280°C
Scan start time: 1.0 minutes
Initial Column Temperature and Hold Time: 45°C for 0.5 minutes
Column Temperature Program: 20°C /min to 100°C 25°C/min to 270°C 10° C/min to 310°C
Final Column Temperature Hold: 310°C for 5 minutes
Carrier Gas: Ultra High Purity Grade Helium at 1.3ml/min
Injector Temperature: 275°C
Injector: Grob-type, pulse, splitless
Injection Volume: 5ul
Splitless Valve Time: 0.3 minutes

10.1.4.2 SIM Operating Mode

SIM Mode
Mass Range: 35 to 500amu
Scan Time: 1 sec/scan
Transfer Line Temperature: 300°C
Source Temperature: Preset by H.P. at 280°C
Scan start time: 1.5 minutes
Initial Column Temperature and Hold Time: 40°C for 0.5 minutes
Column Temperature Program: 20°C /min to 100°C 25°C/min to 270°C 10° C/min to 310°C
Final Column Temperature Hold: 310°C for 3 minutes
Carrier Gas: Ultra High Purity Grade Helium at 1.3ml/min
Injector Temperature: 275°C
Injector: Grob-type, pulse splitless
Injection Volume: 1ul
Splitless Valve Time: 0.3 minutes

10.1.4.3 Isotope Dilution Selected Ion Monitoring Mode :

SIM Parameters

Group 1
Plot 1 Ion: 74.0

Ions/Dwell in Group	(Mass Dwell)	(Mass Dwell)	(Mass Dwell)
	42.0 50	43. 0 50	68.0 50
	74.0 50	128.0 50	129.0 50
	136.0 50	150.0 50	152.0 50
	93.0 50	66.0 50	
	58.0 50		
	88.0 50		

Group 2
Group Start Time: 6.00
Plot 1 Ion: 152.0

Ions/Dwell in Group	(Mass Dwell)	(Mass Dwell)	(Mass Dwell)
	151.0 50	152.0 50	153.0 50
	154.0 50	162.0 50	164.0 50
	165.0 50	166.0 50	

Group 3
Group Start Time: 7.80
Plot 1 Ion: 188.0

Ions/Dwell in Group	(Mass Dwell)	(Mass Dwell)	(Mass Dwell)
	94.0 50	101.0 50	142.0 50
	178.0 50	179.0 50	188.0 50
	202.0 50	264.0 50	266.0 50
	284.0 50		

Group 4
Group Start Time: 10.50
Plot 1 Ion: 228

Ions/Dwell in Group	(Mass Dwell)	(Mass Dwell)	(Mass Dwell)
	120.0 50	228.0 50	229.0 50
	240.0 50		

Group 5
Group Start Time: 12.00
Plot 1 Ion: 252.0

Ions/Dwell in Group	(Mass Dwell)	(Mass Dwell)	(Mass Dwell)
	138.0 50	139.0 50	252.0 50
	253.0 50	260.0 50	264.0 50
	267.0 50	276.0 50	278.0 50

Table 19: Target Compound - Primary and Monitoring Ions

Compound	1	2	3

Compound	1	2	3
1,4-Dioxane-d8	96	64	62
1,4-Dioxane	88	58	57
1,4-Dichlorobenzene-d4	152	150	

10.1.5. The above listed instrument conditions are used for all analytical standards for calibration and for all sample extracts analyzed by this method.

10.1.5.1 The column conditions, scan start time, and splitless valve time for analysis of DFTPP only are as follows are as follows:

Initial Column Temperature and Hold Time: 140°C for 0.5 minutes
Column Temperature Program: 140° to 320°C at 22°C/minute
Final Column Temperature Hold: 320C for 0.5 minutes
Scan Start Time: approx. 5 minutes
Splitless Valve Time: 0.3 minutes
Injection Volume: 2 ul

10.2. Analytical Sequence

10.2.1. Dilutions are made based on initial GC/MS analysis. Dilutions are made in 1-ml vials using microsyringes. Calculate the dilution factor using the equation below:

DF= Ph / 5 x Is
Where:
DF = Dilution Factor
Ph = Sample Peak Height
Is = Internal Standard Peak Height

When DF >1 but <2, combine 500ul of sample extract with 500ul methylene chloride in a 1 ml amber vial, add20 ul internal standard and crimp seal

Use **Table 20** to determine dilution and internal standard amount.

Table 20 Dilution Factor Calculations			
DF Value	**Volume of Sample (ul)**	**Volume of Methylene Chloride (ul)**	**Volume of ISTD (ul)**
<1	1,000	None	None
>1, <2	500	500	10
>4, <5	200	800	16
>10, <20	100	900	36
>20	500*	500	10
*Prepare this dilution by serially diluting the >10, <20 dilution			

10.2.2. Instrument Performance and Calibration Sequence

10.2.2.1. Once the GC/MS instrument has been setup and maintained as detailed in Section 10.1, the first operations to be performed are the performance checks and calibration standards.

10.2.2.2. Analyze the Instrument Performance Check Standard (DFTPP) as discussed in Section 9.2.1.

10.2.2.3. Initially and as required, analyze the Initial Calibration Range (minimum 5 points, six points for second order regression) as detailed in Sections 7.2.1 and 9.2.4.2. Evaluate the acceptability of the Initial Calibration Range as detailed in Section 9.2.4.2.

10.2.2.4. Immediately after the Initial Calibration Range only, analyze the Initial Calibration Verification (ICV) as detailed in Sections 7.2. and 9.2.4.3. Evaluate the acceptability of the ICV as detailed in Section 9.2.4.3.

10.2.2.5. Every 12 hours, reanalyze and evaluate the Instrument Performance Check Standard (DFTPP), not required for 8270E followed by the Continuing Calibration Verification (CCV) and Low Level Continuing Calibration Verification (LLCCV) as detailed in Section 9.2.3, 9.2.4.4 and 9.2.4.5. Evaluate the acceptability of the CCV and LLCCV as detailed in Section 9.2.4.4

10.2.2.6. Client samples and QC samples are analyzed (as detailed in Section 10.2.3) after acceptable Instrument Performance and Calibration Checks and until the 12 hour clock expires. Repeat the sequence as required. The automation of GC/MS runs is accomplished via the “SEQUENCE” macro of the ChemStation.

10.2.3. Sample Analysis Sequence

10.2.3.1. Sample extracts are normally prepared on the same day as analysis. The GC/MS operator will prepare the extracts that will be run on his or her instrument. Volume adjustments to the extracts will be made at the discretion of the supervisor.

10.2.3.2. Prior to the start of sample analysis the GC/MS operator will generate a sequence program containing the list of the sample extracts to be analyzed, the position on the autosampler tray, and the proper acquisition and tune methods that are to be used. This sequence program contains all the necessary information on the samples to be analyzed and how the GC/MS system is to analyze them. The sample extracts are loaded onto the autosampler (ALS) tray. Their position is verified by checking them against the ALS number on the sequence. This batch analysis will be performed automatically over the 12-hour period.

10.2.3.3. The analytical run log is printed as a record of samples analyzed. The analyst will annotate the run log with any required information regarding anomalies or unusual events. The run log must be signed by the analyst and a reviewed and signed by a trained peer or manager

10.3. Data Processing

10.3.1. Prior to processing any standards or samples, target compound lists and sublists must be assembled. Chrom's auto-processing system queries TALS (LIMS) for each sample's processing parameters (including target compounds lists) and downloads the required processing methods from LIMS to analyze data. These lists are required for processing of all data files including calibration files. The data includes compound names, retention time data, quantitation ions, qualitative identification ions, and the assigned internal standard for qualitative and quantitative identification.

10.3.2. Key data is manually entered the first time a compound list is used for data processing. Processing data using a compound list automatically generates response factor data and updates retention information.

10.3.3. The characteristic ions for target compounds, surrogate compounds, and internal standards which can be determined using SW 8270E are listed in Table 21.

10.4. Interpretation and Qualitative Identification: Qualitative identification of target compounds is based on retention time and mass spectral comparison with characteristic ions in the target compound list. The reference mass spectrum is taken from a standard of the target compound analyzed by this method. The

characteristic ions are the three ions of greatest relative intensity or any ions over 30% relative intensity if less than three such ions occur in the reference spectrum. Compounds are identified as present when the following criteria are met:

10.4.1 Target Analytes: Qualitative identification of target compounds is based on retention time and mass spectral comparison with characteristic ions in the target compound list. The reference mass spectrum is taken from a standard of the target compound analyzed by this method. The characteristic ions are the three ions of greatest relative intensity or any ions over 30% relative intensity if less than three such ions occur in the reference spectrum. Compounds are identified as present when the following criteria are met:

10.4.1.1. Once the GC/MS instrument has been setup and maintained as detailed in Section 10.1, the first operations to be performed are the performance checks and calibration standards.

10.4.1.2. The intensities of the characteristic ions of a compound maximize in the same scan or within one scan of each other.

10.4.1.3. The relative retention time (RRT) of the sample component is within ± 0.06 RRT units of the RRT of the standard component.

10.4.1.4. The most abundant ion in the standard target spectrum that equals 100% MUST also be present in the sample target spectrum.

10.4.1.5. All other ions that are greater than 10% in the standard target spectra should also be present in the sample.

10.4.1.6. The relative intensities of the characteristic ions agree within 30% of the relative intensities of these ions in the reference spectrum. (Example: For an ion with an abundance of 50% in the reference spectrum, the corresponding abundance in a sample spectrum can range between 20% and 80%).

10.4.1.7. If the compound does not meet all of the criteria listed above, but is deemed a match in the technical judgment of the mass spectral interpretation specialist, the compound will be positively identified and reported with documentation of the identification noted in the raw data record.

10.4.2 Non-Target Analytes: Upon client request a library search to identify non-target Tentatively Identified Compounds (TIC) is performed. The NIST/EPA/NIH mass spectral library is used to identify non-target compounds (not including internal standard and surrogate compounds) of greatest apparent concentration by a forward search of the library. The following guidelines are used by the analyst when making TIC identifications:

10.4.2.1. Relative intensities of major ions in the reference spectrum (ions greater than 10% of the most abundant ion) should be present in the sample spectrum.

10.4.2.2. The relative intensities of the major ions should agree within ±20%. (Example: For an ion with an abundance of 50% in the standard spectrum, the corresponding sample ion abundance must be between 30 and 70%).

10.4.2.3. Molecular ions present in the reference spectrum should be present in the sample spectrum.

10.4.2.4. Ions present in the sample spectrum but not in the reference spectrum should be reviewed for possible background contamination or presence of co-eluting compounds.

10.4.2.5. Ions present in the reference spectrum but not in the sample spectrum should be reviewed for possible subtraction from the sample spectrum because of background contamination or co-eluting peaks. Data system library reduction programs can sometimes create these discrepancies.

10.4.2.6. If, in the technical judgement of the mass spectral interpretation specialist, no tentative identification can be made, the compound will be reported as 'Unknown'. If the compound can be further classified the analyst may do so (i.e, 'Unknown hydrocarbon', 'Unknown acid' , etc.).

10.5. Data Reporting

10.5.1. Final Report. The Chom data system automatically produces a data report consisting of hardcopy reports corresponding to specific data reporting requirements, which is uploaded to the TALS LIMS System for the report production group.

10.5.1.1. Total Ion Chromatogram. Full length chromatogram depicting the full length of the GC/MS acquisition.

10.5.1.2. Spectra of all detected target compounds. A page for each detected target compound spectra with a standard reference spectrum for comparison.

10.5.1.3. The calculations of the concentrations of each target compound in the sample, reported in units of ppb, ug/kg or ug/l.

10.5.1.4. Data summaries for each method blank indicating which samples were extracted with the indicated blank.

10.5.1.5. A copy of the initial calibration range together with the calibration verification report, and tune report.

10.5.1.6. Quality Control (QC) data report for each batch including surrogate recoveries, internal standard area summaries, LCS, MS/MSD and RPD summaries.

10.6. The low-level calibration standard establishes the reporting limit. All reported data must be at a concentration at or above the low concentration standard. Any quantitative values below the report limit must be qualified as estimated.

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11.0. Calculations/Data Reduction

11.1. Target Compounds: are quantitated using the internal standard method (see the formula in Section 11.3).

11.1.1. Identified target compounds are quantitated using the integrated abundance from the EICP of the primary characteristic ion. The internal standard used shall be the one nearest the retention time of the analyte).

11.1.2. The average response factor (RRF) from the initial calibration is used to calculate the target analyte concentration in client samples using the formula found in Section 11.3. See Section 9.2.4 for discussion of RRF.

11.1.3. Secondary ion quantitation is utilized only when there are sample interferences preventing use of the primary characteristic ion. If secondary ion quantitation is used an average relative response factor (RRF) must be calculated using that secondary ion.

11.2. Non-Target Compounds (Tentatively Identified Compounds): An estimated concentration for non-target (tentatively identified compounds) is calculated using the internal standard method (see formula in Section 11.3). For quantiation, the nearest eluting internal standard free of interferences is used. The procedure used for calculating the concentration of non-target compounds is the same as that used for target compounds (see Section 11.1) with the following revisions:

11.2.1. The total area count of the non-target compound is used for As (instead of the area of a characteristic ion).

11.2.2. The total area count of the chosen internal standard is used as Ais (instead of the area of a characteristic ion).

11.2.3. A RF on 1.0 is assumed.

11.2.4. The resulting concentration is qualified as estimated ('J') indicating the quantitative uncertainties of the reported concentration.

11.3. Internal Standard Calculation:

11.3.1. Aqueous Samples

$$\text{Concentration } (\mu g/L) = \frac{(As)(Cis)(D)}{(Ais)(RF)(Vs)\ (Vi)\ (1000)}$$

Where:

As	=	Area of the characteristic ion for the target analyte in the sample
Cis	=	Concentration of the internal standard (ug/L)
D	=	Dilution factor, if the sample or extract was diluted prior to analysis. If no dilution is performed, D = 1.
Vi	=	Volume of the extract injected (ul)
Ais	=	Area of the characteristic for the associated internal standard
RF	=	Average response factor from the initial calibration.
Vs	=	Volume of sample extracted (ml)

The 1000 in the denominator represents the number of ul in 1 ml.

11.3.2. Solid Samples

$$\text{Concentration } (\mu g/KG) = \frac{(As)(Cis)(D)(Vt)}{(Ais)(RF)(Ws)\ (Vi)\ (1000)}$$

Where:

As	=	Area of the characteristic ion for the target analyte in the sample
Cis	=	Concentration of the internal standard (ug/L)
D	=	Dilution factor, if the sample or extract was diluted prior to analysis. If no dilution is performed, D = 1.
Vi	=	Volume of the extract injected (ul)
Ais	=	Area of the characteristic for the associated internal standard
RF	=	Average response factor from the initial calibration.
Vt	=	Volume of concentrated extract (ul)
Ws	=	Weight of sample (g)

The 1000 in the denominator represents the number of ul in 1 ml.

11.4. Relative Response Factors

$$RRF = \frac{A_x}{A_{is}} \times \frac{C_{is}}{C_x}$$

Where:

A_x = Area characteristic ion for the compound (see Table 21)
Ais = Area characteristic ion of associated internal std (See Table 21)
Cis = Concentration of internal standard
Cx = Concentration of compound in standard

11.5. Percent Relative Standard Deviation (% RSD) : as discussed in Section 9.2.4.4 (Initial calibration):

$$\% \text{ RSD} = \frac{\text{Standard Deviation of RRFs}}{\text{Mean RRF}}$$

11.6. Percent Difference (% D):as discussed in Section 9.2.4.4 (Continuing calibration):

$$\% D = \frac{RRF_c - \overline{RRF_i}}{\overline{RRF_i}} \times 100$$

Where: RRFc = RRF from continuing calibration

$\overline{RRF_i}$ = Mean RRF from current initial calibration

11.7. Percent Recovery (% R): Surrogates and Spikes

$$\text{Recovery (\%)} = \frac{\text{Concentration (or amount) found}}{\text{Concentration (or amount) added}} \times 100$$

11.8. Calculation of Relative Standard Error (RSE)

$$\%\,RSE = 100\% \times \sqrt{\frac{\sum_{i=1}^{N}\left[\frac{C_i - PC_i}{C_i}\right]^2}{(N-P)}}$$

Where:

N = Number of points in the curve
P = Number of parameters in the curve (= 1 for average response factor, 2 for linear, 3 for quadratic)
CI = True concentration for level i
PCi = Predicted concentration for level

11.9. Calculation of Percent (%) Error

$$\%Error = \frac{x_i - x_i'}{x_i} x\,100$$

Where:

x_i ' = Measured amount of analyte at calibration level *i*, in mass or concentration units

x_i = True amount

11.10. Dry Weight Correction: All solid samples must be corrected for dry weight using the following formula for dry weight determination.

$$DW = \frac{Gd}{Gw} \times 100$$

Where:

DW	=	Percent % Dry Weight
Gd	=	Dry weight of selected sample aliquot
Gw	=	Wet weight of selected sample aliquot

Multiply the DW value times the wet weight of the sample extracted. NOTE: This calculation can also be performed automatically by the target system provided the DW value is available and entered into the system.

12.0. Method Performance

12.1. Method Detection Limit Study (MDL)

A Method Detection Limit (MDL) study, as described in the Eurofins corporate Detection and Quantitation Limits SOP, CA-Q-S-006, must be performed initially and whenever a significant change affecting sensitivity is made to the analytical system. The MDL must be re-evaluated from quarterly MDL points at least every 12 months.

12.2. Demonstration of Capabilities

For DOC procedure refer to Section 19 in the most current revision of Eurofins Edison's Quality Assurance Manual (ED-QA-LQM).

12.3. Lower Limit of Quantitation Verification

The lowest calibration standard analyzed establishes the LLOQ or Reporting Limit. The capability to reliably detect this concentration through the preparation, clean-

up and analytical procedure is verified through the annual analysis of a standard at the LLOQ/RL. The LLOQ verification shall also be performed whenever significant changes are made to the preparation and/or analytical procedure.

12.3.1 The LLOQ verification standard shall be prepared at a concentration 0.5-2 times the LLOQ/RL, and be taken through all of the same preparation and clean-up methods as client samples.

12.3.2 The LLOQ verification standard for aqueous matrix shall be prepared using laboratory deionized water and for the solid matrix using clean Ottawa sand. Other clean matrices may be used in addition, for project specific requirements.

12.3.3 The annual LLOQ verification is completed and documented with the required annual MDL evaluation.

12.3.4 Recovery of each analyte must meet the laboratory established LCS recovery limits + 20%. (For example, if the LCS recovery limits are 70-130%, the LLOQ verification must meet recovery limits of 50-150%.) Once sufficient points have been generated, LLOQ based statistical limits may be used in place of limits based on LCS recovery.

NOTE: The lower recovery limit for the LLOQ can be no lower than 10%.

12.4. Training Requirements

Refer to Eurofins SOP No. ED-GEN-022, (*Training*), for the laboratory's training program.

13.0. Pollution Control

13.1 It is Eurofins's policy to evaluate each method and look for opportunities to minimize waste generated (i.e., examine recycling options, ordering chemicals based on quantity needed, preparation of reagents based on anticipated usage and reagent stability). Employees must abide by the policies in Section 13 of the Corporate Environmental Health and Safety Manual (CW-E-M-001) for "Waste Management and Pollution Prevention."

14.0. Waste Management

14.1 Waste management practices are conducted consistent with all applicable rules and regulations. Excess reagents, samples and method process wastes are disposed of in an accepted manner. Waste description rules and land disposal restrictions are followed. Waste disposal procedures are incorporated by reference to Eurofins Edison SOPs Nos. ED-SPM-007 (*Disposal of Samples and Associated Laboratory Waste, current revision)* and ED-SPM-008 (*Laboratory Waste Disposal Procedures, current revision).* The following waste streams are produced when this method is carried out:

- Auto sampler vials and expired standards: These vials are collected in satellite accumulation within the instrument laboratory. The vials are then placed into a 55 steel open top drum in the waste room. When the drums are full, the drum will be collected by the waste vendor for disposal. This waste is treated for incineration.

  Teris Profile Number: 50016652
  Onyx Profile WIP Number: 282493

- Mixed Solvent Waste: Mixed solvent waste is collected in a small beaker inside the bench top hood. This waste is then transferred into the satellite accumulation container in the Organic Prep. Lab. on a daily basis. This material is transferred into 5 gallon solvent cans as satellite accumulation. These cans are emptied every 24 hours into a steel drum in the waste room. This drum is kept in the walk in hood until it is full. The full drum is then removed from the hood and placed on secondary containment in the waste room.

  Teris Profile Number: 50016624
  Onyx Profile WIP Number: 545240

14.1. Pollution Prevention

14.2.1. Pollution prevention encompasses any technique that reduces or eliminates the quantity or toxicity of waste at the point of generation. Numerous opportunities for pollution prevention exist in laboratory operation. The USEPA has established a prevention hierarchy of environmental management techniques that places pollution prevention as the management option of first choice. Whenever feasible, laboratory personnel should use pollution prevention techniques to address their waste generation. When wastes cannot be feasibly reduced at the source, the agency recommends recycling as the next best option.

14.2.2. The quantity of chemical purchased should be based on expected usage during its shelf life and disposal cost of unused material. Actual reagent preparation volumes should reflect anticipated usage and reagent stability.

15.0. References / Cross-References

15.1. United States Environmental Protection Agency, “Method SW8270D, Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry”, Test Methods for Evaluating Solid Wastes, SW846 Third Edition, Laboratory Manual, Physical/Chemical Methods, Revision 5, July 2014..

15.2. United States Environmental Protection Agency, “Method SW8270E, Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry”, Test Methods for Evaluating Solid Wastes, SW846 Update IV, Laboratory Manual, Physical/Chemical Methods, Revision 6, June 2018.

15.3. United States Environmental Protection Agency, "Method SW8000D: Determinative Chromatographic Separations", Test Methods for Evaluating Solid Wastes, SW846, Laboratory Manual, Physical/Chemical Methods, Update V, Revision 4, October 2012..

15.4. Eurofins Edison Document No. ED-QA-LQM, *Laboratory Quality Manual*, current revision.

15.5. Eurofins Edison SOP No. ED-ORP-002, *SW846 Method 3510C-Extraction of Semi-Volatile Organic Compounds in Water by Separatory Funnel,* current revision.

15.6. Eurofins Edison SOP No. ED-ORP-043, *SW846 Method 3580A - Waste Dilution Prep for Analysis of BNAs by SW846 Method 8270,* current revision.

15.7. Eurofins Edison SOP No. ED-ORP-044, *Procedure for the Microwave Extraction of Solids, SW3546, current revision.*

15.8. Eurofins Document No. CW-E-M-001, Corporate Environmental Health and *Safety Manual,* current revision.

15.9. Eurofins Corporate Quality SOP No. CA-Q-S-001, *Solvent & Acid Lot Testing & Approval*, current revision.

15.10. Eurofins Edison SOP No. ED-GEN-023 (*Bulk Solvent Testing and Approval*), current revision.

15.11. Eurofins Edison SOP No. ED-GCS-001, *Preparation and Screening of Semivolatile Organic Extracts for GC/MS Analysis*, current revision.

15.12. Eurofins Edison Work Instruction Document No. EDS-WI-012, *Client Complaint/Corrective Action Form,* current revision.

15.13. Eurofins Edison SOP No. ED-GEN-003, *Standard Operating Procedure for Control of Non-Conformances and Corrective Action,* current revision.

15.14. Eurofins Edison SOP No. ED-ORP-001, *Extraction of Semivolatile Organic Compounds in Water, EPA Method 625.1,* current revision.

15.15. Eurofins Edison SOP No. ED-GEN-022, *Training,* current revision.

15.16. Eurofins Corporate Quality Memorandum, CA-Q-QM-002, *GC/MS Tuning Policy*, current revision.

15.17. Eurofins Corporate Quality SOP No. CA-Q-S-006, *Detection and Quantitation Limits,* current revision.

16.0. Method Modifications:

Method 8270E requires the DFTPP tune standard to be analyzed once prior to an ICAL

and not daily prior to sample analysis. Until such time as 8270D is removed from lab capabilities and in order to satisfy both 8270D and 8270E The laboratory will analyze the DFTPP tune daily, prior to QC and sample analysis. The laboratory will use the tighter criteria from Methods 8270C/8270D for tune evaluation, rather than the criteria suggested in Table 3 of Method 8270E.

17.0. Attachments

Attachment 1 Poor Performing Analytes

18.0. Revision History

- Revision 10, date 10/18/2022
    - Updated to Eurofins branding throughout.
    - Section 8.1: updated to include procedure for sampling chlorinated water sources.
    - Section 9 updated throughout to include ICAL evaluation with Relative Standard Error (RSE).
    - Section 11.8: added formula for calculation of Relative Standard Error (RSE)

- Revision 9, date 03/15/2021
    - Updated as needed to reflect 1,4-dioxane RL of 0.2 ug/l.
    - Updated Tables 11 and 12 to reflect new low ICAL standard concentration of 1,4-dioxane..

- Revision 8, date 06/29/2020
    - Updated to Eurofins branding.
    - Updated throughout to include 8270E requirements.
    - Removed references to SW846 3550B/C prep methods (no longer in use for this method at Edison lab).
    - Update equipment listed in Section 6.0.Updated analytical column in Section 6.1.2.
    - Updated, deleted and renumbered tables as required.
    - Made extensive updates to Standards (sources and preparation) in Section 7.2.
    - Removed all references to Aromatic Amines. Deleted all tables specific to Aromatic Amine analysis. Renumbered remaining tables in document and updated text references.
    - Throughout document clarified tune requirements for 8270E.
    - Following added to Section 9.1.1: For method 8270E the method blank is generally acceptable if target analyte concentrations are less than the one half the reporting limit.
    - Calibration Point Read-back Criteria was added to Section 9.2.4.3. The calculation for percent error was added to Section 11.8.
    - Section 9.2.4.2.3: added following for 8270E: the calculated concentration or amount of each analyte of interest in the CCV standard should fall within ±20%.
    - Section 9.2.4.2.5.6: added ‘The recalculated concentration of the low calibration point should be within ±50% of the standard’s concentration.”

- Section 12.1 revised to reflect the updated MDL procedure.
- Added Section 12.3: annual Lower Limit of Quantitation Verification
- Added Corporate SOP CA-Q-S-006, Detection and Quantitation Limits to references.
- Section 16.0: added a Method Modification regarding tuning check requirements.

- Revision 7, date 06/08/2018

  - Section 2.3: revised to clarify that RVE/LVI is lab standard procedure.
  - Section 9.1.3: removed statement regarding allowance for up to five analytes to recover outside of lab acceptance limits in LCS/LCSD.
  - Section 9.2.4.3: Replace table 'ICV Poor Performers (50-150% Recovery) with expanded list of 'Poor Performing Analytes' in Attachment 1.
  - Added Section 9.2.4.4.5: CCV Poor Performers
  - Corrected number in section 9.2.4.5
  - Added Attachment 1 – Poor Performing Analytes

- Revision 6, date 01/12/2018:

  - Section 7.2.5 included to specify reagent and standard storage conditions.
  - Revised Section 9.1.3 to clarify requirements for specific LCS/LCSD evaluation criteria regarding the # of out of criteria analytes.
  - Revised Section 9.2.4.3 to add 2,4-Dimethylphenol as a poor performing analyte, increased the range for the poor performers to 50-150 and also expanded the guidelines for flagging the ICV outliers.

- Revision 5, dated 09/29/2017:
  - Revised Section 9.1.1 to clarify requirements for surrogate recovery in method blanks.

- Revision 4, dated 08/21/2017:
  - Updated throughout to add a procedure for the analysis of 1,4-dioxane by isotope dilution selected ion monitoring (SIM)
  - Added tables for isotope dilution SIM standards. Renumbered all tables as necessary.
  - Section 7.2.1: added a list of full scan calibration list options.
  - Table 3: Renamed 'Full Scan Stock Standards'.
  - Section 9.2.1: noted that DFTTP applies only to full scan analysis.
  - Section 9.2.3: updated CCV concentrations
  - Added reference to GC/MS Tuning Policy in Section 15.16.

- Revision 3, dated 01/07/2016:
  - Tables 1 and 2: added SIM as option for 1,4-Dioxane.
  - Section 2.3: removed SW3541 (Soxtherm) as option for soils prep (lab has discontinued use of this method). Also removed SW3541 SOP reference from Section 15.0.
  - Tables 19 and 20: added source and prep instructions for 1,4-Dioxane SIM standard. Updated source and prep instructions for 4,6-Dinitro-2-methylphenol.
  - Table 22: added prep instructions for 1,4-Dioxane and 4,6-Dinitro-2-methylphenol

SIM ICV standard.
- Corrected the information in the 'DFTPP Key Ions and Abundance Criteria' table in Section 9.2.1 to match the info found in SW846 8270C.
- Section 10.1.4.2: updated "SIM Parameters" to included ion masses/dwell times for 1,4-Dioxane.

- Revision 2, dated 01/28/2015:
  - Extensively reformatted the SOP. Placed tables that had been in rear of document into the body of the text. Renumbered tables as applicable and fixed text references to tables.
  - Section 1.1, Table 1: Revised table to include all current analytes. Also footnoted those compounds which are currently analyzed by SIM.
  - Section 2.3: added options for extraction of solids by SW846 3456 (Microwave Extraction) and by SW3580A (Waste Dilution) and added SOP references. Deleted reference to SOP ED-ORP-005 (SW3550B – Low Level); Updated Section 15 (References).
  - Section 2.5: added text detailing the RVE/LVI options.
  - Section 2.6: added table which includes all analytes routinely analyzed by SIM.
  - Section 6: updated to include newer GC, MS and autosampler models currently in use.
  - Section 6.1.3: added Zebron ZB column as an option.
  - Section 7.2: extensively revised standards information to reflect switch to Restek standards.
  - Table 3:Added Custom Aromatic Amine Surrogate Standard and revised Table 8 to include initial calibration prep instructions for the Aromatic Amine surrogates.
  - Throughout document: removed references to Target and replaced with Chrom.
  - Section 7.2.1: Added reference to section 10.2.1.2 for LVI.
  - Added Section 7.2.1.3.1 and Table 17A both of which discuss use of Aromatic Amine surrogates.
  - Section 7.2.1.2: Added reference to Tables 9,10 and 11 (ICV Preparation)
  - Section 8.0: Added Sample container and minimum sample size (250 ml) for Reduced volume extraction.
  - Sections 9.1.2, 9.1.3, 9.1.4 and 9.2.4: added statement that certain state regulatory programs have defined recovery limits which, where applicable, are used for spike and calibration evaluations.
  - Section 9.1.2: Deleted sentence "A minimum of 16 spiked analytes are reported to in client reports (the full list is reported at least once during each 2 year period because we employ full spiking list.
  - Section 9.1.4: Added note regarding use of Aromatic Amine Surrogates.
  - Section 9.2.2.2: Added reference to ICV Preparation tables in Section 7.2.
  - Section 9.2.3: added more specific info as to the concentration of the CCVs for all techniques.
  - Section 9.2.4.2.1: Changed to reflect that each analyte should meet minimum RF's, not the average across the calibration. Added LLCCV requirement.
  - Section 10.3.1: added explanation of Chrom's interaction with TALS. Removed references to Target.
  - Section 9.2.4.2.5.5: Added: (or can be noted in the narrative)
  - Section 9.2.4.2.5.6: Revised last sentence to read: "This evaluation can be checked using the Initial Calibration %Drift Report in Chrom."
  - Section 9.2.4.3: Removed 65-135% criteria and added "poor performing" analyte list and associated criteria of 60-140%.

- Section 9.2.4.4.3: Added LLCCV criterion for RFs
- Section 9.2.4.4.4: Added LLCCV criterion for %D
- Section 10.1.4: Updated GC/MS operating conditions for full scan, SIM and DFTPP.
- Section 10.1.4.1: added a table detailing operating conditions for LVI option.
- Table 2: Added 2-ethylaniline, 2,4-dimethylaniline, 3,4-dimethylaniline, 2,3-dimethylaniline, 2,4,5-trimethylaniline and 4-chloro-o-toluidine to Working Standards preparation information.
- Table 25: updated to include all current analytis/surrogates/internal standards and associated ions.
- Throughout document: updated LQM section references as appropriate as some have changed with the latest LQM revision.

- Revision 1, dated 11/07/2011

  - Section 1.1, Table 1: Added Pentachloronitrobenzene and associated CAS# to the analyte list.
  - Section 7.2.1: Added Pentachloronitrobenzene standard information.
  - Table 2: Added Pentachloronitrobenzene to Working Standards preparation information.
  - Table 4: Added Pentachloronitrobenzene and associated minimum RF.
  - Table 8: Added Pentachloronitrobenzene and associated ions.

- Revision 0, dated 02/22/2011: NEW

Table 21
Characteristic Ions Of Semi-Volatile Organic Compounds

Compound	Primary Ion	Secondary Ion(s)
1,1'-Biphenyl	154	153,76
1,2,4,5-Tetrachlorobenzene	216	214, 179
1,2,4-Trichlorobenzene	180	182, 145
1,2-Dichlorobenzene	146	148, 111
1,2-Diphenylhydrazine	77	105, 182
1,3-Dichlorobenzene	146	148, 111
1,3-Dimethylnaphthalene	156	141, 115
1,4-Dichlorobenzene	146	148, 111
1,4-Dichlorobenzene d4 **(ISTD)**	152	150, 115
1,4-Dioxane	88	58, 43
1-Methylnaphthalene	142	141, 115
1-Naphthylamine	143	115, 116
2,2'-oxybis[1-chloropropane]	45	77, 121
2,3,4,6-Tetrachlorophenol	232	131, 230
2,3,7,8-TCDD (screen)	320	322, 324
2,3-Dihydroindene		
2,3-Dimethylaniline	106	129

Table 21 Characteristic Ions Of Semi-Volatile Organic Compounds		
Compound	**Primary Ion**	**Secondary Ion(s)**
2,4,5-Trichlorophenol	196	198, 200
2,4,5-Trimethylaniline	102	55, 56
2,4,6-Tribromophenol **(Surrogate)**	330	132, 141
2,4,6-Trichlorophenol	196	198, 200
2,4-Dichlorophenol	162	164, 98
2,4-Xylidine	121	120, 106
2,4-Dimethylphenol	122	107, 121
2,4-Dinitrophenol	184	63, 154
2,4-Dinitrotoluene	165	63, 89
2,6-Dinitrotoluene	165	63, 89
2-Chloronaphthalene	162	127, 164
2-Chlorophenol	128	64, 130
2-Ethylaniline	106	122,104
2-Fluorobiphenyl **(Surrogate)**	172	171
2-Fluorophenol **(Surrogate)**	112	64
2-Methylnaphthalene	142	141
2-Methylphenol	108	107
2-Naphthylamine	143	115, 116
2-Nitroaniline	65	108, 138
2-Nitrophenol	139	109, 65
2-tert-butyl-4-Methylphenol	149	121, 91
2-Toluidine	107	106, 77
3,3'-Dichlorobenzidine	252	254, 126
3,4-Dimethylaniline	106	129, 127
3,5-Di-tert-butyl-4-Hydroxytol	205	220, 145
3-Nitroaniline	138	108, 65
4,6-Dinitro-2-methylphenol	198	51, 105
4-Bromophenyl phenyl ether	248	250, 141
4-chloro-2-methylaniline	106	144, 142
4-Chloro-3-methylphenol	107	144, 142
4-Chloroaniline	127	129
4-Chloroaniline-d4 **(Surrogate)**	131	133
4-Chlorophenyl phenyl ether	204	206, 141
4-Methylphenol	108	107
4-Nitroaniline	138	108, 65
4-Nitrophenol	139	109, 65
Acenaphthene	154	153, 152
Acenaphthene d10 **(ISTD)**	164	162, 160
Acenaphthylene	152	151, 153
Acetophenone	105	77, 51
Aniline	93	66
Aniline-d5 (**Surrogate**)	98	71,42
Anthracene	178	176, 179
Atrazine	200	173,215
Benzaldehyde	77	105,106
Benzidine	184	92, 185

Table 21 Characteristic Ions Of Semi-Volatile Organic Compounds		
Compound	**Primary Ion**	**Secondary Ion(s)**
Benzo(a)anthracene	228	229, 226
Benzo(a)pyrene	252	253, 125
Benzo(b)fluoranthene	252	253, 125
Benzo(g,h,i)perylene	276	138, 277
Benzo(k)fluoranthene	252	253, 125
Benzoic Acid	122	105, 77
Benzyl Alcohol	108	79, 77
Bis(2-chloroethoxy)methane	93	95, 123
Bis(2-chloroethyl)ether	93	63, 95
Bis(2-ethylhexyl)phthalate	149	167, 279
Bisphenol-A	213	228, 119
Butyl benzyl phthalate	149	91, 206
Caprolactam	113	55,56
Carbamazepine	193	236, 135
Carbazole	167	166, 139
Chrysene	228	226, 229
Chrysene d12 **(ISTD)**	240	120, 136
Coumarin	146	118, 63
Dibenz(a,h)anthracene	278	139, 279
Dibenzofuran	168	139
Diethylphthalate	149	177, 150
Dimethylphthalate	163	194, 164
Di-n-butylphthalate	149	150, 104
Di-n-octylphthalate	149	167, 43
Fluoranthene	202	101, 203
Fluorene	166	165, 167
Hexachlorobenzene	284	142, 249
Hexachlorobutadiene	225	223, 227
Hexachlorocyclopentadiene	237	235, 272
Hexachloroethane	117	201, 199
Indeno(1,2,3-cd)pyrene	276	138, 227
Isophorone	82	95,138
Kepone	272	237, 355
N,N-Dimethylaniline	120	122, 104
Naphthalene	128	129, 127
Naphthalene d8 **(ISTD)**	136	68
n-decane	43	57
Nitrobenzene	77	123, 65
Nitrobenzene-d5 **(Surrogate)**	82	128, 54
N-Nitrosodimethylamine	42	74, 44
N-Nitroso-di-n-propylamine	170	42,101,130
N-Nitrosodiphenylamine	169	168, 167
n-Octadecane	57	43, 85
o-Toluidine-d9 **(Surrogate)**	114	112, 42
Pentachloronitrobenzene	237	214,295
Pentachlorophenol	266	264, 268

Table 21 Characteristic Ions Of Semi-Volatile Organic Compounds		
Compound	**Primary Ion**	**Secondary Ion(s)**
Perylene d12 **(ISTD)**	264	260, 265
Phenanthrene	178	179, 176
Phenanthrene d10 **(ISTD)**	188	94, 80
Phenol	94	65, 66
Phenol-d5 **(Surrogate)**	99	42, 71
Phenyl ether	170	77, 115
Pyrene	202	200, 203
Pyridine	79	52, 51
Terphenyl-d14 **(Surrogate)**	244	122, 212

Attachment 1
Poor Performing Compounds

1,2,4,5-Tetrachlorobenzene
1,4-Dioxane
1-Naphthylamine
2,3,4,6-Tetrachlorophenol
2,4-Dimethylphenol
2,4-Dinitrophenol
2-Chloroaniline
2-Naphthylamine
3&4-Methylphenol
3'3-Dichlorobenzidine
4,6-Dinitro-2-methyl- phenol
4-Chloroaniline
4-Nitrophenol
Aniline
Atrazine
Benzaldehyde
Benzidine
Benzoic Acid
Benzyl Alcohol
Biphenyl
Caprolactam
Diphenylamine
Hexachlorocyclopentadiene
Hexachloroethane
n-Decane
n-Nitrosodimethylamine
o,o,o-Triethylphosphorothioate
o-Toluidine
Pentachloronitrobenzene
Pentachlorophenol
Phenol
Pyridine

These analytes are exempt from the ICV and CCV criteria as detailed in this SOP

Title: Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS) by SW846 Method 8260D

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Approvals (Signature/Date):

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1.0 Scope and Application

1.1 Analytes, Matrix(s), and Reporting Limits

1.1.1 USEPA SW846 Method 8260D is used for the determination of volatile organic compounds in a variety of aqueous and solid matrices by purge and trap gas chromatography (GC)/mass spectrometery (MS). The methods are applicable to the compounds listed in Table 1 (below). Actual target compound lists are determined through regulatory or project specifications. Method performance criteria for each target analyte will be determined prior to sample analysis.

1.1.2 This SOP also describes the optional procedure for analyses of compounds using 8260D Selected Ion Monitoring (SIM). SIM analyses is specific to target compounds: 1,2-dibromoethane, 1,2-dibromo-3-chloropropane, 1,2,3-Trichloropropane and 1,4-Dioxane. Benzene and Chloroform if needed.

Table 1: Method Analytes

Compound	CAS #	Compound	CAS #
1,1,1,2-Tetrachloroethane	630-20-6	cis-1,2-Dichloroethene	156-59-2
1,1,1-Trichloroethane	71-55-6	cis-1,3-Dichloropropene	10061-01-5
1,1,1-Trifluoro-2,2-dichloroethane	306-83-2	Cyclohexane	110-82-7
1,1,2,2-Tetrachloroethane	79-34-5	Cyclopentene	142-29-0
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	Dibromomethane	74-95-3
1,1,2-Trichloroethane	79-00-5	Dichlorobromomethane	75-27-4
1,1-Dichloroethane	75-34-3	Dichlorodifluoromethane	75-71-8
1,1-Dichloroethene	75-35-4	Dichlorofluoromethane	75-43-4
1,1-Dichloropropene	563-58-6	Dimethylnaphthalene (total)	28804-88-8
1,1-Difluoroethane	75-37-6	Epichlorohydrin	106-89-8
1,2,3-Trichlorobenzene	87-61-6	Ethanol	64-17-5
1,2,3-Trichloropropane **(1)**	96-18-4	Ethyl acetate	141-78-6
1,2,3-Trimethylbenzene	526-73-8	Ethyl acrylate	140-88-5
1,2,4,5-Tetramethylbenzene	95-93-2	Ethyl ether	60-29-7
1,2,4-Trichlorobenzene	120-82-1	Ethyl methacrylate	97-63-2
1,2,4-Trimethylbenzene	95-63-6	Ethylbenzene	100-41-4
1,2-Dibromo-3-Chloropropane **(1)**	96-12-8	Ethylene Dibromide **(1)**	106-93-4
1,2-Dichloro-1,1,2,2-tetrafluoroethane	76-14-2	Hexachlorobutadiene	87-68-3
1,2-Dichloro-1,1,2-trifluoroethane	354-23-4	Hexane	110-54-3
1,2-Dichlorobenzene	95-50-1	Indan	496-11-7
1,2-Dichloroethane	107-06-2	Iodomethane	74-88-4
1,2-Dichloroethene, Total	540-59-0	Isobutyl alcohol	78-83-1
1,2-Dichloropropane	78-87-5	Isopropyl acetate	108-21-4
1,3,5-Trichlorobenzene	108-70-3	Isopropyl alcohol	67-63-0
1,3,5-Trimethylbenzene	108-67-8	Isopropyl ether	108-20-3
1,3-Dichlorobenzene	541-73-1	Isopropylbenzene	98-82-8
1,3-Dichloropropane	142-28-9	Methacrylonitrile	126-98-7
1,3-Dichloropropene, Total	542-75-6	Methyl acetate	79-20-9

Compound	CAS #	Compound	CAS #
1,4-Dichlorobenzene	106-46-7	Methyl acrylate	96-33-3
1,4-Dioxane **(1)**	123-91-1	Methyl methacrylate	80-62-6
1-Chloropropane	540-54-5	Methyl tert-butyl ether	1634-04-4
2,2,4-Trimethylpentane	540-84-1	Methylcyclohexane	108-87-2
2,2-Dichloropropane	594-20-7	Methylene Chloride	75-09-2
2,4,4-Trimethyl-1-pentene	107-39-1	Methylnaphthalene (total)	1321-94-4
2-Butanone (MEK)	78-93-3	Monochloropentafluoroethane	76-15-3
2-Chloro-1,3-butadiene	126-99-8	m-Xylene & p-Xylene	179601-23-1
2-Chloroethyl vinyl ether	110-75-8	Naphthalene	91-20-3
2-Chloropropane	75-29-6	n-Butanol	71-36-3
2-Chlorotoluene	95-49-8	n-Butyl acetate	123-86-4
2-Hexanone	591-78-6	n-Butyl acrylate	141-32-2
2-Methyl-1,3-butadiene	78-79-5	n-Butylbenzene	104-51-8
2-Methyl-2-propanol	75-65-0	n-Heptane	142-82-5
2-Nitropropane	79-46-9	n-Propyl acetate	109-60-4
2-Octanol	123-96-6	N-Propylbenzene	103-65-1
2-Octanone	111-13-7	o-Xylene	95-47-6
4-Chlorotoluene	106-43-4	p-Diethylbenzene	105-05-5
4-Ethyltoluene	622-96-8	Pentane	109-66-0
4-Isopropyltoluene	99-87-6	Propene	115-07-1
4-Methyl-2-pentanone (MIBK)	108-10-1	Propionitrile	107-12-0
Acetaldehyde	75-07-0	sec-Butylbenzene	135-98-8
Acetone	67-64-1	Styrene	100-42-5
Acetonitrile	75-05-8	Tert-amyl methyl ether	994-05-8
Acrolein	107-02-8	Tert-butyl ethyl ether	637-92-3
Acrylonitrile	107-13-1	tert-Butylbenzene	98-06-6
Allyl chloride	107-05-1	Tetrachloroethene	127-18-4
Amyl acetate (mixed isomers)	628-63-7	Tetrahydrofuran	109-99-9
Benzene **(1)**	71-43-2	Toluene	108-88-3
Benzyl chloride	100-44-7	Total BTEX	STL00431
Bromobenzene	108-86-1	trans-1,2-Dichloroethene	156-60-5
Bromoform	75-25-2	trans-1,3-Dichloropropene	10061-02-6
Bromomethane	74-83-9	trans-1,4-Dichloro-2-butene	110-57-6
Butadiene	106-99-0	Trichloroethene	79-01-6
Butyl Methacrylate	97-88-1	Trichlorofluoromethane	75-69-4
Camphene	79-92-5	Vinyl acetate	108-05-4
Camphor	76-22-2	Vinyl chloride	75-01-4
Carbon disulfide	75-15-0	Xylenes, Total	1330-20-7
Carbon tetrachloride	56-23-5	1,4-Dichlorobenzene-d4 **(ISTD)**	3855-82-1
Chlorobenzene	108-90-7	1,4-Dioxane-d8 **(ISTD)**	17647-74-4
Chlorobromomethane	74-97-5	2-Butanone-d5 **(ISTD)**	24313-50-6
Chlorodibromomethane	124-48-1	Chlorobenzene-d5 **(ISTD)**	3114-55-4
Chlorodifluoromethane	75-45-6	Fluorobenzene **(ISTD)**	462-06-6
Chloroethane	75-00-3	TBA-d9 **(ISTD)**	25725-11-5
Chloroform **(1)**	67-66-3	1,2-Dichloroethane-d4 **(Surrogate)**	17060-07-0
Chloromethane	74-87-3	4-Bromofluorobenzene **(Surrogate)**	460-00-4

Compound	CAS #	Compound	CAS #
Chlorotrifluoroethene	79-38-9	Dibromofluoromethane **(Surrogate)**	1868-53-7
Chlorotrifluoromethane	75-72-9	Toluene-d8 **(Surrogate)**	2037-26-5
2-ethylhexyl acrylate	103-11-7		

(1) Compound can be analyzed by full scan or Selected Ion Monitoring (SIM).

1.1.3 Method 8260D can be used to quantitate most volatile organic compounds that have boiling points below 200°C, and that are insoluble or slightly soluble in water. Water-soluble compounds can be included in this method, but quantitation limits will be higher due to poor purging efficiency.

1.1.4 The standard reporting limit (RL) is established at or above the low-level standard in the calibration curve (1 ug/l for most compounds). For a complete list of method detection limits (MDLs) and RLs, please see reference the current TALS (LIMS) active Method Limit Group database.

1.1.5 On occasion clients may request modifications to this SOP. These modifications are handled following the procedures outlined in Sections 7 (*Review of Work Request*) and 20 (*Test Methods and Method Validation*) of Eurofins Edison's Quality Assurance Manual (ED-QA-LQM).

1.1.6 Any variation in procedure shall be completely documented using an NCM. The NCM is approved by the supervisor and then automatically sent to the laboratory Project Manager by e-mail so that the client can be notified as appropriate. The QA department also receives NCMs by e-mail for tracking and trending purposes. The NCM process is described in more detail in Eurofins Edison SOP No. ED-GEN-003, *Standard Operating Procedure for Control of Non-Conformances and Corrective Action,* current revision NCM shall be filed in the project file and addressed in the case narrative. Any unauthorized deviations from this procedure must also be documented as a nonconformance, with a cause and corrective action described.

2.0 Summary of Method

2.1 Method 8260D is used to determine volatile organic compounds in aqueous, non-aqueous and solid matrices. Sample preparation techniques vary, depending on the matrix and the level of contamination expected. Purge and trap techniques are used to introduce the sample to the GC/MS system. Refer to Eurofins Edison SOP Nos. ED-MSV-001*, Purge and Trap for Aqueous Samples, SW846 Method 5030*, current revision and ED-MSV-002, *Closed-System Purge-and-Trap and Extraction for Volatile Organics in Soil and Waste Samples, SW846 Method 5035A,* current revision.

2.2 All soil samples are screened by GC/FID static headspace or MS analysis to provide the analyst with appropriate initial dilution factors. Aqueous samples without historical results are also screened. For additional details see Eurofins Edison SOP No. ED-GCV-001, *Screening for Volatile Organics, Static Headspace with GC FID, SW846 Method 5021*, current revision.

2.3 An aliquot of sample containing internal standard and surrogate spiking solution is purged with nitrogen in a closed sparging vessel. The volatile compounds are transferred from the aqueous phase to the vapor phase. The vapor is swept through a sorbent column where the volatiles are trapped. After purging is complete, the sorbent column is heated and backflushed with helium to desorb the volatiles onto a gas chromatograph column.

2.4 Analytes eluted from the capillary chromatograhy column are introduced into the mass spectrometer via a direct connection. Identification of target analytes is accomplished by comparing their mass spectra with the electron impact spectra of authentic standards. Quantitation is accomplished by comparing the response of a major (quantitation) ion relative to an internal standard using a minimum of a five-point calibration curve.

2.5 For aqueous VOA samples submitted for New Jersey Groundwater Quality Standard (NJ GWQS) evaluation, a full scan analysis is initially performed using the 8260 methodology No further analysis by SIM is required if all of the following compounds are present above the full scan RL: 1,2-dibromoethane, 1,2-dibromo-3-chloropropane, 1,2,3-Trichloropropane and 1,4-dioxane, chloroform, vinyl chloride and benzene. If any of these compounds are undetected in the undiluted, full scan analysis, the sample must be analyzed via 8260D SIM for those compounds.

2.6 In order to meet lower reporting limits of 0.5ug/L for most analytes, 2.5 ug/L for ketones and generally lower limits for other non-routine analytical compounds, samples must be analyzed against an initial calibration with a low point at those levels. The corresponding TALS login method for low level aqueous analysis is 8260_LL. See Table 3b for initial calibration levels and spike amounts.

3.0 Definitions

3.1 For a complete list of definitions refer to Appendix 2 in the most current revision of Eurofins Edison's Quality Assurance Manual (ED-QA-LQM).

4.0 Interferences

4.1 This method is susceptible to contamination from a number of sources, including organic solvents used in other laboratory procedures, impurities in the purge gas, improper cleaning of syringes or purge vessels, and carryover from high level samples. Samples can be contaminated by the diffusion of volatile organics through the septum during shipment or storage. Steps have been taken to ensure that these potential problems are eliminated from the laboratory.

4.2 The volatiles analytical laboratory is housed in a separate building, away from the organic extraction lab area where large quantities of organic solvents are used. No organic solvents are used or stored in the volatiles laboratory.

4.3 The nitrogen used as purge gas passes through a solvent trap prior to its inlet into the purge and trap units.

4.4 Trip Blanks are shipped to clients with aqueous bottle ware as requested. The purpose of the trip blank is to detect and identify any VOC contamination of the samples while in transit to and from the lab. The blank is created at the laboratory by completely filling the volatile vial container with lab grade organic free deionized water and sealing the container Trip Blanks accompany bottle ware and samples through the sampling, storage and analysis stages as a check on contamination that may occur at these points.

4.5 Individual samples are each handled with a unique syringe that has been baked in a drying oven at 105°C to ensure the absence of volatile compounds.

4.6 Carryover can occur anytime a high level sample is analyzed. Screening procedures are employed to ensure that a sample is analyzed at an appropriate dilution to minimize potential carryover. When a high level sample is analyzed, it is followed by the analysis of a reagent water blank. If another sample was analyzed after the high level sample, this sample is inspected carefully for signs of carryover. If this sample does not contain any of the compounds found in the high level sample, the system can be considered contamination free.

4.7 The analytical system is checked daily with the analysis of a method blank. This blank must meet all quality control criteria for the method before sample analysis may take place.

5.0 Safety

Employees must abide by the policies and procedures in the Corporate Environmental Health and Safety Manual (CW-E-M-001) and this document. This procedure may involve hazardous material, operations and equipment. This SOP does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of the method to follow appropriate safety, waste disposal and health practices under the assumption that all samples and reagents are potentially hazardous. Safety glasses, gloves, lab coats and closed-toe, nonabsorbent shoes are a minimum.

Any questions pertaining to safety issues or procedures should be brought to the department manager or Edison Safety Officer.

5.1 Specific Safety Concerns or Requirements

5.1.1 Latex, nitrile and vinyl gloves all provide adequate protection against the methanol used in this method.

5.1.2 Purge vessels on purge-and-trap instruments can be pressurized by the time analysis is completed. Vent the pressure prior to removal of these vessels to prevent the contents from spraying out.

5.1.3 The gas chromatograph and mass spectrometer contain zones that have elevated temperatures. The analyst needs to be aware of the locations of those zones, and must cool them to room temperature prior to working on them.

5.1.4 The mass spectrometer is under deep vacuum. The mass spectrometer must be brought to atmospheric pressure prior to working on the source.

5.1.5 There are areas of high voltage in both the gas chromatograph and the mass spectrometer. Depending on the type of work involved, either turn the power to the instrument off, or disconnect it from its source of power.

5.2 Primary Materials Used

The following is a list of the materials used in this method, which have a serious or significant hazard rating. **Note: This list does not include all materials used in the method. The table contains a summary of the primary hazards listed in the MSDS for each of the materials listed in the table.** A complete list of materials used in the method can be found in the reagents and materials section. Employees must review the information in the MSDS for each material before using it for the first time or when there are major changes to the MSDS.

Material (1)	Hazards	Exposure Limit (2)	Signs and symptoms of exposure
Methanol (MeOH)	Flammable Poison Irritant	200 ppm-TWA	A slight irritant to the mucous membranes. Toxic effects exerted upon nervous system, particularly the optic nerve. Symptoms of overexposure may include headache, drowsiness and dizziness. Methyl alcohol is a defatting agent and may cause skin to become dry and cracked. Skin absorption can occur; symptoms may parallel inhalation exposure. Irritant to the eyes.
1 – Always add acid to water to prevent violent reactions.			
2 – Exposure limit refers to the OSHA regulatory exposure limit.			

6.0 Equipment and Supplies

6.1 Instrumentation

6.1.1 Purge and trap units from several different manufacturers are used, depending upon the sample matrix and preparatory technique required. A purge and trap unit consists of three parts: the sample purge unit, the trap, and the concentrator. Unit configurations currently in use are:

- OI Analytical 4551, 4100 Automatic Sampler/4660,4760 concentrator;
- Archon 5100A Automatic sampler/ OI Analytical 4660,4760 concentrator;
- EST Centurion Autosampler/ EST Encon concentrator;
- Archon Autosampler/EST Encon concentrator.
- Archon/EST Evolution

6.1.2 A VOCARB 3000 trap from Supelco is used in the Encon concentrator. The trap is 25cm long with an inside diameter of 0.105 inches. The trap is packed with 10.0cm Carbopack B, 6.0 cm Carboxin 1000, and 1cm Carboxin 1001.

6.1.3 An OI analytical purge trap #10 is used for the OI 4560,4660 and 4760 concentrator. The trap is 25cm long with an inside diameter of 0.105 inches. The trap is packed to contain the following absorbents: Tenax/silica gel/carbon molecular sieve.

6.1.4 Alternate traps may be used provided the adsorption and desorption characteristics are equivalent to those of the trap recommended by the method.

6.1.5 Both the Encon and OI concentrators are capable of rapidly heating the trap to 260°C and holding at that temperature for the duration of the desorb time.

6.1.6 Gas chromatograph: HP Agilent 6890/7890 equipped with temperature programming capability.

6.1.7 GC column: 30M long x 0.25mm ID, 1.4um film thickness, 20M x 0.18mm x 1um DB-624 and 20M long x 0.18 mm ID Restek Rtx-VMS capillary column with 1um film thickness or similar phase.

6.1.8 Mass Spectrometer (Agilent 5973/5975/5977): scanning from 35-260 amu every 0.9 seconds, utilizing 70 volts (nominal) electron energy in the electron ionization mode and producing a mass spectrum which meets all EPA performance criteria when 50 ng of 4-Bromofluorobenzene (BFB) is injected through the gas chromatograph inlet.

6.1.9 GC/MS Interface: transfer lines heated to 180°C .

6.1.10 Data system: HP Chemstation II for data acquisition and Eurofins Chrom for data processing.

6.2 Supplies

- Microsyringes: 10 ul to 1000 ul.
- Syringes: 5 ml to 25 ml gas-tight.

- Injection port liners: HP 18740-80200 or equivalent
- Volumetric flasks: Class "A" glassware, 5 ml to 500 ml.
- VOA vials: 20-ml and 40-ml glass with PTFE – faced septum.
- Vials: 2-ml amber glass with screw cap with Teflon-faced septa.
- Top loading analytical balance.
- Spatula: Narrow, stainless steel.
- Stir bars: PTFE coated, small enough to spin freely inside a VOA vial.

7.0 Reagents and Standards

7.1 Reagents

7.1.1 Organic free reagent water: High purity water that meets the requirements for a method blank when analyzed. (See section 9.1.1) Reagent water is obtained from Millipore system. Other methods of preparing reagent water are acceptable, provided that the water produced meets method blank criteria.

7.1.2 Methanol: Ultra Resi-Analyzed, purge and trap grade, purchased from JT Baker or equivalent. (Cat # 9077-02)

7.1.2.1 Each lot of methanol is screened for contaminants before being used for analysis as detailed in Eurofins Corporate Quality SOP No. CA-Q-S-001 (*Solvent & Acid Lot Testing & Approval*) and Eurofins Edison SOP No. ED-GEN-023 (*Bulk Solvent Testing and Approval*).

7.2 Standards

7.2.1 **Calibration Standards** Stock target compound analytical standard solutions are purchased mainly from Restek, Supelco, Inc, Absolute Standards and Spex although standards of similar quality from other suppliers may be substituted as required. Standards noted with an asterisk (*) are custom mixes made especially for Eurofins Edison.

Target Analyte Standard Name	Concentration	Vendor	Catalog #
8260 List 1 / Std #3 Gases*	2500 ppm	Restek	569722
8260 List 1 / Std #3 Gases – (SS)*	2500 ppm	Restek	569722 sec
8260 List 1 / Std #1 MegaMix*	1250-62500 ppm	Restek	569720
8260 List 1 / Std #1 MegaMix (SS)*	1250-62500 ppm	Restek	569720 sec
8260 List 1 / Std #2 Ketones *	12500 ppm	Restek	569721
8260 List 1 / Std #2 Ketones * (SS)	12500 ppm	Restek	569721 sec
8260 List 1 / Std #5 Acrolein *	20,000 ppm	Restek	568720
8260 List 1 / Std #5 Acrolein (SS)	20,000 ppm	Restek	568720 sec
8260 List 1 /Std #4 2 CEVE *	2500 ppm	Restek	569723

Target Analyte Standard Name	Concentration	Vendor	Catalog #
8260 List 1 /Std #4 2 CEVE (SS) *	2500 ppm	Restek	569723 sec
8260 List 1 /Std #6 Vinyl Acetate *	5000 ppm	Restek	569724
8260 List 1 /Std #6 Vinyl Acetate (SS) *	5000 ppm	Restek	569724 sec
8260 List 2 / Std #1 Additions *	2500-62500ppm	Restek	568725
8260 List 2 / Std #1 Additions (SS) *	2500-62500 ppm	Restek	568725 sec
8260 List 3 / Std #1 Polar Additions *	2500-100000ppm	Restek	568728
8260 List 3 / Std #1 Polar Additions (SS) *	2500-100000 ppm	Restek	568728 sec
VOC Extra Standard 2015 *	2500-5000 ppm	Absolute	98593
VOC Extra Standard 2015 * (SS)	2500-5000 ppm	Absolute	98593
Epichlorohydrin	1000 ppm	Absolute	70377
Acrolein	5000 ppm	Restek	91980
Acrolein *	Neat	Sigma	110221
2-Freon Mix quote # 12258 *	2500ppm	Absolute	12258
2-Freon Mix quote # 12258 * (SS)	2500ppm	Absolute	12258
1,4-Dioxane	Neat	Sigma	360481
Epichlorohydrin	Neat	Sigma	45340
2-Chloroethylvinyl ether	Neat	Sigma	109983
1,4-Dioxane	1000 ppm	Absolute	70373
1,4-Dioxane	10000 ppm	Absolute	92785
Benzene	1000 ppm	Absolute	70025
Chloroform	1000 ppm	Absolute	70076

(1): The separate source for this material is not available as a distinct catalog number. Analyst must ensure that a separate lot of the material is selected and used as required.

An asterisk (*) indicates a custom standard mix.

7.2.1.1. Prepare stock solutions at volumes and concentrations indicated in Table 2 (Working Standards Preparation) by combining the indicated volumes of each stock solution into a volumetric flask corresponding to the total final volume. Dilute to the volume marker with methanol.

7.2.1.2. Prepare individual calibration standards as applicable per Section 9.2.2.1, Table 3, Initial Calibration Standards Preparation, Low Level Soil, Table 3a, Initial Calibration Standards Preparation (Low Level), Aqueous or Table 3B Initial Calibration Standards Preparation, Aqueous.

7.2.1.3. The 'Second Source' standards listed are used in the preparation of the Initial Calibration Verification (ICV) standard (see Tables 4 and 4a for ICV preparation instructions) and the Laboratory Control Standard (LCS) (see Section 9.1.3 and Tables 4 and 4a).

7.2.2 **Surrogate Standards:** Surrogate standard solutions are prepared from the stock solution (2500ppm)

Surrogate Standard Name	Concentration	Vendor	Catalog #
4-Bromofluorobenzene	2500ppm	Restek	567650
Toluene-d8			
1,2-Dichloroethane-d4			
Dibromofluoromethane			

7.2.2.1 A primary surrogate stock solution (2500 ppm each) is prepared from the neat standards as follows:

7.2.2.2 Secondary surrogate standard solutions are prepared at two (2) levels using the 2500 ppm primary stock solution as detailed in the table below:

Standard Name	Vendor	Catalog #	Volume added	Concentration of Stock Std.	Concentration of Standard	Total Volume Volume in MeOH/Total volume of MeOH
8260 Surrogate Mix: 4-Bromofluorobenzene Toluene-d8 1,2-Dichloroethane-d4 Dibromofluoromethane	Restek	567650	1ml	2500ppm	250ppm	10mL 9.0mL TV/M
8260 Surrogate Mix: 4-Bromofluorobenzene Toluene-d8 1,2-Dichloroethane-d4 Dibromofluoromethane	Restek	567650	1ml	2500ppm	50ppm	50mL 9.0mL TV/M

7.2.2.3 Methanol/Surrogate solution (2.5ug/mL): For methanol sampling field kits. Prepared by adding 1mL of 2500 ug/ml primary surrogate stock solution (see Section 7.2.2.1) to 1 L purge and trap grade methanol.

7.2.3 **Internal Standards:** Internal Standards Solutions are purchased from Restek:

Standard Name	Concentration	Vendor	Catalog #
8260 Internal Standard Mix: *Chlorobenzene-d5 *1,4-Dichlorobenzene-d4 *Fluorobenzene *1,4-Dioxane-d8 *TBA-d9	250-5000ppm	Restek	567649

7.2.4 **Internal Standard/Surrogate Mix (125 ppm each):** A solution containing both Internal Standards and Surrogates at 125 ppm is prepared in a 10ml volumetric flask as detailed below using the 2500

ppm surrogate stock solution prepared in Section 7.2.2.1 and the 2500 ppm internal standard mix detailed in Section 7.2.3:

Standard Name	Concentration of Stock Std.	Volume added to final volume of 20ml MeOH	Final Concentration of Standard
8260 Internal Standard/Surrogate Mix (125 ppm) For Aquatek Autosampler	2500 ppm Surrogate Mix	1.0ml	125 ppm each component
	250 Internal Std Mix	10 ml	

7.2.5 **Internal Standard/Surrogate Mix (SIM) (2.5/50 ppm each):** A solution containing both Internal Standards and Surrogates at 25 ppm is prepared in a 10ml volumetric flask as detailed below using the 2500 ppm surrogate stock solution prepared in Section 7.2.2.1 and the 250 ppm internal standard mix detailed in Section 7.2.3:

Standard Name	Concentration of Stock Std.	Volume added to final volume of 10ml MeOH	Final Concentration of Standard
8260 Internal Standard/Surrogate Mix (25 ppm) (SIM)	2500 ppm Surrogate Mix	10ul	2.5/50 ppm each component
	250 Internal Std Mix (Restek)	10ul	
1,4-Dioxane-d8	10000 ppm	50ul	

7.2.6 **GC/MS Instrument Performance Check (BFB):** The instrument performance check solution consists of 4-Bromofluorobenzene in addition to the other three surrogates in methanol. Prepare the solution at **50ppm as specified in section 7.2.2.2**. Assign an expiration date of 6 months.

7.2.7 All standards preparation information must be logged into the TALS Reagent Module. All pertinent information must be entered: Date prepared, Lot #'s, Expiration dates, Solvents used, Lab Lot # (expiration date), Manufacturer and Verification signature. Additionally, all prepped standards are typically given a unique Lot# and all information pertaining to standard preparation is entered into the GC/MS VOA Standard Preparation Log Book. Information such as standard supplier, lot number, original concentration, a description of how the standard was made, are required along with the laboratory lot number, analyst's initials, date prepared, expiration date and verification signature. Class "A" volumetric must be used at all times and syringes, preferably gas-tight syringes when available, should be checked for accuracy using an analytical balance. Class "A" pipettes should also be used if volumes permit.

7.2.8 Please refer to Eurofins Edison SOP No. ED-GEN-008, *Standard Operating Procedure for Preparation, Purity and Storage of Reagents and Standards*, current revision. For Method 8260D:

- Shelf Life of Standard:
  - Stock standards (Non-gases) - 6 months after opening vendor stock of up to 2000ppm, 3 years for 10,000ppm, 5 years for over 50,000ppm, or manufacturer's expiration date whichever comes first.
  - Stock Standards (Gases) - 2 months after opening vendor stock, or manufacturer's expiration date whichever comes first.
  - Working/Secondary dilution Standards (Non-gases) – 6 months after preparation, or manufacturer's expiration date whichever comes first.
  - Working/Secondary dilution Standards (Gases) – 1 week from the date of preparation for 50ppm and 2 weeks for 500ppm, or manufacturer's expiration date whichever comes first.
  - Daily Calibration Standards – 24 hours after preparation.

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- Storage Requirements:
  Aqueous standards are stored at 4°C and Methanol standards are stored at -10°C to -20°C.

8.0 Sample Collection, Preservation, Shipment and Storage

Sample container, preservation techniques and holding times may vary and are dependent on sample matrix, method of choice, regulatory compliance, and/or specific contract or client requests. Listed below are the holding times and the references that include preservation requirements.

Matrix	Sample Container	Min. Sample Size	Preservation	Holding Time	Reference
Waters	Glass 40 ml vials	40 mLs	HCl, pH < 2; Cool 4 °C ± 2°C	14 Days / preserved 7 Days / unpreserved	SW846 Method 5030
Waters	Glass 40 ml vials	40mLs	TSP,pH>11 Cool 4 °C ± 2°C	14 Days / preserved	SW846 Method 5030
Soils (Low)	Encore or Terracore (40 ml vials)	5 grams in 5 mls DI H_2O	Frozen Stored -7°C to -20°C	14 Days	SW846 Method 5035A

Matrix	Sample Container	Min. Sample Size	Preservation	Holding Time	Reference
Soils (Med)	Encore or Terracore (40 ml vials)	5 grams in 10 mls MeOH	Cool 4 °C ± 2°C	14 Days	SW846 Method 5030
Soils (High)	Glass (Lab Prepared Kits)	10 grams in 25 mls MeOH	Cool 4 °C ± 2°C	14 Days	SW846 Method 5030

8.1.1 There are several methods of sampling soil. The recommended method is to take samples using an EnCore™ sampler or using a Terra Core™ sampling kit. At specific client request, unpreserved soil samples in 4oz jars may be accepted. For EnCore and Terra Core sampling, a separate jar is required for percent solids/moisture determination, unless one is supplied for another analysis.

8.1.2 For EnCore™ samplers, the 5g sample is extruded into a pre-weighed 40mL vial containing 5mL of methanol (medium level analysis) or reagent water (for low level, <50 µg/kg, analysis). The exact samples weight is determined as the difference between the vial + preservative weight and weight after the sample is added.

- Samples must be transferred (extruded from the sampler) and preserved within 48 hours of sampling.
- Water preserved samples are then frozen at <10°C. Methanol preserved samples may be stored at > 0.0 °C but < 6° °C or frozen.
- Methanol preserved samples are shaken for at least 2 minutes, and a portion of the methanol extract after settling may be transferred to a smaller Teflon-lined capped vial for storage below 6 °C
- Normally one (1) medium level and two (2) low-level samples are taken and preserved.
- One vial with a clean matrix of each preservation type is prepared at the same time as samples, to be used for LCS analysis. Spikes are not added until the time of analysis.
- Samples are spiked with internal standards and surrogates at the time of analysis.

8.1.3 Terra Core™ sampling kits are pre-preserved for use and immediate samples preservation in the field. Kits are shipped that include one (1) methanol preserved and two (2) reagent water preserved vials, along with a 4oz jar for solids/moisture analysis volume.

- Terra Core™ vials are immediately placed in the freezer (<-10°C) upon receipt at the lab. Methanol preserved vials are shaken for at least two (2) minutes to break up the solid and create the methanol extract.
- Terra Core™ vials are labeled with the weight of the vial and preservative. The vials are re-weighed prior to analysis to determine the weight of the solid sample added. It is important that labels NOT

be added to these vials prior to weighing, because the weight of the label will add to the sample weight. Vials may be marked with indelible marker, or placed in a labeled, sectioned box until ID labels can be added after weighing.

8.2 Unpreserved soils - At client request, unpreserved soils packed into glass jars or brass tubes may be accepted and subsampled in the lab. A 5g portion of the sample is transferred to a 40mL vial and mixed with reagent water and/or methanol for analysis. Since this procedure is not compliant with SW5035A an NCM and case narrative statement describing the non-conformance must be included with any resulting data reported to the client.

8.3 Aqueous samples are stored in 40mL glass vials with Teflon lined septa at >0 and ≤ 6.0°C. Vials are required to have no headspace larger than a small pea.

8.3.1 Samples from chlorinated water sources must be treated with sodium thiosulfate (0.008% solution) at the time of collection to remove chlorine. NOTE: containers pre-preserved with sodium thiosulfate must be requested in bottle orders for samples from chlorinated water sources

8.3.2 Regulatory requirements for 2-Chloroethyl vinyl ether:

- 2-Chloroethyl vinyl ether: The stability of this compound is reduced when subjected to low pH, therefore samples for analysis to include 2-CEVE must be taken without acid preservation. Unpreserved samples must be analyzed within 7 days.

- SW846 Update V removed special preservation requirements for Acolein and Acylonitrile. These compounds may be analyzed for using a preserved sample vial.

8.4 Soil samples and water samples preserved to pH <2 with HCl have a maximum holding time is 14 days from sampling until the sample is analyzed. If water samples are known to be unpreserved, the holding time is 7 days from sampling to analysis.

8.4.1 Preserved water samples are checked to confirm the preservation pH AFTER analysis because the vials must not be opened prior to analysis. If the pH is found to be >2, this must be addressed in the case narrative.

8.5 Medium level solid methanol extracts, if taken at the time of preservation, are aliquoted into 4 mL glass vials with Teflon lined caps and stored at > 0.0 °C but ≤6.0°C or frozen. The extracts are stored with minimum headspace.

8.6 Storage blanks are prepared by filling 40 mL VOA vials with reagent water and placing one in each refrigerator. After 1-2 weeks, the storage blanks are removed and analyzed. Additional details can be found in Eurofins Edison SOP No. ED-SPM-004, *Sample Storage & Handling Procedures for Mitigation of Sample and Laboratory Contamination,* current revision.

9.0 Quality Control

9.1 **Sample QC** - The following quality control samples are prepared with each batch of samples:

Quality Controls	Frequency	Control Limit
Method Blank (MB)	1 in 20 or fewer samples	< Rpt. Limit
Laboratory Control Sample (LCS)[1]	1 in 20 or fewer samples	Statistical Limits [4]
Matrix Spike (MS)[2]	1 in 20 or fewer samples	Statistical Limits [4]
MS Duplicate (MSD)[2]	1 in 20 or fewer samples	Statistical Limits [4]
Surrogates	every sample[3]	Statistical Limits [4]
Internal Standards	Every samples	Response within -50% to +100% of CCV

[1] LCS Duplicate (LCD) is performed only when insufficient sample is available for the MS/MSD or when requested by the client/project/contract.
[2] The sample selection for MS/MSD are randomly selected, unless specifically requested by a client….predetermined by the extraction lab.
[3] Analytical and QC samples (MB, LCS, MS/MSD)
[4] Statistical control limits are updated annually and are updated into LIMS.

9.1.1. **Method blanks** are analyzed every 12 hours immediately after successful calibration verification (ICV and CCV) and before any samples are analyzed during the 12 hour clock. Analyze the blank in the same manner as the associated samples.

9.1.1.1. Prepare an aqueous blank by filling a 40 mL vial with reagent water and placing it in the autosampler. The autosampler will add the internal standard and/or surrogate standard.

9.1.1.2. Prepare a medium or high level blank in a 50 mL volumetric flask by adding 1.0 mL of purge and trap grade methanol to reagent water and bringing up to volume with the reagent water. The appropriate volume of this mix is added to the purge vessel. The autosampler will automatically internal standard and/or surrogate standard.

9.1.1.3. Prepare a low- level soil blank in a 40 ml VOA vial by adding a magnetic stir bar and 5 ml of reagent water and placing the vial in the autosampler tray. An additional 5mL of reagent water plus 1uL of 250ppm Internal Standard/Surrogate Mix (see Section 7.2.4) will be added by the Archon prior to purging.

9.1.1.4. To be considered acceptable, the method blank must not have any target analytes above the reporting limit. For method 8260D method blank is acceptable when target analyte concentrations are less than one-half of the reporting limit. Method blanks may contain analyte concentrations greater than acceptance limits if the associated samples in the batch are unaffected or sample

concentrations/responses are >10x the blank If method blanks are unacceptably contaminated with target compounds that are also present in field samples, all affected samples must be re-extracted and re-analyzed. Re-analysis is not necessary if the analyte concentration falls well below the action or regulatory limit or if the analyte is deemed not important for the project. Corrective action must be taken to identify and eliminate the contamination source. Demonstrate that acceptable blanks can be obtained before continuing with sample extraction and analysis. Method blanks must be analyzed on each instrument on which the associated samples are analyzed. Method blanks, trip blanks and other field blanks must be carried out through all stages of sample preparation and analysis.

9.1.1.5. Surrogate recoveries for the method blank must be within the laboratory generated limits. (Method 8260D requires the use of a minimum of three (3) surrogates. Since we are spiking with four (4) surrogates, either 1,2-Dichloroethane-d4 or dibromofluoromethane can be recovered outside of control limits without corrective action) .Internal standard area counts in the method blank must be within method specified limits. If any surrogate or internal standard is outside the limits, the method blank must re-analyzed.

9.1.2. Matrix Spike (MS)/Matrix Spike Duplicate (MSD): A matrix spike/matrix spike duplicate (MS/MSD) pair is extracted and analyzed with every 20 environmental samples of a specific matrix (defined as a sample batch which may contain up to 20 samples, and additional samples can be added to the batch for 14 days after the first sample was analyzed). Full compound list spiking is employed for MS/MSDs and LCSs. These spikes are prepared (as described in Section 9.1.2.1) concurrent with sample preparation. MS and MSD recoveries are calculated and compared to lab generated acceptance criteria which are updated annually. For acceptance limits, reference the current TALS (LIMS) active Method Limit Group database.

9.1.2.1. Prepare the MS/MSD as follows:

9.1.2.1.1 Low Level Soil: The low level soil MS/MSD is prepared as detailed in the following table. This is prepared in duplicate (one for the MS, the other for the MSD) in a 5 ml syringe filled with reagent water. Once prepped the solution is added to separate 40 ml vials each containing 5 gram aliquots of the sample to be spiked :

Standard Solution (Reference Table 2, Lab Names)	Concentration	Volume of Standard (ul) Added to 5.0 ml of Reagent Water	Final Concentration (ug/kg)
Gas Mix Li	50ppm	2	20

Standard Solution (Reference Table 2, Lab Names)	Concentration	Volume of Standard (ul) Added to 5.0 ml of Reagent Water	Final Concentration (ug/kg)
8260 combined	50ppm	2	20
Acrolein	500 ppm	3	300
Propenes	50ppm (varied)	2	20 (varied)
Freons	50 ppm	2	20

9.1.2.1.2 Aqueous Samples: The MS/MSD for aqueous samples is prepared as detailed in the following table. This is prepared in duplicate (one for MS, the other for MSD) in 50 ml volumetric flasks filled with an aliquot of sample to be spiked. Once prepped the solution is poured into a 40 ml VOA vial and loaded onto the purge and trap autosampler:

Standard Solution (Reference Table 2, Lab Names)	Concentration	Volume of Standard (ul) Added to 50 ml of Sample	Final Concentration(ug/L)
Gas Mix Li	50ppm	20	20
8260 combined	50ppm	20	20
Acrolein	500 ppm	4	40
Propenes	50ppm (varied)	20	20 (varied)
Freons	50	20	20

9.1.2.1.3 Medium & High Level Soils: The MS/MSD for medium/high level soils is prepared as detailed in the following table. This is prepared in duplicate (one for MS, the other for MSD) in 50 ml volumetric flasks filled with reagent water which has been previously spiked with the methanol sample extract. Once prepped the solution is poured into a 40 ml VOA vial, the and loaded onto the purge and trap autosampler:

Standard Solution (Reference Table 2, Lab Names)	Concentration	Volume of Standard (ul) Added to 50 ml of Reagent Water containing sample methanol extract	Final Concentration (ug/L)
Gas Mix Li	50ppm	20	20
8260 conbined	50ppm	20	20
Acrolein	500ppm	4	40
Propenes	50ppm (varied)	20	20 (varied)
Freons	50 ppm	20	20

9.1.2.1.4 SIM: The MS/MSD for SIM samples is prepared as detailed in the following table. This is prepared in duplicate (one for MS, the other for MSD) in 100 ml

volumetric flasks filled with an aliquot of sample to be spiked. Once prepped, two separate 10ml solution is poured into 40 ml VOA vials, 2ul of SIM IS/S is then added to each vial and loaded onto the purge and trap autosampler:

Standard Solution	Concentration	Volume of Standard Added to 100 ml of Sample (ul)	Final Concentration (ug/L)
8260SIM Mix1	10ppm	0.5	0.05
1,4-Dioxane	50ppm (varied)	10	5
Benzene/Chloroform	10ppm	0.5	0.05

9.1.2.2. An Laboratory Control Sample (LCS) /Laboratory Control Sample Duplicate (LCSD) may be substituted for the MS/MSD if insufficient sample volume is available (see Section 9.1.3).

9.1.3. Laboratory Control Sample (LCS)/Laboratory Control Sample Duplicate (LCSD): A Laboratory Control Sample (LCS) (aka blank spike) must be prepared analyzed with each batch of 20 environmental samples. The LCS data is used to assess method performance if the MS/MSD recoveries fall outside of the lab generated limits (see For acceptance limits, reference the current TALS (LIMS) active Method Limit Group database). If the LCS recovery is within the current lab generated limits, the MS/MSD recoveries are attributed to matrix interference. If the LCS recovery results are outside the method specified, the LCS is reanalyzed. If, upon reanalysis, the LCS is it is still outside of limits the entire batch must be reanalyzed. For 8260D, when an LCS is prepared in the same manner as CCV, the same standard can be used as both the LCS and CCV.

9.1.3.1 For LCS preparation instructions please refer to Section 9.1.2.1 for low level soil introduction technique (note: use reagent water only, no solid matrix is used when preparing the LCS) and Sections 9.1.2.1.2 and 9.1.2.1.3 as applicable for aqueous/medium or high level solids introduction (note: use reagent water only, no sample or sample extract is used when preparing the LCS).

9.1.3.2 The LCS for SIM samples is prepared as detailed in the following table. This is prepared in a 200 ml volumetric flasks filled with organic free reagent water. Once prepped, 10ml of the solution is poured into a 40 ml VOA vial and 2ul IS/SS added manually and loaded onto the purge and trap autosampler

Standard Solution	Concentration	Volume of Standard Added to 200 ml of Reagent Water (ul)	Final Concentration (ug/L)
8260 Mix1	10ppm	1	0.05
1,4-Dioxane	50ppm	20	5
Benzene/Chloroform	10ppm	1	0.05

9.1.3.3 A Laboratory Control Sample Duplicate (LCSD) is analyzed only when insufficient client sample is available for preparation of an MS/MSD pair. The LCS/LSCD is evaluated in the same manner as the MS/MSD (see Section 9.1.2)

9.1.4. Surrogate Standards: All samples, blanks and QC samples are spiked with a four (4) component surrogate standard mix (see Section 7.2.2). The percent recovery of the surrogate standards is calculated and compared to lab generated limits (For acceptance limits, reference the current TALS (LIMS) active Method Limit Group database).

9.1.4.1. Surrogate recovery limits are lab generated and are updated annually.

9.1.4.2. Surrogate recoveries are calculated for the blank, samples, and QC samples. Surrogate recovery is calculated as:

$$\frac{\text{Concentration found}}{\text{Concentration added}} \times 100 = \%\ \text{RECOVERY}$$

9.1.4.3. If the surrogate recoveries of any blank, sample, or QC sample fails to meet the current recovery criteria, the sample must be re-analyzed. If a surrogate is diluted to a concentration below that of the lowest calibration standard, no corrective action is necessary. Method 8260D requires the use of a minimum of three (3) surrogates. As we spike with four (4) surrogates, one can be recovered outside of control limits without corrective action.

9.1.5. Internal Standards: All samples, blanks, standards and QC samples are spiked with a five (5) component internal standard mix (See Section 7.2.3). The response (area count) and retention time of each internal standard in all samples, standards, blanks and QC samples are monitored.

9.1.5.1. The internal standard responses must be within -50 +100% of its corresponding internal standard in the mid-level calibration standard or the active calibration curve. Failure to meet these criteria is indicative of sample matrix effects. All samples failing these criteria must be reanalyzed to confirm matrix effects.

9.1.5.2. Internal standard retention time is evaluated immediately after acquisition. The retention times of the internal standards must be within ±30 seconds of the internal standards from the mid point standard of the initial calibration or the calibration verification standard. Any blank, sample, or QC sample that fails to meet these criteria must be re-analyzed.

9.2 Instrument QC

9.2.1 GC/MS Instrument Performance Check (BFB): The GC/MS system is tuned using Perfluortributylamine (PFTBA) such that an injection or purging of 50ng of 4-Bromofluorobenzene (BFB) meets the abundance criteria listed in the table below. Prior to the analysis of any calibration standards or samples, the GC/MS system must meet all BFB key ion abundance criteria. This analysis will verify proper tuning of the system for a period of 12 hours post-injection. After 12 hours, the instrument performance must again be verified prior to the analysis of standards, QC or samples. For method 8260D tune checks are only required prior to initial calibration. (**NOTE**: see Method Modifications in Section 16.0).

BFB Key Ions and Abundance Criteria	
Mass	**Ion Abundance Criteria**
50	15.0-40.0 percent of the base peak
75	30.0-60.0 percent of the base peak
95	Base peak, 100% relative abundance
96	5.0-9.0 percent of the base peak
173	Less than 2.0% of mass 174
174	Greater than 50% of the base peak
175	5.0-9.0 percent of mass 174
176	Greater than 95.0% but less than 101% of mass174
177	5.0-9.0 percent of mass 176

9.2.1.1. The BFB mass spectrum may be evaluated using one of the procedures listed below. The spectrum may be background subtracted using a single peak no more than 20 scans before the peak apex. The BFB spectrum must meet the technical acceptance criteria listed in the table above:

- A single scan on the peak;
- An average of the peak;
- Use of three scan averaging and background subtraction techniques. Select the scan at the BFB peak apex, add +1 scan from the apex and -1 scans from the apex;

9.2.1.2. BFB parameter settings are stored in a tune file, which ill be used in all subsequent analysis of standards and samples.

9.2.2 Initial Calibration Range and Initial Calibration Verification

9.2.2.1. **Initial Calibration:** The initial calibration range consists of a five-point concentrations (six points for second order regression) of analytical standards prepared as described in Tables 3, 3A and 3B as applicable (attached). The initial calibration range must be analyzed only after the BFB instrument performance check has met the criteria in Section 9.2.1. A separate initial calibration range is analyzed for each sample introduction technique. The last initial calibration standard may be used to be the start of the 12 hour clock for samples analyzed after initial calibration. Verify closely eluting isomers resolution in the mid-point concentration of the ICAL. Isomers are considered resolved if the peaks are at least 50% resolved (i.e., the height of the valley between two isomer peaks is less than or equal to 50% of the average of the two peak heights. This should also be checked in the daily CC's.

9.2.2.2. If analysis by the SIM technique is required, prepare calibration standards for, Vinyl Chloride, Chloroform, Benzene 1,2-dibromoethane, 1,2,3-Trichloropropane and 1,2-dibromo-3-chloropropane at concentrations of 0.02, 0.04, .05, 0.10, 0.20, 0.50, 1.0 and 2.0 ppb; 1,4-Dioxane at 0.4, 1, 5, 10, 20, 30, 40 and 50ppb. See Table 5 that summarizes the preparation information.

9.2.2.3. **Initial Calibration Verification (ICV):** An Initial Calibration Verification (ICV) standard is analyzed immediately after the Initial Calibration Range and before any samples are analyzed. The ICV is prepared as detailed in Section 7.2.1.3 and Tables 4 and 4a (full scan) and Table 6 (SIM) (attached). The ICV must be from a source separate from the standards used in the Initial Calibration Range.

9.2.3 **Continuing Calibration Verification (CCV):** A approximately mid-point (20ug/ml and 0.050/5ug/ml for SIM) Continuing Calibration Verification (CCV) must be analyzed every 12 hours after the BFB instrument performance check. BFB is not a requirement for 8260D CCV verification. The CCV is prepared as detailed in Section 7.2.1.1 and Table 3 (attached).

9.2.4 **Calibration Acceptance Summary**

9.2.4.1. **Retention Time:** The relative retention times of each compound in the five calibration standards must agree within 0.06 relative retention time units.

9.2.4.2. **Initial Calibration Range:** Internal standard calibration is employed for this method. After the initial calibration range has been analyzed as detailed in Section 10.3.3 the relative response factor (RRF) for each target/surrogate compound at each concentration level is determined using the following equation.

$$RRF = \frac{A_x}{A_{is}} \times \frac{C_{is}}{C_x}$$

Where:
A_x = Area characteristic ion for the compound (see attached Table 7)
Ais = Area characteristic ion of internal standard (see attached Table 7)
Cis = Concentration of internal standard
Cx = Concentration of compound in standard

9.2.4.2.1. Determine the mean RRF for each compound using the five or six RFs from the initial calibration range.

9.2.4.2.2. The average RFs of the target analytes listed in the table below must meet the indicated minimum RF criteria:

Minimum Relative Response Factor	
Common Target Analytes	**Minimum RF**
Dichlorodifluoromethane	0.100
Chloromethane	0.100
Vinyl Chloride	0.100
Bromomethane	0.100
Chloroethane	0.100
Trichlorofluoromethane	0.100
1,1-Dichloroethene	0.100
1,1,2-Trichloro-1,2,2-trifluoroethane	0.100
Acetone *	0.050
Carbon disulfide	0.100
Methyl Acetate *	0.005
Methylene chloride	0.100
trans-1,2-Dichloroethene	0.100
cis-1,2-Dichloroethene	0.100
Methyl tert-Butyl Ether	0.100
1,1-Dichloroethane	0.200
2-Butanone *	0.050
Chloroform	0.200
1,1,1-Trichloroethane	0.100
Cyclohexane	0.100
Carbon tetrachloride	0.100
Benzene	0.500
1,2-Dichloroethane	0.100
Trichloroethene	0.200
Methylcyclohexane	0.100
1,2-Dichloropropane	0.100
Bromodichloromethane	0.200
cis-1,3-Dichloropropene	0.200
trans-1,3-Dichloropropene	0.100
4-Methyl-2-pentanone *	0.050
Toluene	0.400

Minimum Relative Response Factor	
Common Target Analytes	**Minimum RF**
1,1,2-Trichloroethane	0.100
Tetrachloroethene	0.200
2-Hexanone*	0.050
Dibromochloromethane	0.100
1,2-Dibromoethane	0.100
Chlorobenzene	0.500
Ethylbenzene	0.100
meta-/para-Xylene	0.100
ortho-Xylene	0.300
Styrene	0.300
Bromoform	0.100
Isopropylbenzene	0.100
1,1,2,2-Tetrachloroethane	0.300
1,3-Dichlorobenzene	0.600
1,4-Dichlorobenzene	0.500
1,2-Dichlorobenzene	0.400
1,2-Dibromo-3-chloropropane	0.050
1,2,4-Trichlorobenzene	0.200

Note: Alternate ions chosen for the analytes in the table above may result in lower than recommended value

* These values are lower than method recommended values.

9.2.4.2.3. Any individual analyte that fails the minimum response factor above must have a demonstration of sensitivity in the analytical batch to report non-detects. The demonstration of sensitivity is analysis of a low level CCV (at or below the reporting limit). The criterion for a passing LLCCV is detection only, and a passing LLCCV allows non-detects to be reported without flagging. The low level CCV would normally be analyzed immediately after the mid-level CCV

9.2.4.2.4. Calculate the Standard Deviation (SD) and Percent Relative Standard Deviation (% RSD) of the response factors for each compound:

$$\% \text{ RSD} = \frac{\text{Standard Deviation of RRFs}}{\text{Mean RRF}}$$

The % RSD of the common target compounds listed above must be ≤20% for average RF in order for the calibration range to be acceptable. If more than 10% of the compounds exceed the 20%RSD limit and do not meet the minimum correlation coefficient (0.99) or Relative Standard Error (RSE) of ≤20% for alternative curve fits, appropriate instrument maintenance like source cleaning should be performed. Any compound that do not meet the 20%

RSD or 0.99 correlation coefficient/RSE criteria must be flagged as estimated for detects.

9.2.4.2.5. For all compounds (including those analyzed by SIM): in order to assume linearity, the % RSD of the RRF's for each target analyte must be ≤20%.

9.2.4.2.6. If the above listed criteria is met, the system can be assumed to be linear, sample analysis may begin and the average RF from the initial calibration range may be used to quantitate all samples.

9.2.4.2.7. An alternative calibration technique may be employed for those any compounds exceeding the 20% RSD criteria:

9.2.4.2.5.4 Linear regression: Calculate the first order linear regression for any compound which did not meet the 20% RSD criteria the r^2 (Correlation Coefficient) value must be $\geq$ 0.99 or the Relative Standard Error (RSE) (≤20%) for the calibration to be employed.

9.2.4.2.5.4 Quadratic (or second order) regression: may be used if the linear regression correlation coefficient exceeds criteria. Quadratic regression requires the use of a minimum six calibration points. If second order regression calibration is used, , the r^2 (Correlation Coefficient) value must be $\geq$ 0.99 or the Relative Standard Error (RSE) (≤20%) for the calibration to be employed.

9.2.4.2.8. If neither of the alternative calibration techniques meets acceptance criteria i.e for more than 10% of the analytes fail both 20%RSE and 0.990 the calibration is not valid. Corrective action must be taken and the initial calibration range reanalyzed.

9.2.4.2.9. Non-detect results for any analyte that fails both 20%RSD/RSE and 0.990 correlation coefficient may be reported without flagging if (and only if) there has been a successful analysis of a LLCCV (CCV at the reporting limit) in the same analytical batch. The criterion for the LLCCV is detection only (%D criteria are not applied) but the standard qualitative criteria in the method must be met. Flagging of detected analytes results as estimated is discouraged when the 20%RSD/RSE and 0.990 criteria fails. In general no more than one or two of the poorest performing analytes should fail both criteria.

9.2.4.2.10. Due to significant bias to the lower portion of a calibration curve using the linear regression fit model a quantitation check on the viability of the lowest calibration point should be performed by re-fitting the response from the low concentration calibration standard back into the curve as if it were an unknown sample (rename the lower point calibration file as a separate data file before re-processing). The results should be within ±30% of the standard's true concentration. This is not required for average RF or quadratic fits. Additionally forcing a linear regression through zero will meet the requirement of not re-fitting. Analytes which do not meet the minimum quantitation calibration re-fitting criteria should be considered 'out of control'. Report those target analyte outliers as estimated when the concentration is at or near the lowest calibration point and/or report to the next reporting level (i.e., the next higher calibration point for the analyte).

9.2.4.2.11. For additional detail refer to Eurofins Edison Work Instruction No. EDS-WI-096, *8260C ICAL Procedure*, latest revision.

9.2.4.3. Calibration Point Read-back Criteria: Whichever calibration model above is selected, it should be subjected to an additional check to establish the representativeness of the data that were used to produce it. This check is the refitting of each calibration point response back to the calibration model, or the comparison of the calculated amount of the standard against the expected amount.

- CHROM software provides an Initial Calibration %Drift report which shows the % Error for each calibration point. This report must be reviewed in addition to the %RSD Linear Response Factor.

- The absolute value of the % Error for each calibration point should be < 30%. For the lowest calibration point, the % Error may be < 50%. Relative standard error (RSE) can also be used and must be ≤ 20% for each calibration point. See section 11.10 for the Calculation of the %Error.

9.2.4.4. Initial Calibration Verification (ICV): Once the initial calibration has been analyzed and has met the above criteria, a second source Initial Calibration Verification (ICV) (as prepared in Section 9.2.2.2) must be analyzed and evaluated. The ICV must meet the criteria of 70-130% recovery for all compounds however up to 10% of the compounds are allowed to exceed

this criteria as long as their recoveries are within 65-135%. For the poor performers the range is 50-150%. If the criterion is not met, a second ICV may be analyzed after corrective measures are taken. If a second ICV analysis fails to meet criteria proceed with corrective action and the analysis of a new initial calibration range. Flagging: If the ICV limits are outside of criteria (high) for an analyte and that analyte is undetected in the sample, no flagging or narration is required. If the ICV limits are outside of criteria (low) for an analyte and that analyte is undetected in a sample, narrate the non-conformance in an NCM. When that out of spec analyte is detected in a sample, describe the issue in the narrative, or flag as estimated.

9.2.4.5. Continuing Calibration Verification (CCV): A CCV consisting of a standard at or near the midpoint of the Initial Calibration Range is analyzed every 12 hours of instrument operation or at the beginning of an analytical sequence to verify the initial calibration. The calibration verification consists of a BFB instrument performance check, and analysis of a calibration verification standard.

9.2.4.4.1 Tune Verification: Follow the procedure for verifying the instrument tune described in section 9.2.1 using a 50 ng injection of BFB. If the tune cannot be verified, analysis must be stopped, corrective action taken and a return to "control" demonstrated before continuing with the calibration verification process. For method 8260D, tune verification is not required for daily CCV.

9.2.4.4.1.1 Calibration Verification: Analyze the calibration verification standard immediately after a BFB that meets criteria. For method 8260D, BFB is not needed. Use the mid point calibration standard (20ug/L). **NOTE:** The same sample introduction technique employed for the initial six-point calibration must be used for the calibration verification.

9.2.4.4.1.2 Calculate response factors (RF) for each compound using the internal standard method.

9.2.4.4.1.3 The RFs must meet the minimum RF criteria listed in the table in Section 9.2.4.2.2.

9.2.4.4.1.4 Calculate the % Difference for each response factor in the calibration check standard vs. the response factors from the initial calibration.

9.2.4.4.1.5 If the percent difference/drift (%D) for the compounds listed in the table in Section 9.2.4.2.2 is ≤20%, the initial calibration is assumed to be valid. If the ≤20% D criteria is not met for more than 20% of the compounds in the initial calibration, corrective action/ investigation may be taken. After corrective action, another calibration verification standard may be injected. If the response for the analyte is still not ≤20%, a new initial calibration range must be generated.

9.2.4.4.1.6 For the poor performing compounds listed below that fail the 20%D or 50%D criteria adequate sensitivity may be demonstrated by including a low level standard (LLCCV) in the analytical batch.

Poor Performers	
Acetone	Acrolein
Carbon disulfide	1,4-Dioxane
2-Butanone	Cyclohexane
2-Hexanone	Methyl cyclohexane
4-Methyl-2-pentanone	Benzyl chloride
Chlorodibromomethane	Naphthalene
1,2-Dibromo-3-chloropropane	Cis-Dichloropropene
Bromomethane	Trans-Dichloropropene
Chloroethane	All Alcohols

When samples have non-detects for an analyte that fails the SOP criteria with low recovery a low level CCV must be analyzed in the batch as a demonstration of adequate sensitivity. The criterion for a passing LLCCV is detection only, and a passing LLCCV allows non-detects to be reported without flagging. Any sample detects for an analyte that fails the SOP criteria must be flagged as estimated, or detailed in the case narrative. In all cases every effort should be made to re-analyze on an instrument with a passing CCV.

9.2.4.4.1.7 Percent drift is used instead of percent difference in calibrations employing either the linear or second order regression modes.

9.2.4.4.1.8 For the compounds not listed in the table in Section 9.2.4.2.2: No one individual compound of interest may exceed 50%D. For SIM analysis the %D is 20%.

9.2.4.4.1.9 The retention times of the internal standards from the calibration check must be within ±30 seconds of the internal standards from the mid point standard of the original calibration. If the retention time for any internal standard changes by more than 30 seconds from the latest daily (12 hour) calibration standard, the chromatographic system is inspected for malfunctions, and corrections made as required. If corrective action does not result in the retention time criteria being achieved, the system must be re-calibrated using four additional standards.

9.2.4.4.1.10 Internal standard area response is also evaluated immediately after acquisition. The response (area count) of each internal standard in the calibration verification standard must be within 50% - 100% of its corresponding internal standard in the mid-level calibration standard of the initial calibration curve. If the EICP area for any internal standard changes by more than a factor of two (-50% to +100%), the mass spectrometer system must be inspected for malfunction and corrections made as appropriate. When corrections are made, re-analysis of samples analyzed while the system was malfunctioning is required.

10.0 Procedure

10.1. Gas Chromatograph/Mass Spectrometer Operation

10.1.1. The instrument operating parameters are set as follows at the beginning of a method of analysis and remain constant throughout the entire analytical procedure

10.1.1.1 Full Scan Operating Mode

Purge and trap unit

Purge Time:	11 minutes
Dry Purge:	1 Minutes
Purge Gas:	Nitrogen
Purge Flow:	40-45 ml/min
Purge Temp:	Water: Ambient; Solids: 40°C
Trapping Temp:	Ambient, <30°C

Desorb Time:	1 Minute
Desorb Temp:	VOCARB: 260°C, #10: 190°C

Gas chromatograph

Injector:	180°C
Carrier Gas:	Helium
Carrier Flow:	6 ml/min, 6890: 0.8 ml/min
Oven Program:	40°C for 1 min, 8°C/min to 90°C, 20°C/ min to 250°C for 3 min; 6890: 40°C for 1 min, 8°C/min to 100°C, 24°C/min to 220°C for 2 min
Run Time:	15 - 20 Minutes

Mass Spectrometer

Electron Energy:	70 volts (nominal)
Mass range:	35-260 AMU
Scan time:	0.9 sec./scan
Source Temp:	200°C
Separator Temp:	180°C

10.1.1.2 SIM Operating Mode

Purge and trap unit

Purge Time:	11 minutes
Dry Purge:	1 Minutes
Purge Gas:	Nitrogen
Purge Flow:	40-45 ml/min
Purge Temp:	Water: Ambient; Solids: 40°C
Trapping Temp:	Ambient, <30°C
Desorb Time:	1 Minute
Desorb Temp:	VOCARB: 260°C, #10: 190°C

Gas chromatograph

Injector:	180°C
Carrier Gas:	Helium
Carrier Flow:	6 ml/min, 6890: 0.8 ml/min
Oven Program:	40°C for 1 min, 8°C/min to 90°C, 20°C/ min to 250°C for 3 min; 6890: 40°C for 1 min, 8°C/min to 100°C, 24°C/min to 220°C for 2 min
Run Time:	15 - 20 Minutes

Mass Spectrometer

Electron Energy:	70 volts (nominal)
Mass range:	35-260 AMU
Scan time:	0.9 sec./scan
Source Temp:	200°C
Separator Temp:	180°C

SIM Parameters:

Group 1
Plot 1 Ion: 51.0/96

Ions/Dwell in Group	(Mass	Dwell)	(Mass	Dwell)	(Mass	Dwell)
	51.0	100	58.0	100	65.0	100
	67.0	100	70.0	100	88.0	100
	96.0	100	78.0	100	83.0	100
	85.0	100	62.0	100	64.0	100

Group 2
Group Start Time: 6.20
Plot 1 Ion: 82/117

Ions/Dwell in Group	(Mass	Dwell)	(Mass	Dwell)	(Mass	Dwell)
	82.0	100	107.0	100	109.0	100
	117.0	100				

Group 3
Group Start Time: 8.50
Plot 1 Ion: 75/157

Ions/Dwell in Group	(Mass	Dwell)	(Mass	Dwell)	(Mass	Dwell)
	75.0	100	95.0	100	150.0	100
	152.0	100	152.0	100	157.0	100
	174.0	100				

10.2. Sample Preparation

10.2.1. Screening: All soil samples extracts must be screened by GC/FID static headspace or MS analysis to provide the analyst with appropriate initial dilution factors. Aqueous samples without historical results are also screened. For additional details see Eurofins Edison SOP No. ED-GCV-001, *Screening for Volatile Organics, Static Headspace with GC FID, SW846 Method 5021*, current revision.

10.2.2. Aqueous Samples: Unopened 40 mls vials with aqueous samples are placed in an Archon autosampler. 1 uL of Internal Standard/Surrogate Mix (see Section 7.2.4) is added by the Archon as the 5 mL of the sample passes through the sample loop.

10.2.3. **Medium or high level soils:** Medium or high level extracts that will be run on an Archon autosampler are prepared in 50mL volumetric flasks. The Archon can be set up to add 1uL of 250ppm Internal Standard/Surrogate separately (see Section 7.2.3 and 7.2.2.2) to each sample as the 5mL portion passes through the sample loop.

10.2.4. **Low level soils:** Low level soils must be run on an Archon autosampler. 1uL of 250ppm Internal Standard/Surrogate separately (see Section 7.2.3 and 7.2.2.2) and 5mL reagent water is added to each sample vial by the Archon immediately before the sample is purged.

10.2.5. **SIM analysis:** Aliquot 10ml of sample and manually add 2ul of 2.5/50ppm of internal standard/surrogate mix. Load to soil section of the autosampler for heated purge.

10.3. Instrument Performance and Calibration Sequence

10.3.1. Once the GC/MS instrument has been setup and maintained as detailed in Section 10.1, the first operations to be performed are the performance checks and calibration standards.

10.3.2. Analyze the Instrument Performance Check Standard (BFB) as discussed in Section 9.2.1.

10.3.3. A unique initial calibration is then prepared for each sample introduction technique.:

10.3.3.1 **40 ml VOA Vial (Aqueous/Medium-High Level Soils):** Prepare aqueous calibration standards at six concentration levels for each parameter by adding the volumes of working standards listed in Table 3 to a 50mL volumetric flask of reagent water. Pour the calibration standards into 40mL VOA vials and load into the autosampler tray. If the internal standard is to be added by the Archon/OI autosamplers the addition of internal standard into the 50ml volumetric flaks may be omitted.

10.3.3.2 **40 ml VOA Vial (Low Level Soils):** If the calibration is for low-level soils prepared according to Method 5035AA, the calibration standards must be prepared by adding the volumes of working standards listed in Table 3 into a 5 mL syringe filled with reagent water and pouring the prepared standards into 40 mL VOA vials containing a magnetic stir bar.

10.3.4. Purge the standard for 11 minutes.

10.3.5. After purging is complete, desorb the sample onto the GC column by rapidly heating the trap to 260°C for VOCARB, 190°C for #10 and backflushing it with helium.

10.3.6. Begin the GC temperature program and data acquisition.

10.3.7. Re-condition the trap by baking for 12 minutes at 260°C for VOCARB, 210°C for #10.

10.3.8. Cool the trap to (<31°C). The trap is now ready for the next sample.

10.3.9. Transfer data to network, and process using CHROM software.

10.4. Sample Analysis Sequence

10.4.1. Once the initial calibration has been verified by successful analysis of an ICV and Method Blank, analysis of samples may begin.

10.4.2. Samples must be analyzed under the same instrument conditions and using the same injection volume as the calibration standards.

10.4.3. Equilibrate all samples to room temperature prior to analysis.

10.4.4. If the sample concentration exceeds that of the range, the sample must be diluted and re-analyzed.

10.4.5. The analytical run log is printed as a record of samples analyzed. The analyst will annotate the run log with any required information regarding anomalies or unusual events. The run log must be signed by the analyst and a reviewed and signed by a trained peer or manager

10.5. Data Processing

10.5.1. Prior to processing any standards or samples, target compound lists and sublists must be assembled in the Chrom system. These lists are required for processing of all data files including calibration files. The data includes compound names, retention time data, quantitation ions, qualitative identification ions, and the assigned internal standard for qualitative and quantitative identification.

10.5.2. Key data is manually entered the first time a compound list is used for data processing. Processing data using a compound list automatically generates response factor data and updates retention information.

10.5.3. Data is transferred from the acquisition PC to the network for auto-processing with CHROM software.

10.5.4. Each data file is checked for correct information including sample number, job number, QA batch, dilution factor, initial volume, final volume, and % moisture.

10.5.5. The data processing service from Chrom queries LIMS for the sample processing parameters.

10.5.6. Each data file is processed using calibration factors from the most recent initial calibration, quantitation from the daily calibration verification standard is not permitted.

10.5.7. The characteristic ions for target compounds, surrogate compounds, and internal standards which can be determined using SW8260D are listed in Table 7.

10.6. Interpretation and Qualitative Identification:

10.6.1 Target Analytes: Qualitative identification of target compounds is based on retention time and mass spectral comparison with characteristic ions in the target compound list. The reference mass spectrum is taken from a standard of the target compound analyzed by this method. The characteristic ions are the three ions of greatest relative intensity or any ions over 30% relative intensity if less than three such ions occur in the reference spectrum. Compounds are identified as present when the following criteria are met:

10.6.1.1. Once the GC/MS instrument has been setup and maintained as detailed in Section 10.1, the first operations to be performed are the performance checks and calibration standards.

10.6.1.2. The intensities of the characteristic ions of a compound maximize in the same scan or within one scan of each other.

10.6.1.3. The relative retention time (RRT) of the sample component is within ± 0.06 RRT units of the RRT of the standard component.

10.6.1.4. The most abundant ion in the standard target spectrum that equals 100% MUST also be present in the sample target spectrum.

10.6.1.5. All other ions that are greater than 10% in the standard target spectra should also be present in the sample.

10.6.1.6. The relative intensities of the characteristic ions agree within 30% of the relative intensities of these ions in the reference spectrum. (Example: For an ion with an abundance of 50% in the reference spectrum, the corresponding abundance in a sample spectrum can range between 20% and 80%).

10.6.1.7. Structural isomers that produce very similar mass spectra should be identified as individual isomers if they have sufficiently different GC retention times. Otherwise, structural isomers are identified as isomeric pairs.

10.6.1.8. If the compound does not meet all of the criteria listed above, but is deemed a match in the technical judgment of the mass spectral interpretation specialist, the compound will be positively identified and reported with documentation of the identification noted in the raw data record.

10.6.2 Non-Target Analytes: Upon client request a library search to identify non-target Tentatively Identified Compounds (TIC) is performed. The NIST/EPA/NIH mass spectral library is used to identify non-target compounds (not including internal standard and surrogate compounds) of greatest apparent concentration by a forward search of the library. The following guidelines are used by the analyst when making TIC identifications:

10.6.2.1 Relative intensities of major ions in the reference spectrum (ions greater than 10% of the most abundant ion) should be present in the sample spectrum.

10.6.2.2 The relative intensities of the major ions should agree within ±20%. (Example: For an ion with an abundance of 50% in the standard spectrum, the corresponding sample ion abundance must be between 30 and 70%).

10.6.2.3 Molecular ions present in the reference spectrum should be present in the sample spectrum.

10.6.2.4 Ions present in the sample spectrum but not in the reference spectrum should be reviewed for possible background contamination or presence of co-eluting compounds.

10.6.2.5 Ions present in the reference spectrum but not in the sample spectrum should be reviewed for possible subtraction from the sample spectrum because of background contamination or co-eluting peaks. Data system library reduction programs can sometimes create these discrepancies.

10.6.2.6 If, in the technical judgement of the mass spectral interpretation specialist, no tentative identification can be made, the compound will be reported as 'Unknown'. If the compound can be further classified the analyst may do so (i.e, 'Unknown hydrocarbon', 'Unknown acid' , etc..).

10.7. Data Reporting

10.7.1. Final Report. LIMS TALS system automatically produces a data report consisting of key, hardcopy reports corresponding to specific data reporting requirements.

10.7.1.1. Total Ion Chromatogram. Full length chromatogram depicting the full length of the GC/MS acquisition.

10.7.1.2. Spectra of all detected target compounds. A page for each detected target compound spectra with a standard reference spectrum for comparison.

10.7.1.3. The calculations of the concentrations of each target compound in the sample, reported in units of ppb, ug/kg or ug/l.

10.7.1.4. Data summaries for each method blank indicating which samples were extracted with the indicated blank.

10.7.1.5. A copy of the initial calibration range together with the calibration verification report, and tune report.

10.7.1.6. Quality Control (QC) data report for each batch including surrogate recoveries, internal standard area summaries, LCS, MS/MSD and RPD summaries.

11.0. Calculations / Data Reduction

11.1. Target Compounds: are quantitated using the internal standard method.

11.1.1. Identified target compounds are quantitated using the integrated abundance from the EICP of the primary characteristic ion. The internal standard used shall be the one nearest the retention time of the analyte).

11.1.2. The average response factor (RRF) from the initial calibration is used to calculate the target analyte concentration in client samples using the formula found in Section 11.3.. See Section 9.2.4.2 for discussion of RRF.

11.1.3. Secondary ion quantitation is utilized only when there are sample interferences preventing use of the primary characteristic ion. If secondary ion quantitation is used an average relative response factor (RRF) must be calculated using that secondary ion.

11.1.4. Aqueous Samples

$$\text{Concentration } (\mu g/L) = \frac{(As)(Cis)(D)}{(Ais)(RRF)(Vs)}$$

Where:

As = Area of the characteristic ion for the target analyte in the sample

Cis = Concentration of the internal standard (ug/L)

D = Dilution factor, if the sample or extract was diluted prior to analysis. If no dilution is performed, D = 1.

Ais = Area of the characteristic for the associated internal standard

RRF = Average relative response factor from the initial calibration.

Vs = Volume of sample purged (ml)

11.1.5. Low Level Solid Samples

$$\text{Concentration (µg/Kg) (dry wt)} = \frac{(As)(Cis)}{(Ais)(RRF)(Ws)\,(DW)}$$

Where:

As = Area of the characteristic ion for the target analyte in the sample

Cis = Concentration of the internal standard (ug/L)

DW = Dry wt correction = $\frac{100 - \%\ \text{moisture}}{100}$

Ais = Area of the characteristic for the associated internal standard

RRF = Average relative response factor from the initial calibration.

Ws = Weight of sample purged (g)

11.1.6. Medium Level Solid Samples

$$\text{Concentration (µg/Kg) (dry wt)} = \frac{(As)(Cis)(Vt)(1000)(D)}{(Ais)(RRF)(Va)(Ws)(DW)}$$

Where:

As = Area of the characteristic ion for the target analyte in the sample

Cis = Concentration of the internal standard (ug/L)

D = Dilution factor, if the sample or extract was diluted prior to analysis. If no dilution is performed, D = 1

DW = Dry wt correction = $\frac{100 - \% \text{ moisture}}{100}$

Ais = Area of the characteristic for the associated internal standard

RRF = Average relative response factor from the initial calibration.

Va = Volume of the aliquot of sample methanol extract added to reagent water for purging in ul

Vt = Total volume of methanol extract in milliliters

Ws = Weight of sample purged (g)

11.2. Non-Target Compounds (Tentatively Identified Compounds): An estimated concentration for non-target (tentatively identified compounds) is calculated using the internal standard method . For quantiation, the nearest eluting internal standard free of interferences is used. The procedure used for calculating the concentration of non-target compounds is the same as that used for target compounds (see Section 11.1) with the following revisions:

11.2.1. The total area count of the non-target compound is used for As (instead of the area of a characteristic ion).

11.2.2. The total area count of the chosen internal standard is used as Ais (instead of the area of a characteristic ion).

11.2.3. A RF on 1.0 is assumed.

11.2.4. The resulting concentration is qualified as estimated ('J') indicating the quantitative uncertainties of the reported concentration.

11.3. Relative Response Factors

$$RRF = \frac{A_x}{A_{is}} \times \frac{C_{is}}{C_x}$$

Where:

A_x = Area characteristic ion for the compound (see Table 7)
Ais = Area characteristic ion of associated internal standard (See Table 7)
Cis = Concentration of internal standard
Cx = Concentration of compound in standard

11.4. Percent Relative Standard Deviation (% RSD) : as discussed in Section 9.2.4.2. (Initial calibration):

$$\% \text{ RSD} = \frac{\text{Standard Deviation of RRFs}}{\text{Mean RRF}}$$

11.5. Percent Difference (% D):as discussed in Section 9.2.4.4 (Continuing calibration):

$$\% \text{ D} = \frac{RRF_c - \overline{RRF_i}}{\overline{RRF_i}} \times 100$$

Where: RRFc = RRF from continuing calibration

$\overline{RRF_i}$ = Mean RRF from current initial calibration

11.6. Percent Recovery (% R): Surrogates and Spikes

$$\text{Recovery (\%)} = \frac{\text{Concentration (or amount) found}}{\text{Concentration (or amount) added}} \times 100$$

11.7. Dry Weight Correction: All solid samples must be corrected for dry weight using the following formula for dry weight determination.

$$DW = \frac{Gd}{Gw} \times 100$$

Where:

DW	=	Percent % Dry Weight
Gd	=	Dry weight of selected sample aliquot
Gw	=	Wet weight of selected sample aliquot

Multiply the DW value times the wet weight of the sample extracted. NOTE: This calculation can also be performed automatically by the target system provided the DW value is available and entered into the system.

11.8. Accuracy:

$$\text{ICV , CCV and LCS \% Recovery} = \frac{\text{observed concentration}}{\text{known concentration}} \times 100$$

$$\text{MS \% Recovery} = \frac{\text{(spiked sample) - (unspiked sample)}}{\text{spiked concentration}} \times 100$$

11.9. Precision (RPD):

$$\text{Matrix Duplicate (MD)} = \frac{|\text{orig. sample value - dup. sample value}|}{[(\text{orig. sample value + dup. sample value})/2]} \times 100$$

11.10. Calculation of Percent (%) Error:

$$\%Error = \frac{x_i - x_i'}{x_i} x\,100$$

Where:

x_i ' = Measured amount of analyte at calibration level *i*, in mass or concentration units
x_i = True amount

11.11. Relative Standard Error (RSE):

$$\%\,RSE = 100\% \times \sqrt{\frac{\sum_{i=1}^{N}\left[\frac{C_i - PC_i}{C_i}\right]^2}{(N-P)}}$$

Where:

N = Number of points in the curve
P = Number of parameters in the curve (= 1 for average response factor, 2 for linear, 3 for quadratic)
CI = True concentration for level i
PCi = Predicted concentration for level

12.0 Method Performance

12.1. Method Detection Limit Study (MDL)

A Method Detection Limit (MDL) study, as described in the Eurofins corporate Detection and Quantitation Limits SOP, CA-Q-S-006, must be performed initially and whenever a significant change affecting sensitivity is made to the analytical system. The MDL must be re-evaluated from quarterly MDL points at least every 12 months.

12.2. Demonstration of Capabilities

For DOC procedure refer to Section 19 in the most current revision of Eurofins Edison's Quality Assurance Manual (ED-QA-LQM).

12.3. Lower Limit of Quantitation Verification

The lowest calibration standard analyzed establishes the LLOQ or Reporting Limit. The capability to reliably detect this concentration through the preparation, clean-

up and analytical procedure is verified through the annual analysis of a standard at the LLOQ/RL. The LLOQ verification shall also be performed whenever significant changes are made to the preparation and/or analytical procedure. The annual LLOQ verification is completed and documented with the required annual MDL evaluation

12.3.1 The LLOQ verification standard shall be prepared at a concentration 0.5-2 times the LLOQ/RL, and be taken through all of the same preparation and clean-up methods as client samples.

12.3.2 The LLOQ verification standard for aqueous matrix shall be prepared using laboratory deionized water and for the solid matrix using clean Ottawa sand. Other clean matrices may be used in addition, for project specific requirements.

12.3.3 The LLOQ shall be verified annually on each instrument used for client sample analysis.

12.3.4 Recovery of each analyte must meet the laboratory established LCS recovery limits + 20%. (For example, if the LCS recovery limits are 70-130%, the LLOQ verification must meet recovery limits of 50-150%.) Once sufficient points have been generated, LLOQ based statistical limits may be used in place of limits based on LCS recovery.

NOTE: The lower recovery limit for the LLOQ can be no lower than 10%.

12.4. Training Requirements

Refer to Eurofins SOP No. ED-GEN-022, (*Training*), for the laboratory's training program.

13.0 Pollution Control

13.1. It is Eurofins's policy to evaluate each method and look for opportunities to minimize waste generated (i.e., examine recycling options, ordering chemicals based on quantity needed, preparation of reagents based on anticipated usage and reagent stability). Employees must abide by the policies in Section 13 of the Corporate Environmental Health and Safety Manual (CW-E-M-001) for "Waste Management and Pollution Prevention."

14.0 Waste Management

14.1. Waste management practices are conducted consistent with all applicable rules and regulations. Excess reagents, samples and method process wastes are disposed of in an accepted manner. Waste description rules and land disposal restrictions are followed. Waste disposal procedures are incorporated by reference to Eurofins Edison SOP No. ED-SPM-008, *Laboratory Waste Disposal Practices*, current revision. The following waste streams are produced when this method is carried out.

- Laboratory Generated Aqueous Waste (aqueous VOA vials – used and unused). This waste may have a pH of less than 2.0. These vials are collected in satellite accumulation. The vials are then transferred to the waste room. These vials are passed through a vial crusher and the liquid portion is separated from the solid portion. The solid is dumped into the municipal garbage. The liquid is pumped into the neutralization system where it is neutralized to a pH of 6 to 9 with sodium bicarbonate (Seidler Chemical SC-0219-25). When neutralization is complete, the material is transferred to the municipal sewer system**.**

- Expired Standards – The vials are collected in a 1 gallon polyethylene bucket. These vials are then transferred to an open top 55 gallon steel or polyethylene waste drum. These drums are transported to a waste facility for proper disposal.

- Soil Retain Samples - These samples if not flagged in the system for any hazardous constituents are transferred to poly-lined cubic yard boxes. These boxes when full are sent to stabilization or incineration. These materials are sent out as hazardous for lead and chromium

  Teris Profile Number (incineration): 50016710
  Onyx Profile Number: (stabilization) 402535

- Methanol Preserved Samples/Returned Methanol Preservative - Methanol preserved sample vials are collected in satellite accumulation and then transferred to a 55 gallon open top steel waste drum in the waste room. This drum is then removed by a waste vendor for incineration.

  Teris Profile Number: 50016652
  Onyx Profile Number: 282493

15.0 References / Cross-References

15.2. .United States Environmental Protection Agency, “Method 8260D, Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)”, Test Methods for Evaluating Solid Waste, SW846, Update VI, Revision 4, June 2018.

15.3. United States Environmental Protection Agency, “Method SW8000D: Determinative Chromatographic Separations”, Test Methods for Evaluating Solid Wastes, SW846, Laboratory Manual, Physical/Chemical Methods, Update V, Revision 4, October 2012.

15.4. U.S. EPA. 2003. "Method 5030C (SW-846): Purge-and-Trap for Aqueous Samples," Revision 3. Washington, DC.

15.5. U.S. EPA. 2002. "Method 5035A (SW-846): Closed-System Purge-and-Trap and Extraction for Volatile Organics in Soil and Waste Samples," Draft Revision 1. Washington, DC.

15.6. Eurofins Edison Document No. ED-QA-LQM, *Laboratory Quality Manual*, most current revision.

15.7. Eurofins Document No. CW-E-M-001, Corporate Environmental Health and *Safety Manual,* current revision.

15.8. Eurofins Edison SOP Nos. ED-MSV-001*, Purge and Trap for Aqueous Samples, SW846 Method 5030*, current revision.

15.9. Eurofins Edison ED-MSV-002, *Closed-System Purge-and-Trap and Extraction for Volatile Organics in Soil and Waste Samples, SW846 Method 5035A,* current revision.

15.10. Eurofins Edison SOP No. ED-GCV-001, *Screening for Volatile Organics, Static Headspace with GC FID, SW846 Method 5021*, current revision.

15.11. Eurofins Corporate Quality SOP No. CA-Q-S-001, *Solvent & Acid Lot Testing & Approval*, current revision.

15.12. Eurofins Edison SOP No. ED-GEN-023, *Bulk Solvent Testing and Approval*, current revision.

15.13. Eurofins Edison SOP No. ED-GEN-008, *Standard Operating Procedure for Preparation, Purity and Storage of Reagents and Standards*, current revision

15.14. Eurofins Edison SOP No. ED-SPM-004, *Sample Storage & Handling Procedures for Mitigation of Sample and Laboratory Contamination,* current revision

15.15. Eurofins Edison Work Instruction No. EDS-WI-096, *8260C ICAL Procedure*, current revision.

15.16. Eurofins Edison SOP No. ED-GEN-022, *Training*, current revision.

15.17. Eurofins Edison SOP No. ED-SPM-008, *Laboratory Waste Disposal Practices*, current revision

15.18. Eurofins Edison Work Instruction Document No. EDS-WI-012, *Client Complaint/Corrective Action Form,* current revision.

15.19. Eurofins Corporate Quality Memorandum, CA-Q-QM-002, *GC/MS Tuning Policy*, current revision.

15.20. Eurofins Edison SOP No. ED-GEN-003, *Standard Operating Procedure for Control of Non-Conformances and Corrective Action,* current revision

16.0 Method Modifications:

16.1 Method 8260D requires the BFB tune standard to be analyzed once prior to an ICAL and not daily after that prior to sample analysis. The laboratory will analyze the BFB tune daily, prior to QC and sample analysis. The laboratory will use the

tighter criteria from Methods 8260B/8260C for tune evaluation, rather than the criteria suggested in Table 3 of Method 8260D.

17.0 Attachments

N/A

18.0 Revision History

- Revision 10, dated 08/09/2023
    - Throughout: added analyte 2-ethylhexyl acrylate
    - Sections 2.3 and 10.2.1: Screening clarified to indicate which samples are screened and samples that derive their dilutions from historical data.

- Revision 9, dated 10/17/2022
    - Updated throughout to Eurofins branding throughout the document.
    - Removed all references to 8260C
    - Section 8.3.1: added requirements for handing aqueous samples from chlorinated sources.
    - Section 9.2.2: updated throughout to detail requirements for Relative Standard Error (RSE) evaluation if ICAL.
    - Section 11.11: added formula for calculation of RSE.

- Revision 8, dated 07/16//2020
    - Updated throughout to include requirements of SW 8260D and 8000D.
    - Updated Table 1 with full current analyte list.
    - Add text to Section 1.1.6 detailing procedures for documenting method variations via NCMs.
    - Section 2.6: clarified text regrading lower than standard RLs.
    - Section 4.4: clarified text regarding trip blanks.
    - Section 7.1.1: revised source and details of organic free water.
    - Section 8.0: added handling and preservation details for various soil and aqueous sample types.
    - Section 9.1.1.4: Added that concentrations allowed in blanks (one half of RL), how blank concentration relates to sample concentration (<1/10) and some guidance on re-analysis when concentration exceeds criteria.
    - Section 9.1.3: added that CCV/LCS can be the same run.
    - Tune verifications as not required for daily CCV updated throughout.
    - Section 9.2.2.1.: Allowance for last calibration standard to be the start of 12-hour clock for samples analyzed after initial calibration. Calculations for verifying peak resolution
    - New Section 9.2.4.2 added: Calibration Point Read Back Criteria
    - Section 11.10: added formula for calculation of Percent Error.

- Section 12 (Method Performance) updated to include new MDL procedure and annual LLOQ procedure.
- Updated references in Section 15 as necessary.

- Revision 7, dated 04/01/2020:

  - Updated formatting and branding to Eurofins
  - Sec 7.2.8: Revised Expiration dates based on concentration level and corrected storage requirements.
  - Sec 8.1: Changed Storage Blanks storage period from 1 week to 1-2 weeks.

- Revision 6, dated 01/17/2018:

  - Revised Table 5 and 6: revised to add additional levels plus Benzene and chloroform and to updated concentration level of ICV to current level.

  - 7.2.1 and Table 2: Table in Section 7.2.1 and Table 2 updated to include complete list of standards currently in use as well as to update vendor catalog number for several items.

  - Section 7.2.5: SIM IS/SS mix corrected to reflect lower concentration of IS mix .

  - Section 9.1.2.1.4: SIM MS/MSD preparation revised.

  - Section 9.1.3.2: SIM LCS/LCSD preparation revised.

  - Section 9.2.2.2: additional SIM levels added.

  - Section 9.2.3: SIM CCV level concentration revised to reflect lower concentration.

  - Section 10.2.5: New SIM analysis preparation narrative added

  - Section: 6.1: New instrumentation added.

  - Section: Section: 9.1.4.3: Revised to have any one surrogate out without the need for corrective action. This corrects previous narrative of one surrogate out of two.

- Revision 5, dated 12/11//2015:

  - Revised Table 5: new concentration of low standard (1,4-dioxane only).

- Revision 4, dated 12/08//2014:

  - Section 9.2.4.2.2: Table revised to reflect minimum RF of 0.050 for following compounds: acetone, 2-butanone, 4-methyl-2-pentanone, 2-hexanone.

  - Section 9.2.4.3: added statement ‘for poor performers the range is 50-150%’.

- Revision 3, dated 11/10/2014:

- Tables 1 and 7: added 1,2,4,5-Trimethylbenzene, 1,4-Diethylbenzene, Butadiene, 1,4-Difluorobenzene, 1-Chlorohexane, Freon 114, Freon 123a, Isooctane, 4-Ethyltoluene, t-Amyl Alcohol, Chlorofluoroethylene to list of target compounds and list of standard sources.

- Section 2.5: added chloroform, vinyl chloride and benzene to the list of SIM analytes addressed in this section.

- Section 2.6: revised the concentration of the low ketone standard to 2.5 ug/l.

- 7.2.1 and Table 2: Table in Section 7.2.1 and Table 2 updated to include complete list of standards currently in use as well as to update vendor catalog number for several items. All standards prep tables revised to reflect current standard prep instructions.

- Section 8. Preservation by TSP and holding time is added.

- Section 9.1.2.1: updated source of standards used in various spiking solutions.

- Section 9.1.3: LCS/MS/MSD. Preparation tables now indicate using calibration mix and not the second source mix.

- Sections 9.1.4.3 and 9.1.1 : Revised to indicate that we are now spiking with 4 surrogates instead of the method required 3. One surrogate is now allowed to be out of limit criteria for either 1,2-Dichloroethane-d4 and Dibromofluoromethane.

- Section 9.2.2: Chloroform, Vinyl Chloride and Benzene added as SIM compounds.

- Section 9.2.4.2.3.1. A list of 'poor performing compounds' is added with a ICAL RSD criteria of 50%.

- Section 9.2.4.3: now specifies that up to 10% of the compounds are allowed to exceed the 70-130% ICV recovery criteria as long as their recoveries are within 65-135%..

- Section 9.2.4.4.1.6: Added the following to the first sentence: '…or 50%D for the poor performing compounds'.

- Section 10.1.1.2: updated masses/dwell time for Group 1 under SIM Parameters.

- Throughout document as appropriate: Replaced references to Target with references to CHROM

- Added Section 10.5.5: "The data processing service from Chrom queries LIMS for the sample processing parameters."

- Revision 2, dated 11/04/2013:

- Tables 1 and 7: added methyl acrylate, 1-methylnaphthalene and 2-methylnapthalene.

- Revision 1, dated 09/16/2011:

  - Tables 1 and 7: added cyclopentene, 2-chloro-1,3-butadiene, methacrylonitrile, propionitrile, ethyl methacrylate, 2-nitropropane, indan and isobutyl alcohol to list of target compounds and list of standards sources.

  - Section 7.2.1 and Table 2: Table in Section 7.2.1 and Table 2 updated to include complete list of standards currently in use as well as to update vendor catalog number for several items.

  - Table 3: Initial Calibration Standards Preparation: is now split into three tables to include aqueous low level analysis.

  - Table 5: added following footnote:
    Levels 1 and 2 respectively are prepared in 500ml and 100ml final volumes
    [1]This level is also used as the Continuing Calibration Verification.

- Revision 0, dated 02/15/2011: New

Table 2: Working Standards Preparation							
Target Compound Standard Name	**Lab Name**	**Vendor**	**Cat. #**	**Vol. Std. Added**	**Conc. of Stock Std.**	**Concentration of Standard**	**Final Vol/ Total vol of MeOH**
Gas Mix Hi	Gas (Hi)	Restek	567645	5ml mL	2000 ppm	500 ppm	20mL 15mL TV/M
Gas Mix Li	Gas (Li)	Restek	567645	500 uL	2000 ppm	50 ppm	20mL 19.5mL TV/M
8260Mix 1	Mix 1 (Hi)	Restek	567641 567646 567642 568022	2.5ml 2.5 ml 2.5 ml 2.5 ml	2000 ppm	500 ppm	10ml
8260 combined	Mix 1 (Li)	Restek	567641 567646 567642 568022 567643 568018 568713 568722 568723	1.0ml 1.0ml 1.0ml 1.0ml 1.0ml 1.0ml 1.0ml 1.0ml 1.0ml	2000 ppm	50 ppm	40ml 31ml TV/M
Acrolein	AC	Restek	82402	1.0ml	20000 ppm	500 ppm	40ml 39ml TV/M
8260 Mix 2	Mix 2 (Hi)	Restek	567643 568722 568019-fl 568713-fl	2.5ml 2.5 ml 2.5 ml 2.5 ml	2000 ppm	500 ppm	10mL
8260 Mix 3	Mix 3 (Hi)	Restek	568723 568021-fl	2.5ml 2.5ml	2000 ppm	500 ppm	10ml 5ml TV/M
1,4-Dioxane	1,4-Dioxane	Supelco	360481	483.6ul	Neat	50000 ppm	10ml/9.52TVM
1,4-Dioxane	1,4-Dioxane	Supelco	NA	100ul	50000 ppm	500 ppm	10ml/9.90TVM
Propenes*	Propenes	Supelco	21240202	NA	1000/2000 ppm	NA	NA
Propenes*	Propenes	Supelco	21240202	1ml	1000/2000 ppm	50 ppm (varied)	20ml/ 19ml
Gas SS	Gas SS	Restek	567645.sec	1ml	2000ppm	50 ppm	40ml 39ml/TV/M
8260 Mix 1 SIM	8260 Mix 1 SIM	Supelco	5-02111	50 ul	2000ppm	10 ppm	10ml 9.95 TV/M
1,4-Dioxane SIM	1,4-Dioxane	Supelco	NA	100 ul	50000 ppm	500 ppm	10ml/9.90TVM

Table 2: Working Standards Preparation

Target Compound Standard Name	Lab Name	Vendor	Cat. #	Vol. Std. Added	Conc. of Stock Std.	Concentration of Standard	Final Vol/ Total vol of MeOH
8260 SS	8260 SS	Restek	567641.sec 567646.sec 567642.sec 568022- sl 567643.sec 568019- sl 568713- sl 568722.sec 568723.sec 568021- sl	1 ml 1 ml 1 ml 1 ml 1 ml 1 ml 1 ml 1 ml 1 ml 1 ml	2000 ppm	50 ppm	40 ml 30 ml TV/M
Acrolein SS	AC SS	Restek	568720.sec	1 ml	20000 ppm	500 ppm	40 ml 39 ml TV/M
Propenes SS	Propenes SS	Supelco		1 ml	1000/2000 ppm	50/100 ppm	40 ml 39 ml TV/M
8260Mix 1 SIM SS	SIM MIX1 SS	Supelco	5S-02111	50ul	2000 ppm	10 ppm	10ml 9.95 TV/M
Benzene/ Chloroform	Ben/chl	Absolute	70025/ 70076	100ul each	1000ppm	10ppm	10ml 9.90 TV/M
1,4-Dioxane (SS)	1,4-Dioxane	Absolute	70373	1ml	1000 ppm	500 ppm	2ml/1ml TV/M

Asterisk (*) indicates a custom standard mix.

Table 3: Initial Calibration Standards Preparation, Low Level Soil

Standard Solution	Final Volume Reagent Water (ml)	Volume of Standard Added to Reagent Water (ul)					
		1ppb *	5ppb*	20ppb[1]	50ppb	200ppb	500ppb
Gas Mix (50ppm)	5	-	-	2.0	5	-	-
	50	1.0	5.0			-	-
Gas Mix (500ppm)	5	-	-	-		2.0	5.0
		-	-	-			
Mix 1 (combined) (50ppm)	5	-	-	2.0	5	-	-
	50	1.0	5.0			-	-
Mix 1 (Hi) (500ppm)	5	-	-	-	-	2.0	5.0
		-	-	-	-	-	-
Freon Mix							
AC (500ppm)	5	-	-	3.0	4.0	5.0	6.0
	50	10	20			-	-
Mix 2 (Hi) (500ppm)	5	-	-	-	-	2.0	5.0
		-	-	-	-		
Mix 3 (500ppm)	5					2.0	5
Propenes (50ppm)	-	-	-	-	-	-	-
	50	10.0	20.0		-	-	-
Propenes (Hi)(500ppm)	5	-	-	2.0	5.0	20	50
	-	-	-	-	-	-	-

[1]**This level is also used as the Continuing Calibration Verification.**

Table 3a: Initial Calibration Standards Preparation, Aqueous (LOW LEVEL)

Standard Solution	Volume of Standard Added to Reagent Water (ul)						
	0.5ppb*	1ppb*	5ppb*	20ppb[1]	50ppb	200ppb	500ppb
Gas Mix (500ppm)	0.5	1	1	2	5	20	50
Mix 1 (Hi) (500ppm)	0.5	1	1	2	5	20	50
Mix 2 (Hi) (500ppm)	0.5	1	1	2	5	20	50
Mix 3 (varied)	0.5	1	1	2	5	20	50
AC (500ppm)	2	4	4	4	10	20	40
1,4-Dioxane (500ppm)	15	30	-	-	-	-	-
Freons mix	0.5	1	1	2	5	20	50
Propenes (1000/2000ppm)	0.5	0.5	0.5	1	2.5	10	25
Methanol Compensate	3000	2800	610	300	280	190	0
Final vol. (reagent water)	500ml	500 ml	100ml	50 ml	50ml	50ml	50ml

[1]This level is also used as the Continuing Calibration Verification.

Table 3b: Initial Calibration Standards Preparation, Aqueous

Standard Solution	Volume of Standard Added to Reagent Water (ul)					
	1.0ppb*	5ppb*	20ppb[1]	50ppb	200ppb	500ppb
Gas Mix (500ppm)	1	1	2	5	20	50
Mix 1 (Hi) (500ppm)	1	1	2	5	20	50
Mix 2 (Hi) (500ppm)	1	1	2	5	20	50
Mix 3 (varied)	1	1	2	5	20	50
AC (500ppm)	4	4	4	10	20	40
1,4-Dioxane (500ppm)	30	-	-	-	-	-
Freons Mix	1	1	2	5	20	50
Propenes (1000/2000ppm)	0.25	0.5	1	2.5	10	25
Methanol Compensate	2800	610	300	280	190	0
Final vol. (reagent water)	500 ml	100ml	50 ml	50ml	50ml	50ml

[1]This level is also used as the Continuing Calibration Verification.

Table 4 : ICV Standard Preparation, Low Level Soil

Standard Solution	Concentration	Volume of Standard Added to 5.0 ml of Reagent Water (ul)	Final Concentration (ug/L)
GAS SS (Separate lot)	50ppm	2	20
8260 SS (Separate lot)	50ppm (+varied)	2	20
AC SS (separate lot)	500ppm	3	300
Freon SS (Separate lot)	50ppm	2	20
Propenes SS(separate lot)	50ppm (varied)	2	20 (varied)

Table 4a: ICV Standard Preparation, Aqueous

Standard Solution	Concentration	Volume of Standard Added to 50 ml of Reagent Water (ul)	Final Concentration (ug/L)
GAS SS (Separate lot)	50ppm	20	20
8260 SS (Separate lot)	5000ppm (varied)	20	20
AC SS (separate lot)	500ppm	4	400
Freons SS (Separate lot)	50ppm	20	20
Propenes (second source)	50ppm (varied)	20	20 (varied)

Table 5: SIM Initial Calibration Standards Preparation

Standard Solutions	Volume Standard Solution Added to Reagent Water (Final Concentration)							
8260 Mix 1 SIM (10ppm)	1 ul (0.02 ppb)	2 ul (0.04 ppb)	1 ul (0.05 ppb)	1 ul (0.1 ppb)	1 ul (0.2 ppb)	2.5 ul (0.5 ppb)	5 ul (1 .0 ppb)	10 ul (2.0 ppb)
1,4-Dioxane (500ppm)	4 ul (0.4 ppb)	2 ul (1.0 ppb)	1 ul (5.0 ppb)	1 ul (10 ppb)	1 ul (20 ppb)	2.5 ul (30 ppb)	5 ul (40 ppb)	10 ul (50 ppb)
SIM (ben/chl) 10ppm	1 ul (0.02 ppb)	1 ul (0.02 ppb)	1 ul (0.05 ppb	1 ul (0.1 ppb)	1 ul (0.2 ppb)	2.5 ul (0.5 ppb)	5 ul (1.0 ppb)	10 ul (2.0 ppb)
Final Vol. (reagent water)	**500ml**	**500ml**	**200ml**	**100ml**	**50ml**	**50ml**	**50ml**	**50ml**

levels 1 and 2 are respectively prepared in 500ml and 100ml final volumes
[1]**This level is also used as the Continuing Calibration Verification.**

Table 6 : SIM ICV Standard Preparation

Standard Solution	Concentration	Volume of Standard Added to 200 ml of Reagent Water (ul)	Final Concentration (ug/L)
SIM MIX1 SS (Second source)	10ppm	1	0.05
1,4-Dioxane SS	50ppm	20	5

TABLE 7
Characteristic Ions of Volatile Organic Compounds

Parameter	Primary ion	Secondary ion
1,1,1-Trichloroethane	97	99,117,119
1,1,2,2-Tetrachloroethane	83	85,131,133,166
1,1,2-Trichloroethane	97	83,85,99,132,134
1,1-Dichloroethane	63	65,83,85,98,100
1,1-Dichloroethene	96	61,98
1,1-Dichloropropene	75	110. 77
1,2,3-Trichlorobenzene	180	182
1,2,3-Trichloropropane	110	75
1,2,4-Trichlorobenzene	180	182, 145
1,2,4-Trimethylbenzene	105	120
1,2-Dibromo-3-Chloropropane	75	155, 157
1,2-Dibromomethane	107	109
1,2-Dichloroethane	62	64,100,98
1,2-Dichloroethene	96	61,98
1,2-Dichloropropane	63	65,114
1,2-Dichlorotrifluoroethene	67	117
1,2-Difluorotetrachloroethene	101	103, 167
1,3,5-Trimethylbenzene	105	120
1,3-Dichlorobenzene	146	148, 111
1,4-Dichlorobenzene	146	148, 111
1,4-Dioxane	88	58
1-Chloropropane	63	78
1-Methylnaphthalene	142	141
1-Propene	41	42
2,2-Dichloropropane	77	97

TABLE 7 Characteristic Ions of Volatile Organic Compounds		
2,4,4-trimethyl-1-pentene	41	57, 97
2-Butanone	72	57
2-Chloroethyl vinyl ether	63	65, 106
2-Chloropropane	78	63
2-Chlorotoluene	91	126
2-Chloro-1,3-butadiene	88	53
2-Hexanone	43	58,100
2-Methylnaphthalene	142	141, 115
2-Nitropropane	39	42, 44
2-Octane	43	58
2-Octanol	45	55
4-Chlorotoluene	91	126
4-Methyl-2-Pentanone	43	58,100
Methacrylonitrile	67	41
Acetone	43	58
Acetonitrile	39	40, 41
Acrolein	56	55
Acrylonitrile	53	52
Allyl Alcohol	57	40, 39
Allyl Chloride	76	41
Amyl Acetate	43	70, 61
Benzene	78	--
Benzyl Chloride	91	126, 65
Bromobenzene	156	77, 158
Bromochloromethane	129	49, 130
Bromodichloromethane	83	85
Bromoform	173	171,175,
Bromomethane	94	96
Butyl Acetate	73	56, 43
Butyl Acrylate	73	56, 55
Butyl methacrylate	87	69
Camphene	93	121
Camphor	95	81
Carbon disulfide	76	78
Carbon tetrachloride	117	119,121
Chlorobenzene	112	114
Chloroethane	64	66
Chloroform	83	85
Chloromethane	50	52
Chlortrifluoroethene	116	118
cis-1,3-Dichloropropene	75	77

TABLE 7 Characteristic Ions of Volatile Organic Compounds		
Cyclohexane	56	84, 69
Cyclopentene	67	68, 68, 53
Dibromochloromethane	129	208,206
Dibromomethane	93	95, 174
Dichlorodifluoromethane	85	87
Dimethylnaphthalene (total)	141	156, 155
Epichlorohydrin	57	62, 49
Ethanol	46	45
Ethyl Acetate	70	61, 43
Ethyl Acrylate	55	56
Ethyl Ether	59	74, 75
Ethylbenzene	106	91,
Ethyl methacrylate	69	41, 99
Freon TF	101	103, 151, 85
Hexachlorobutadiene	225	223
Hexane	56	57, 86
Indan	117	118, 58
Iodomethane (methyl iodide)	142	127
Isobutyl Alcohol (Isobutanol)	43	41, 42
Isoprene	67	53, 59
Isopropanol	45	59
Isopropyl Acetate	43	61, 87
Isopropyl Ether (DIPE)	45	87
Isopropylbenzene	105	120
Methyl Acetate	43	74
Methyl Acrylate	55	85, 42
Methyl cyclohexane	83	55, 98
Methyl Methacrylate	100	69
Methyl tert-butyl ether (MTBE)	73	57
Methylene chloride	84	49,51,86
Methylnaphthalene (total)	142	141, 115
Naphthalene	128	--
n-Butanol	56	41, 43
n-Butylbenzene	91	92, 134
n-Heptane	57	43, 71
n-Pentane	72	57
N-Propanol	60	59
n-Propylbenzene	91	120
P-Isopropyltoluene`	119	134, 91
Propyl Acetate	43	61, 73
Propionitrile	54	52, 54

TABLE 7 Characteristic Ions of Volatile Organic Compounds		
sec-Butylbenzene	105	134
Styrene	104	78,103
Tert-Amyl Methyl Ether	73	55, 87
Tert-butyl Alcohol	59	--
Tert-Butyl Ethyl Ether	59	87
Tert-Butylbenzene	119	91, 134
Tetrachloroethene	164	129,131,166
Tetrahydrofuran	42	72, 71
Toluene	92	91
Total Xylenes	106	91
trans,-1,3-Dichloropropene	75	77
Trans-1,4-dichloro-2-butene	53	75
Trichloroethene	130	95,97,132
Trichlorofluoromethane	101	103
Vinyl acetate	43	86
Dichlorofluoromethane	67	69
Chlorotrifluoroethene	116	118
1,2-tetrachlorodifluoroethane	101	103,167
1,2-Dichlorotrifluoroethane	67	117
Vinyl chloride	62	64
Isooctane	57	41, 56
1- Chlorohexane	91	93, 55, 56
1,2,4,5-Tetramethylbenzene	119	134, 91
4-EthylToluene	105	120, 77
Chlorotrifluoroethylene	66	116,118,85
Freon 114	85	87,135,137
t-Amyl Alcohol	59	55, 73, 43
1,4-Difluorobenzene	114	63
1,4-Diethylbenzene	119	105,134
Freon 123a	67	69, 117, 119
Butadiene	54	53, 39
4-Bromofluorobenzene (sur)	95	174,176
1,2-Dichloroethane-d4 (sur)	65	102, 104
Toluene-d8 (sur)	98	70,100
Fluorobenzene (istd)	96	77
Chlorobenzene-d5 (istd)	117	82,119
1,4-Dichlorobenzene-d4 (istd)	152	115,150

Title: Procedure for the Microwave Extraction of Solids, SW846 3546

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Approvals (Signature/Date):

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1.0 Scope and Application

The procedure uses microwave energy to produce elevated temperature and pressure conditions (i.e., 100° -115°C and 50 - 175 psi) in a closed vessel containing the sample (soil, sediment and sludge) and organic solvent(s) to achieve analyte recoveries equivalent to those from Automated Soxhlet extraction (Method 3541), using less solvent and taking significantly less time than the Automated Soxhlet procedure.

This method is applicable to the extraction of semi-volatile petroleum products in soil, sediment and sludge which may then be analyzed by a variety of chromatographic procedures. The method may also be applicable for the extraction of additional target analytes, provided that the analyst demonstrates adequate performance for the intended application as further described in TestAmerica Edison's Quality Assurance Manual (ED-QA-LQM).

This method only is applicable to solid samples with small particle sizes. If practical the sample may be air dried and ground to a fine powder prior to extraction.

1.1 **Analytes, Matrix(s), and Reporting Limits:** This standard operating procedure details the procedures used by TestAmerica Edison for the microwave extraction of soils, sediments, sludges, and waste solids for semivolatile organic compounds by SW846 Method 3546 for subsequent analysis of:

- Diesel Range Organics (C10-C28 & C8-C44) by SW846 Methods 8015B, 8015C and 8015D (see TestAmerica Edison SOP Nos. ED-GCS-009 and ED-GCS-020);
- TPH by NJDEP-OQA-QAM-025 (see TestAmerica Edison SOP No. ED-GCS-011);
- Organochlorine Pesticides and PCBs by SW846 8081A/B and 8082/A (see TestAmerica Edison SOPs No.ED-GCS-003, ED-GCS-004, ED-GCS-016 and ED-GCS-017)
- Semivolatile Organic Compounds by Gas Chromatography/ Mass Spectrometry (GC/MS) by SW846 8270 and 8270D (TestAmerica Edison SOPs ED-MSS-002 and ED-MSS-009)
- PCBs by GC/MS using EPA Method 680 (TestAmerica Edison SOP ED-MSS-010)

1.2 The microwave prep for NJDEP Extractable Petroleum Hydrocarbons (EPH) (10/08), current revision, is addressed separately in TestAmerica Edison SOP ED-GCS-012 (current revision).

1.3 For a complete discussion of analytes and reporting limits (RLs) please refer to the applicable TestAmerica Edison analytical SOPs referenced in Section 1.1 and in References (Section 14.0).

1.4 On occasion clients may request modifications to this SOP. These modifications are handled following the procedures outlined in Section 7 (*Review of Work Request*) and 19 (*Test Methods and Method Validation*) of TestAmerica Edison's Quality Assurance Manual (ED-QA-LQM).

2.0 Summary of Method

A representative soil, clay, sediment, sludge, solid or waste sample is weighed and placed into a 75mL Teflon vessel and extracted using an appropriate solvent in a microwave extractor. The extraction vessel containing the sample and solvent system is heated to the extraction temperature and extracted for 10 minutes. The mixture is allowed to cool. The vessel is opened and the contents are filtered. The solid material is rinsed and the various solvent fractions are combined. The extract is then dried, concentrated using a nitrogen blow down device, and as necessary, solvent exchanged for use in clean up, fractionation, or determinative methods.

3.0 Definitions

For a complete list of definitions refer to Appendix 2 in the most current revision of TestAmerica Edison's Quality Assurance Manual (ED-QA-LQM).

4.0 Interferences

4.1 Solvents, reagents, glassware, and other sample processing hardware may contribute to interferences with sample analysis. All materials must be demonstrated to be free from interferences under the conditions of the analysis by analyzing a method blanks.

4.2 Phthalate esters are commonly extracted from laboratory items. Plastics in particular, must be avoided because phthalates are easily extracted from these materials. The presence of these contaminants in extracts is problematic because it will give false positive results for the methods that list phthalates as target compounds or it will interfere with the target compounds of other methods that are co-extracted with them.

4.3 All glassware used must be scrupulously cleaned before use in trace analysis. Refer to TestAmerica Edison SOP No. ED-GEN-013 (*Glassware Cleaning*), current revision.

4.4 Use caution if sodium sulfate is used for this method. Salts are known to super heat when used in microwave. Typically samples are analyzed with the addition of 5.0 grams sodium sulfate.

5.0 Safety

Employees must abide by the policies and procedures in the Corporate Safety Manual, Radiation Safety Manual and this document.

This procedure may involve hazardous material, operations and equipment. This SOP does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of the method to follow appropriate safety, waste disposal and health practices under the assumption that all samples and reagents are potentially hazardous. Safety glasses, gloves, lab coats and closed-toe, nonabsorbent shoes are a minimum.

5.1 Specific Safety Concerns or Requirements

Nitrile gloves should be used when performing this extraction. Latex and vinyl gloves provide no significant protection against the organic solvents used in this SOP, and should not be used. During Kuderna-Danish (KD) concentration, do not allow the extract to boil to dryness. The solvent vapors remaining in the KD apparatus may superheat and create an explosion or fire hazard.

The use of the microwave to extract samples creates excessive pressure and temperature within the digestion vessels very rapidly. Cooling the sample after digestion is extremely important.

5.2 Primary Materials Used

The following is a list of the materials used in this method, which have a serious or significant hazard rating. NOTE: This list does not include all materials used in the method. The table contains a summary of the primary hazards listed in the MSDS for each of the materials listed in the table. A complete list of materials used in the method can be found in the reagents and materials section. Employees must review the information in the MSDS for each material before using it for the first time or when there are major changes to the MSDS.

Material	Hazards	Exposure Limit (2)	Signs and symptoms of exposure
Acetone	Flammable	1000 ppm-TWA	Inhalation of vapors irritates the respiratory tract. May cause coughing, dizziness, dullness, and headache.
Hexane	Flammable Irritant	500 ppm-TWA	Inhalation of vapors irritates the respiratory tract. Overexposure may cause lightheadedness, nausea, headache, and blurred vision. Vapors may cause irritation to the skin and eyes.
Methylene Chloride	Carcinogen Irritant	25 ppm-TWA 125 ppm-STEL	Causes irritation to respiratory tract. Has a strong narcotic effect with symptoms of mental confusion, light-headedness, fatigue, nausea, vomiting and headache. Causes irritation, redness and pain to the skin and eyes. Prolonged contact can cause burns. Liquid degreases the skin. May be absorbed through skin.
1 – Always add acid to water to prevent violent reactions.			
2 – Exposure limit refers to the OSHA regulatory exposure limit.			

6.0 Equipment and Supplies

6.1 Instrumentation

- Zymark Turbovap II concentrator
- Electronic Balance, capable of weighing to 0.01g.
- N-Evap Analytical Evaporator
- Fisher 8 Position Steam Bath
- MARS 5 microwave oven with temperature sensor (CEM Corp) capable of sensing

temperature within 2.5°C and adjusting microwave field output within 2 sec of sensing.
- MARS 40 position carousel (CEM Corp)
- Visiprep DL column holder

6.2 Supplies

- 10, 50 and 200 mL Concentrator tubes.
- Vials, - 1ml, 4ml, and 10ml with PTFE lined snapcaps.
- Glass syringes, 25ul, 50ul, 100ul, 500ul, 1000ul
- Pastuer pipets
- Glass Buchner funnels (stainless steel funnels may be substituted) – Fisher Scientific.
- 500 ml Kuderna-Danish (KD) flask
- Stainless steal spatulas
- Glass wool- Contaminant-free (silane treated or oven baked at 400°C)
- 75mL Teflon Express vessels with stopper and cap (CEM Corp.)
- Glass fiber filter paper - #1 185mm (Whatman)
- Weigh boats
- Tongue depressors, wood

7.0 Reagents and Standards

Note: Each solvent lot is screened for contaminants before being used for analysis as detailed in TestAmerica Corporate Quality SOP No. CA-Q-S-001 (*Solvent & Acid Lot Testing & Approval*) and TestAmerica Edison SOP No. ED-GEN-023 (*Bulk Solvent Testing and Approval*).

7.1. Reagents

7.1.1 Organic free reagent water - Reagent water is defined as a water in which an interference is not observed at the MDL of each parameter of interest (ASTM Specification D1193, Type ii). At TestAmerica Edison this water is generated by the Barnstead/Thermolyne Water System (Model # D11991 Serial # 1191020210415).

7.1.2 Methylene Chloride, JT Baker Resi-analyzed, P/N 9254-03 (or equivalent)

7.1.3 Hexane – JT Baker Ultra-Resi 73513-42-5 or equivalent

7.1.4 Acetone, J.T. Baker Ultra- ResiAnalyzed, Catalog No. 9264-03 (or equivalent)

7.1.5 Nitrogen, high-purity

7.1.6 Construction Sand (Home Depot or Lowes), free from organic compounds. (Baked in the muffle furnace for four hours at 400°C and stored in a dessicator prior to use.)

7.1.7 Sodium Sulfate Anhydrous Powder, Mallinckrodt MA8020-06 or equivalent (Must be baked in the muffle furnace for four hours at 400°C and stored in a dessicator prior to use.)

7.2. Standards

7.2.1 Stock target analyte standard spiking solutions are purchased as prepared solutions (see table below). Stock solutions are diluted (in volumetric glassware) to a working concentration using methylene chloride ($MeCl_2$) hexane or Acetone as the diluent as indicated below below. Stock standards of similar quality from other suppliers may be substituted as required.

NOTE: Second sources (from separate lots) are used for quanitation standards and spiking.

Stock Standards (Methods 8015B,8015C and 8015D DRO & NJDEP OQA-QAM-025)				
Standard Mix	**Concentration**	**Source**	**Catalog #**	**Used in method(s):**
TPH Mix 3	1000 ppm	Sigma Aldrich	861394U	*NJDEP OQA-QAM-025
o-Terphenyl	10000 ppm	Sigma Aldrich	47580U	*SW846 8015B, 8015C &8015D DRO *NJDEP OQA-QAM-025
Chlorobenzene	10000 ppm	Sigma Aldrich	4 6860U	*NJ DEP OQA-QAM-025
Diesel Fuel #2	50000 ppm	Restek	31259	*SW846 8015B, 8015C &8015D DRO *NJDEP OQA-QAM-025

Stock Standards - Pesticides/PCBs* (Methods SW846 8081A/B and 8082/A)				
Standard Mix	**Concentration**	**Source**	**Catalog #**	**Used in method(s):**
Pesticide Surrogate Spike Mix ("Pest/PCB Surrogate")	10 ug/ml	Supelco	861275	SW846 8081/8082
Aroclor Spike Mix ("PCB Spike")	100 ug/ml	Supelco	861274	SW846 8082
SS CLP Organochlorine Pesticides Mix ("Pest Spike")	2000 ug/ml	Supelco	4S7426-U	SW846 8081
Chlordane (technical) ("Technical Chlordane Spike")	1000 ug/ml	Supelco	48065-U	SW846 8081
Toxaphene	1000 ug/ml	Supelco	48065-U	SW846 8081

*May be substituted with equivalent standards from alternate sources.

Components of Pesticide/PCB Standard Mixes (Methods SW846 8081A/B and 8082/A)			
Parameter	**Catalog Nos.**	**Lab Standard Name**	**Concentration (ug/ml)**
Decachlorobiphenyl (DCB)	Supelco – 4S8913	Pest/PCB Surrogate	10.0
2,4,5,6-Tetrachloro-m-xylene (TCMX)	Supelco – 4S8913	Pest/PCB Surrogate	10.0
Aroclor 1016	Supelco - 861274	PCB Spike	100

Components of Pesticide/PCB Standard Mixes (Methods SW846 8081A/B and 8082/A)			
Parameter	**Catalog Nos.**	**Lab Standard Name**	**Concentration (ug/ml)**
Aroclor 1260	Supelco - 861274	PCB Spike	100
Aldrin	Supelco - 4S7426-U	Pest Spike	2000
Alpha-BHC	Supelco - 4S7426-U	Pest Spike	2000
Alpha-Chlordane	Supelco - 4S7426-U	Pest Spike	2000
Beta-BHC	Supelco - 4S7426-U	Pest Spike	2000
Delta-BHC	Supelco - 4S7426-U	Pest Spike	2000
Dieldrin	Supelco - 4S7426-U	Pest Spike	2000
Endosulfan I (Alpha)	Supelco - 4S7426-U	Pest Spike	2000
Endosulfan II (Beta)	Supelco - 4S7426-U	Pest Spike	2000
Endosulfan Sulfate	Supelco - 4S7426-U	Pest Spike	2000
Endrin Aldehyde	Supelco - 4S7426-U	Pest Spike	2000
Endrin Ketone	Supelco - 4S7426-U	Pest Spike	2000
Endrin	Supelco - 4S7426-U	Pest Spike	2000
Gamma-BHC (Lindane)	Supelco - 4S7426-U	Pest Spike	2000
Gamma-Chlordane	Supelco - 4S7426-U	Pest Spike	2000
Heptachlor	Supelco - 4S7426-U	Pest Spike	2000
Heptachlor Epoxide (Isomer B)	Supelco - 4S7426-U	Pest Spike	2000
Methoxychlor	Supelco - 4S7426-U	Pest Spike	2000
4,4’-DDD	Supelco - 4S7426-U	Pest Spike	2000
4,4’DDE	Supelco - 4S7426-U	Pest Spike	2000
4,4’-DDT	Supelco - 4S7426-U	Pest Spike	2000
Chlordane (technical)	Supleco – 48065-U	Technical Chlordane Spike	1000
Toxaphene	Supelco 48103	Toxaphene Spike	1000

Stock Standards – BNAs (Method 8270x)			
Standard Mix	**Concentration (ug/ml)**	**Lab Vendor**	**Catalog #**
8270 List 1/ Std#1 MegaMix	500/1000/2000	RESTEK	567672
8270 List 1/ Std#5 N-Nitrosodiphenylamine	2000	RESTEK	567676
8270 List 1/ Std#2 Amines	2000	RESTEK	567673
8270 List 1/ Std#3 Benzoic Acid	2000	RESTEK	567674
Custom SVO Mix	2000	SPEX	SVO-TANJ-16-5
Bisphenol A	1000	SPEX	S-509-MC
8270 List 1/ Std#8	2000	RESTEK	568724
8270 Surrogate Standard	5000	RESTEK	567685
Aromatic Amines Custom Mix	2000	Supelco	21467482

Stock Standards – PCB Homologues (Method 680)			
Standard Mix	**Concentration (ug/ml)**	**Lab Vendor**	**Catalog #**
Retention Time Calibration Standard Mixture	Varies by component (100 to 200)	Ultra	CB-682MN
Concentration Calibration Standard Mix	Varies by component (50 to 250)	Ultra	CB-681MN
13C12-Decachlorobiphenyl Surrogate	40	Cambridge	EC-1410-3
Lindane13C6	100	Cambridge	CLM-1282-S

Components of PCB Homologue Mixes (Methods 680)			
Parameter	**Catalog Nos.**	**Lab Standard Name**	**Concentration (ug/ml)**
PCB-104	Ultra CB-682MN	Retention Time Calibration Standard Mixture	100
PCB-208	Ultra CB-682MN	Retention Time Calibration Standard Mixture	200
PCB-77	Ultra CB-682MN	Retention Time Calibration Standard Mixture	100
Total Nonachlorobiphenyls	Ultra CB-682MN	Retention Time Calibration Standard Mixture	200
DCB Decachlorobiphenyl	Ultra CB-681MN	Concentration Calibration Standard Mix	250
Total Dichlorobiphenyls	Ultra CB-681MN	Concentration Calibration Standard Mix	50
Total Heptachlorobiphenyls	Ultra CB-681MN	Concentration Calibration Standard Mix	150
Total Hexachlorobiphenyls	Ultra CB-681MN	Concentration Calibration Standard Mix	100
Total Monochlorobiphenyls	Ultra CB-681MN	Concentration Calibration Standard Mix	50
Total Octachlorobiphenyls	Ultra CB-681MN	Concentration Calibration Standard Mix	150
Total Pentachlorobiphenyls	Ultra CB-681MN	Concentration Calibration Standard Mix	100
Total Tetrachlorobiphenyls	Ultra CB-681MN	Concentration Calibration Standard Mix	100
Total Trichlorobiphenyls	Ultra CB-681MN	Concentration Calibration Standard Mix	50

7.2.2 Spiking Standards Prep for GC FID (DRO/QAM): The table below provides instruction in preparation of the various working spiking standards for use in this preparation method using the applicable standards listed in 7.2.1. Use volumetric glassware. Dilute to the volume marker with the indicated solvent.

Working Spiking Standards Preparation					
Standard Name	**Vendor/ Cat #**	**Initial Conc. (ug/ml)**	**Vol. of Standard (ml)**	**Vol. of solvent mls (solvent)**	**Final Conc. (ug/ml)**
DRO Spike/ QAM-025 LCS Spike Diesel Fuel #2	Restek/31259	50000	4	100 ($MeCl_2$)	2000
DRO Surrogate -o-terphenyl	Supelco/47580U	10000	1.0	500 (Acetone)	20
QAM-025 MS/MSD Spike TPH Mix 3	Sigma/861394-U	1000	1.47	10 ($MeCl_2$)	147
QAM-025 Surrogate -Chlorobenzene -o-terphenyl	Supelco/46860-U Supelco/47580-U	10000 10000	1.0 1.0	500 500	20 20

7.2.3 Spiking Standards Prep for GC ECD(8081/8082):

7.2.3.1 All standard stock solutions are diluted to the working concentrations with hexane or acetone (as indicated) using Class A volumetric glassware. **Note:** septa on all surrogate and spike vials are to be replaced immediately after use. Additionally, all surrogate and spike vials are to be returned to the standards refrigerator immediately after use.

7.2.3.2 Pesticide Spiking Standard (LCS/MS/MSD): The Pesticide Mix BS/MS/MSD solution with 20 single component pesticides is prepared at a final concentration of 20 ug/ml by diluting 500 ul (0.50 ml) of the 2000 ppm Pest Spike stock solution (Supelco 4S7426-U, see tables in Section 7.2.1) to a 50 ml final volume with acetone. For spiking instructions refer to Section 10.

7.2.3.3 PCB Spiking Standard (LCS/MS/MSD): The PCB spiking solution (Supelco – 861274, see Tables 1 and 2) is a custom mix received from the vendor at its working concentration of 100 ug/ml in Acetone. For spiking instructions refer to Section 10.

7.2.3.4 Technical Chlordane Spiking Standard (LCS/MS/MSD): A technical Chlordane spiking solution is prepared at a final concentration of 100 ug/ml by diluting 1 ml of the 1000 ug/ml Technical Chlordane Spike solution (Supelco 48065-U, see tables in Section 7.2.1) to a 10 ml final volume using acetone. For spiking instructions refer to Section 10.

7.2.3.5 Toxaphene Spiking Standard (LCS/MS/MSD): A Toxaphene spiking solution is prepared at a final concentration of 100 ug/ml by diluting 1 ml of the 1000 ug/ml Toxaphene Spike solution (Supelco 48103, see tables in

Section 7.2.1) to a final volume 10 mL.using acetone. For spiking instructions refer to Section 10.

7.2.3.6 Pesticide/PCB Surrogate Spiking Standard: The Pesticide/PCB surrogate spiking solution is a concentrated 10 ml solution of DCB/TCMX at a concentration of 10 ug/ml. (Supelco Catalog # 861275, see tables in Section 7.2.1). The concentrate is used without further dilution prior to the spiking of samples.

7.2.4 Spiking Standard for BNA: For use in spiking Soils samples prepared for BNA analysis by SW846 Method 8270. Prepare the spiking solution for MS/MSD/Blank Spike (LCS) as detailed in the following table using the applicable standards listed in 7.2.1. Use volumetric glassware. Dilute to the volume marker with methanol

Standard Name	Concentration	Volume of Standard added to final volume of 200ml (solvent)	Final Concentration
8270 List 1/ Std#1 MegaMix	500/1000/2000pmm	20 ml (methanol)	50/100/200 ppm
8270 List 1/ Std#5 N-Nitrosodiphenylamine	2000ppm	10 ml (methanol)	100 ppm
8270 List 1/ Std#2 Amines	2000ppm	10 ml (methanol)	100 ppm
8270 List 1/ Std#3 Benzoic Acid	2000ppm	10 ml (methanol)	100 ppm
Custom SVO Mix	2000ppm	10 ml (methanol)	100 ppm
Bisphenol A	1000ppm	10ml (methanol)	50ppm
8270 List 1/ Std#8	2000ppm	20ul (methanol) 100ul(methanol)	Used neat for LVI Used neat for non-LVI
Aromatic Amines Custom Mix**	2000ppm	10 ml (methylene chloride)	100 ppm

** *As needed based on clients requirement.*

7.2.4.1 BNA Surrogate Standard Spiking Solution: For use in spiking all blanks, samples and associated QC prior to extraction. Prepare as detailed in the following table using the applicable standards listed in 7.2.1. Use volumetric glassware. Dilute to the volume marker with methanol.

Standard Name	Concentration	Volume of Standard added to final volume of 1000 ml methanol	Final Concentration
8270 Surrogate Standard	5000 ppm	20 ml	100 m

7.2.5 Spiking Standard for PCB Homologues (EPA 680): For use in spiking LCS and MS/MSD prior to extraction. Prepare by adding 1.0ml

of the Retention Time Calibration Standard and 1.0ml of the Concentration Calibration Standard Mix to hexane in volumetric glassware and dilute to final volume of 100ml. 1.0mL of this solution is spiked into LCS/MS/MSD prior to extraction.

7.2.5.1 PCB Homologue Surrogate Standard Spiking Solution (EPA 680): (2.0ug/mL and 2.5ug/mL) – Add 3.125mL of $^{13}C_{12}$-Decachlorobiphenyl and 1.0mL of Lindane13C6 and dilute to a final volume of 50mL in hexane in volumetric glassware. 1.0mL of this solution is spiked into all blanks, samples and QC items prior to extraction.

7.2.6 The preparation of all standards must be documented in a standard preparation logbook or in the TALS reagent module. Information such as standard supplier, lot number, original concentration, and a description of how standard was prepared are required along with a laboratory lot number, analyst's initials, date prepared and verification signature. Standards must be made every 6 months or sooner if signs of degradation appear.

8.0 Sample Collection, Preservation, Shipment and Storage

Sample container, preservation techniques and holding times may vary and are dependent on sample matrix, method of choice, regulatory compliance, and/or specific contract or client requests. Listed below are the holding times and the references that include preservation requirements.

Matrix	Sample Container	Min. Sample Size	Preservation	Holding Time [1]	Reference
Soils	Glass	4 oz	Cool 4 ± 2°C	14 Days	a) NJDEP-OQA-QAM-025; b)SW846 Method 8000

Samples are collected in amber jars with Teflon lined caps.
[1]All sample extracts must be analyzed within forty (40) days of extraction.

9.0 Quality Control

9.1. Sample QC – The following quality control samples are prepared with each batch of samples.

QC Analysis	Frequency	Acceptance Criteria	Corrective Action
Laboratory Control Sample (LCS/LCSD)[1]	1 in 20 or fewer samples	See applicable analytical SOPs	See applicable analytical SOPs for control criteria
Method Blank (MB)	1 in 20 or fewer samples	See applicable analytical SOPs	See applicable analytical SOPs for control criteria

QC Analysis	Frequency	Acceptance Criteria	Corrective Action
MS\MSD[2] (Client specified)	1 in 20 or fewer samples	See applicable analytical SOPs	See applicable analytical SOPs for control criteria
Surrogates[3]	All Samples including QC	See applicable analytical SOPs	See applicable analytical SOPs for control criteria

[1] LCS Duplicate (LCSD) is performed only when insufficient sample is available for the MS/MSD or when requested by the client/project/contract except for NJDEP EPH 10/09 where LCS/LCSD is required.
[2] The sample selections for MS/MSD are randomly selected, unless specifically requested by a client. For NJDEP EPH 10/09, only MS is required (MSD for NJDEP EPH 10/09 is by client request only).
[3] Analytical and QC samples (MB, LCS, MS/MSD)
[4] Statistical control limits are updated annually and are updated into LIMS.

9.2. Instrument QC

N/A

10.0 Procedure

10.1. Sample Preparation

10.1.1 Decant and discard any water layer on a sediment sample. Discard any foreign objects such as rocks, leaves and sticks. Mix sample thoroughly with wooden tongue depressor prior to subsampling

10.1.2 The initial amount and treatment of soil samples is method dependent:

- For QAM-025, DRO (8015): 15 grams of soil is weighed into a 75mL Teflon microwave vessel (the weight is recorded to two significant figures). Where practical samples should be air dried and ground prior to extraction. Drying should be performed in a hood to avoid contamination.
- For 8270/ 8081/8082: 15 grams of soil is weighed into an aluminum weighing dish (the weight is recorded to two significant figures). 15 mls of acetone is added to the dish and the soil/acetone mixture is stirred well with a wooden tongue depressor to create a slurry. The soil/acetone slurry is transferred to a 75 ml Teflon microwave vessel. The dish is then rinsed with 15 ml of methylene chloride which is also added to the microwave vessel.
- For EPA 680: 30 grams of soil is weighed into a 75mL Teflon microwave vessel (the weight is recorded to two significant figures).

10.1.3 For laboratory blanks and control spikes, an equal portion of clean sand is prepped along with samples.

10.1.4 All samples, blanks, and spikes are fortified with an appropriate amount of the applicable method surrogates. All matrix spikes and lab

control spikes are fortified with an appropriate amount of the applicable method spiking solution. See Attachment 1 for general spiking instructions. (Refer to Section 7.2 for information on preparation of spiking solutions):

- PCBs (8082): add 50 ul of the PCB Spike solution to each LCS and designated MS/MSD;
- Pesticides (total, 8081): 100 ul of the Pest Spike solution to each LCS and designated MS/MSD;
- Technical Chlordane: 100 ul of the Technical Chlordane Spike mix to each LCS and designated MS/MDS;
- Toxaphene: 100 ul of the Toxaphene Spike mix to each LCS and designated MS/MSD;
- BNA (8270): 500ul of spike/Surrogate solution to each LCS and designated MS/MSD);
- PCB Homolgues (EPA 680): 1.0 ml each of Spiking solution (see Sec.7.2.5) and Surrogate solution (see Sec. 7.2.5.1) to each LCS and designated MS/MSD.

NOTE: When spiking the samples, it is critical to remove all bubbles from the syringe.

10.1.5 Add the following solvent to each sample vessel depending upon the fraction (**note**: for Pesticides and PCBs by methods 8081 and 8082 the solvent addition is addressed in Section 10.1.2 above)

- 30mL of methylene chloride for DRO (8015)/QAM-025;
- 30 mL of Methylene Chloride/Acetone blend (50:50) for BNA (8270)

30 mL of Hexane for PCB homologues by EPA 680

10.1.6 A stopper is placed over the opening along with the vessel cap. The vessel is then tightened using the MARS capping wrench. This capping wrench tightens the cap to the appropriate torque.

10.1.7 The sample vessels are placed into the 40-position carousel. Each position has an insulator sleeve that the vessel slides into – slide the vessel into the appropriate sleeve – and press firmly down to ensure a complete connection.

10.1.8 Place the carousel (with samples and vessels) into the microwave unit.

Start Run: (load method – using key pad on face of unit)
Press: Home

Press Select: load method
Press Select: from user directory
Press Select: 3546 Microwave – Xpress method
Press Start.

Microwave Operating Parameters				
Power Max	**Power %**	**Oven Ramp**	**Degrees Celsius**	**Hold Time**
1200W	100	10.0 minutes	110	10.0 minutes
1600W[1]	100	20.0 minutes	115	10.0 minutes

[1] For pesticide/PCB and BNA samples only

10.1.9 A 5-minute cool down will close out the run.

10.1.10 Remove vessels from carousel and allow cooling (either at room temperature or in a cold water bath).

10.1.11 When cool down is complete, remove carousel from microwave.

10.1.12 Pre-wash a funnel filled with sodium sulfate with three successive washings of 30 ml acetone. Pour the extract carefully through the sodium sulfate funnel (to remove any moisture) into the 200mL concentrator tube. Rinse the 75mL vessel with 10 mL methylene chloride three times to ensure quantitative transfer.

10.1.13 Set the water temperature in the concentrator to 35°C and adjust the pressure to around 5psi of nitrogen.

10.1.14 Place the tube into the apparatus and slowly raise the pressure to 20psi. If splashing occurs, start with a lower pressure and raise it when the solvent gets lower.

10.1.15 Concentrate to just under the 1mL mark on the nipple of the tube. Remove from the bath and transfer to an auto sampler vial with a glass Pasteur pipette..

10.1.16 Add a few drops of clean methylene chloride to the tube, rinsing the narrow part and add to the vial to adjust to 1mL or other method specific final volume. If solvent exchange to hexane is required, add approximately 30mL (mix well) and return to concentrator set at 35°C. See Attachment 2.

10.1.17 Total concentration time should be approximately 20 minutes for methylene chloride. If a sample takes a longer than usual amount of time to concentrate or if the extract becomes viscous the final volume should be adjusted to a larger volume and documented.

10.1.18 The extract is now ready for the appropriate clean up and or analysis.

10.2. Calibration

10.2.1 The balance calibration is checked daily prior to use. Refer to TestAmerica Edison SOPs ED-GEN-010, *Calibration of Analytical Balances*, current revision and ED-GEN-006, *Standard Operating Procedure for Preventive Maintenance and Calibration Procedures for All Analytical Instruments and Ancillary Equipment*, current revision.

11.0 Calculations / Data Reduction

N/A

12.0 Method Performance

12.1. Method Detection Limit Study (MDL)

The method detection limit (MDL) is the lowest concentration that can be detected for a given analytical method and sample matrix with 99% confidence that the analyte is present. The MDL is determined according to the laboratory's MDL procedure in Section 19 (Test Methods and Method Validation) of TestAmerica Edison's Quality Assurance Manual (ED-QA-LQM). MDLs reflect a calculated (statistical) value determined under ideal laboratory conditions in a clean matrix, and may not be achievable in all environmental matrices. The laboratory maintains MDL studies for analyses performed; these are verified at least annually unless method requirements require a greater frequency.

12.2. Demonstration of Capabilities

For demonstration of capability procedure refer to Section 19 in the most current revision of TestAmerica Edison's Quality Assurance Manual (ED-QA-LQM).

12.3. Training Requirements

Refer to TestAmerica SOP No. ED-GEN-022, *Training*, for the laboratory's training program.

13.0 Pollution Control

13.1. It is TestAmerica's policy to evaluate each method and look for opportunities to minimize waste generated (i.e., examine recycling options, ordering chemicals based on quantity needed, preparation of reagents based on anticipated usage and reagent stability). Employees must abide by the policies in Section 13 of the Corporate Environmental Health and Safety Manual (CW-E-M-001) for "Waste Management and Pollution Prevention."

14.0 Waste Management

14.1 Waste management practices are conducted consistent with all applicable rules and regulations. Excess reagents, samples and method process wastes are disposed of in an accepted manner. Waste description rules and land disposal restrictions are followed. Waste disposal procedures are incorporated by reference to TestAmerica Edison SOPs No. ED-SPM-008 (*Laboratory Waste Disposal Procedures, current revision).* The following waste streams are produced when this method is carried out:

- *Mixed Solvent Waste*: Mixed solvent waste is collected in a small beaker inside the bench top hood. This waste is then transferred into the satellite accumulation container in the Organic Prep. Lab. on a daily basis. This material is transferred into 5 gallon solvent cans as satellite accumulation. These cans are emptied every 24 hours into a steel drum in the waste room. This drum is kept in the walk in hood until it is full. The full drum is then removed from the hood and placed on secondary containment in the waste room.

  Teris Profile Number: 50016624
  Onyx Profile WIP Number: 545240

- *Auto sampler vials and expired standards*: These vials are collected in satellite accumulation within the instrument laboratory. The vials are then placed into a 55 steel open top drum in the waste room. When the drums are full, the drum will be collected by the waste vendor for disposal. This waste is treated for incineration.

  Teris Profile Number: 50016652
  Onyx Profile WIP Number: 282493

15.0 References / Cross-References

15.1 United States Environmental Protection Agency, “Method SW3546, Microwave Extraction”, Test Methods for Evaluating Solid Wastes, SW846 Laboratory Manual, Physical/Chemical Methods, February 2007.

15.2 United States Environmental Protection Agency, “Method SW8015B, Non-Halogenated Organics, Test Methods for Evaluating Solid Wastes, SW846 Third Edition,Volume 1B: Laboratory Manual, Physical/Chemical Methods, Revision 3, December 1996.

15.3 United States Environmental Protection Agency, Method SW8015C, Test Methods for Evaluating Solid Wastes, SW846 Third Edition, Volume 1B: Laboratory Manual, Physical/Chemical Methods, Revision 3, February 2007.

15.4 United States Environmental Protection Agency, Method SW8015D, Test Methods for Evaluating Solid Wastes, SW846 Third Edition, Volume 1B: Laboratory Manual, Physical/Chemical Methods, Revision 4, June 2003.

15.5 NJDEP Method No. OQA-QAM-025, “Quantitation of Semivolatile Petroleum Products in Water, Soil, Sediment and Sludge” (current revision)

15.6 United States Environmental Protection Agency, “Method 8081A, Organochlorine Pesticide by Gas Chromatography”, Test Methods for Evaluating Solid Wastes, SW846 Third Edition, Volume 1B: Laboratory Manual, Physical/Chemical Methods, Revision 3, December 1996.

15.7 United States Environmental Protection Agency, “Method 8082, Polychlorinated Biphenyls PCBs) by Gas Chromatography”, Test Methods for Evaluating Solid Wastes, SW846 Third Edition, Volume 1B: Laboratory Manual, Physical/Chemical Methods, Revision 3, December 1996.

15.8 United States Environmental Protection Agency, “Method 8081B, Organochlorine Pesticide by Gas Chromatography”, Test Methods for Evaluating Solid Wastes, SW846 Third Edition, Volume 1B: Laboratory Manual, Physical/Chemical Methods, Revision 2, February 2007.

15.9 United States Environmental Protection Agency, “Method 8082A, Organochlorine Pesticide by Gas Chromatography”, Test Methods for Evaluating Solid Wastes, SW846 Third Edition, Volume 1B: Laboratory Manual, Physical/Chemical Methods, Revision 1, February 2007.

15.10 United States Environmental Protection Agency, “Method SW8270C, Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry”, Test Methods for Evaluating Solid Wastes, SW846 Third Edition, Volume 1B: Laboratory Manual, Physical/Chemical Methods, Revision 3, December 1996.

15.11 United States Environmental Protection Agency, “Method SW8270D, Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry”, Test Methods for Evaluating Solid Wastes, SW846 Third Edition, Volume 1B: Laboratory Manual, Physical/Chemical Methods, Revision 4, February 2007.

15.12 TestAmerica Edison SOP No. ED-GCS-008, *Preparation and Analysis of Diesel Range Organics (DRO C10-C28) in Soil and Water Samples by SW846 Methods 3510C (Separatory Funnel), 3541 (Automated Soxhlet Extraction) and 8015B(GC/FID),* current revision.

15.13 TestAmerica Edison SOP No. ED-GCS-009, *Preparation and Analysis of Diesel Range Organics (DRO C10-C44) in Soil and Water Samples by SW846 Methods 3510C (Sep Funnel), 3541 (Automated Soxhlet) and 8015B (GC/FID),* current revision.

15.14 TestAmerica Edison SOP No. ED-GCS-011,*NJDEP OQA-QAM-025 Quantitation of Semivolatile Petroleum Products in Water Soil Sediment and Sludge,* current revision.

15.15 TestAmerica Edison SOP No. ED-GCS-003, *Analysis of Organochlorine Pesticides by Gas Chromatograph, SW846 Method 8081A*, current revision.

15.16 TestAmerica Edison SOP No. ED-GCS-004, *Analysis of Polychlorinated Biphenyls by Gas Chromatograph, SW846 Method 8082*, current revision

15.17 TestAmerica Edison SOP No. ED-GCS-016, *Analysis of Organochlorine Pesticides by Gas Chromatograph, SW846 Method 8081B*, current revision.

15.18 TestAmerica Edison SOP No. ED-GCS-017, *Analysis of Polychlorinated Biphenyls by Gas Chromatograph, SW846 Method 8082A*, current revision

15.19 TestAmerica Edison SOP No. ED-MSS-010, *Determination of PCBs in Water and Soil/Sediment by GC/MS, EPA Method 680,* current revision.

15.20 TestAmerica Edison Document No. ED-QA-LQM, *Laboratory Quality Manual*, current revision.

15.21 TestAmerica Environmental Health and Safety Manual, CW-E-M-001.

15.22 TestAmerica Corporate Quality SOP No. CA-Q-S-001, *Solvent & Acid Lot Testing& Approval*, current revision.

15.23 TestAmerica Edison SOP No. ED-GEN-023, *Bulk Solvent Testing and Approval*, current revision.

15.24 TestAmerica Edison SOP No. ED-GEN-013, *Glassware Cleaning,* current revision

15.25 TestAmerica Edison SOP No. ED-GEN-022, *Training,* current revision

15.26 TestAmerica Edison SOP No. ED-SPM-008, *Laboratory Waste Disposal Procedures,* current revision.

15.27 TestAmerica Edison SOP No. ED-GEN-006, *Standard Operating Procedure for Preventive Maintenance and Calibration Procedures for All Analytical Instruments and Ancillary Equipment,* current revision.

15.28 TestAmerica Edison SOP No. ED-GEN-010, *Calibration of Analytical Balances,* current revision.

15.29 TestAmerica Edison SOP No. ED-GEN-007, *Subsampling*, current revision.

15.30 Operation Manuals for the Zymark Turbo Vap II Concentrator.

15.31 Operating manual for the MARS 5 Microwave unit.

16.0 Method Modifications:

N/A

17.0 Attachments

Attachment 1: Spiking information
Attachment 2: Specific Extraction Conditions

18.0 Revision History

Rev 11, March 12, 2018

- Updated Section 10.1 to revise procedures for the microwave extraction of solids for subsequent analysis by EPA methods 8081, 8082 and 8270.
- Updated to remove all references to addition of sodium sulfate to samples prior to microwave extraction.
- Fixed section numbering and formatting errors.

Rev 10, May 16, 2017

- Updated throughout to add procedures for microwave extractions of solids for subsequent analysis by EPA Method 680 (PCBs by GC/MS).

Rev 9, Dec 15, 2016

- Updated throughout to remove procedures for microwave extraction of solids for NJ EPH method. Those procedures are fully covered in TestAmerica Edison SOP ED-GCS-012, Preparation and Analysis of Extractable Petroleum Hydrocarbons (EPH) in Solid and Water Samples using NJDEP EPH Method 10/08, August 2010 (Rev. 3): Analysis of Extractable Petroleum Hydrocarbon Compounds (EPH) in Aqueous and Soil/Sediment/Sludge Matrices (current revision)
- Added following text to Section 1.2: The microwave prep for NJDEP Extractable Petroleum Hydrocarbons (EPH) (10/08), current revision, is addressed separately in TestAmerica Edison SOP ED-GCS-012 (current revision).
- All references to NJDEP EPH methodology removed.

Rev 8, Jan 22, 2015

- Updated to include procedures for microwave extraction of solids for analysis my SW846 Methods 8270C and 8270D (Semivolatile Organic Compounds by Gas Chromatography/ Mass Spectrometry (GC/MS). Specifically
    - Added 8270 method references and SOP numbers to Sections 1.1 and 15.0
    - Added a table to Section 7.2.1 detailing the BNA standard mixes.
    - Added new Section 7.2.4 detailing the preparation of BNA spiking standards

- Added Section 7.2.4.1 detailing the preparation of BNA surrogate spiking standards.
- Added details of 8270 spiking and extraction to Section 10.0 as appropriate.
- Added BNA Spiking details to Attachments 1 and 2. COAs for BNA spiking not included in SOP but are on-file in the department.

Rev 7, June 14, 2013

- Section 1.1: updated the DRO method references to include SW8015C and SW8015D. Also update the SOP references for the DRO analytical methods.
- Section 7.2.1: updated stock standards table to include SW8015C and 8015D. Revised source for o-Terphenyl stock. Removed TPH Mix 1 from list. Removed 8015x DRO from the list of methods for which TPH Mix 3 is used. Added 8015x DRO to the list of methods for which Diesel Fuel #2 is used.
- Section 7.2.2.1: Revised DRO surrogate spike source and prep instructions. Revised DRO and QAM-025 spiking standard source and prep instructions.
- Section 15.0: References: added references for methods SW8015C and 8015D.
- Attachment 1: updated spiking information for DRO.

Rev 6, October 10, 2012

- Throughout document:: Revised LQM reference sections to reflect the most current revision
- Throughout document: updated as detailed below to include prep instructions for solid samples undergoing analysis by SW846 8081A/B and 8082/A.
- Section 1.1: added references to the 8081/8082 SOPs: TestAmerica Edison SOPs No.ED-GCS-003, ED-GCS-004, ED-GCS-016 and ED-GCS-017.
- Section 6.2: added weigh boats and wooden tongue depressors.
- Section 7.2.1: added acetone as a diluent and added tables detailing the Pestcide and PCB standards.
- Section 7.2.2: added “GCFID (DRO/EPH/QAM)” to section header.
- Section 7.2.3: added instructions for prep of Pest/PCB spiking standards.
- Section10.1.4: Added Pest/PCB spiking instructions.
- Section 10.1.5: added instructions for addition of extraction solvent (Methylene Chloride:Acetone for Pest/PCB).
- Section 10.1.8: updated table to include Microwave Parameters for Pest/PCB prep.
- Section 10.1.12: added a methylene chloride rinse.

- Section 15: added method and SOP references for SW846 8081A/8081B and SW846 8082/8082A.
- Attachments: updated to include Pest/PCB information.

Rev 5, August 26, 2011

- Section .6.2: added vendor and part number details for silica gel columns (Phenomenex Part No:8L-S012-JCH)
- Section 10.1.2: Added details for the pre-washing of sodium sulfate funnels with three successive 30 ml volumes of acetone. Added details for the rinsing of the 75 ml vessel with three successive volumes of methylene chloride.

Rev 4, April 21, 2010

- Section 7.2.1: Corrected the footnotes in the tables 'Stock Standards – Aliphatics (Method NJDEP EPH 10/08)' and 'Stock Standards-Aromatics (Method NDJEP EPH 10.08)'.
- Attachment 3: Added this attachment which consists of select certificates of analysis for Method NJDEP EPH 10/08.
- Section 7.2.2.1: Table 'Working Spiking Standards Preparation'" replaced asterisks (*) with dashes (-) in order to clarify that these are simply bullets rather than referencing footnotes.

Rev 3, April 19, 2010

- Section 7.2.2.1: added procedure for preparation of a 500 ppm Aliphatic Neat Spike Mix.
- Section 7.2.2: Spiking Standards Prep: revised the procedure for prep of the EPH Aliphatic Spike in the 'Working Spiking Standards Preparation' table as follows:
    - Replaced 'MA EPH-n-Hydrocarbons (Absolute/91488) with the 'Florida TRPH Standard (Restek/31266)'
    - Included used of the intermediate 500 Aliphatic Neat Spike Mix.

Rev 2, February 9, 2009

- Section 3.0, Definitions – updated to reflect current location of definitions (Appendix 2 of Lab Quality Manual
- Section 5.2, Primary Materials Used – added 'hexane' to table (used in the NJDEP EPH method).
- Section 7.2.1: added stock standards associated with NJDEP EPH 10/08 method.
- Section 7.2.2: Spiking Standards Prep: updated 'Working Spike Standards' table to include revised NJDEP EPH 10/09 spiking standards; revised other as required.
- Section 9.1, Sample QC: updated with revise NJDEP EPH 10/09 QC requirements.
- Section 10.1, Sample Preparation: revised initial sample weight to 15 grams.
- Section 10.1.8: added Microwave Operating Parameters for the NJDEP EPH 10/09 method.
- Section 10.2.1: changed the specifications of the silica column.

- Section 10.2.5: changed the volume of the hexane rinsate.
- Section 10.2.7: changed the volume of the methylene chloride rinsate.
- Section 10.2.11: Added text describing procedures for NJDEP EPH 10/09 Demonstration of Fractionation Capability.
- Section 14.1 and Section 15.0 : Removed reference to TestAmerica Edison SOP No. ED-SPM-007 (*Disposal of Samples and Associated Laboratory Waste, current revision)* (SOP is now retired).
- Section 15.0: updated references to NJDEP EPH method as well as TestAmerica Edison SOP for NJDEP EPH analysis.
- Section 17.0, Attachments: corrected descriptions of attachments.

Rev 1, June 29, 2009

- Section 1.0, Scope and Application – corrected typo in the temperature range 100 – 115°C
- Section 5.2, Primary Materials Used – removed ‘sodium hydroxide’ and ‘sulfuric acid’ from table as they are not used in this method.
- Section 6.1, Instrumentation – added Visiprep DL column holder to the instrumentation list
- Section 6.2, Supplies – added 5 g silica gel column (20 ml capacity)
- Sections 7.2.1, 7.2.2, Attachment 1 and Attachment 2: corrected a typo in the abbreviation for Methylene Chloride ($MeCl_2$).
- Section 10.1.1.2 - sentence correction to show actual process and typo error correction. Phrase ‘may also’ changed to ‘shall’.
- Section 10.1.12 – replaced the word ‘salt’ with ‘Sodium Sulfate’ to show actual reagent being used.
- Section 10.1.17 – typo error correction to ’20 minutes’
- Section 10.2.5 – Added the following text to the end of the section: “The amount on hexane will need to be adjusted with every lot of silica columns. The Hexane amount should never exceed 20 mls.”
- Corrected carbon ranges for the reference DRO SOPs throughout the document.

Rev 0, March 27, 2009: New

Attachment 1

Spiking Information – Microwave Extraction

Method	Surrogate Amount (all samples and QC)	Spike Amount (LCS/MS/ MSD)	Final volume	Initial Solvent	Final Solvent
DRO (8015)	1 mL	1 mL	1 mL	$MeCl_2$	$MeCl_2$
QAM-025	1 mL	1 mL	1 mL	$MeCl_2$	$MeCl_2$
Pest/PCB (8081/8082)	0.05 mL	0.1/0.05 mL	10 mL	MeCl2/Acetone (50:50)	Hexane Exchange from MeCl2/Acetone
BNA (8270)	500uL	500uL	1 mL	MeCl2/Acetone (50:50)	$MeCl_2$
PCB Homologues (EPA 680)	1.0	1.0	1 mL	Hexane	Hexane

Attachment 2

Specific Extraction Conditions

Method	Initial extraction pH	Secondary extraction pH	Final Solvent	Volume of extract required for cleanup(mL)	Final extract volume for analysis (mL)
DRO (8015)	as received	NA	$MeCL_2$	NA	1.0
QAM-025	as received	NA	$MeCL_2$	NA	1.0
Pest/PCB (8081/8082)	as received	NA	Hexane	3	10.0
BNA (8270)	as received	NA	$MeCL_2$	NA	1.0
PCBs (EPA 680)	as received	NA	Hexane	NA	1.0

Roux Standard Operating Procedures

Date: May 5, 2000

1.0 PURPOSE

The purpose for this standard operating procedure (SOP) is to establish the guidelines for decontamination of all field equipment potentially exposed to contamination during drilling, and soil and water sampling. The objective of decontamination is to ensure that all drilling, and soil-sampling and water-sampling equipment is decontaminated (free of potential contaminants): 1) prior to being brought onsite to avoid the introduction of potential contaminants to the site; 2) between drilling and sampling events/activities onsite to eliminate the potential for cross-contamination between boreholes and/or wells; and 3) prior to the removal of equipment from the site to prevent the transportation of potentially contaminated equipment offsite.

In considering decontamination procedures, state and federal regulatory agency requirements must be considered because of potential variability between state and federal requirements and because of variability in the requirements of individual states. Decontamination procedures must be in compliance with state and/or federal protocols in order that regulatory agency(ies) scrutiny of the procedures and data collected do not result in non-acceptance (invalidation) of the work undertaken and data collected.

2.0 PROCEDURE FOR DRILLING EQUIPMENT

The following is a minimum decontamination procedure for drilling equipment. Drilling equipment decontamination procedures, especially any variation from the method itemized below, will be documented on an appropriate field form or in the field notebook.

2.1 The rig and all associated equipment should be properly decontaminated by the contractor before arriving at the test site.

2.2 The augers, drilling casings, rods, samplers, tools, rig, and any piece of equipment that can come in contact (directly or indirectly) with the soil, will be steam cleaned onsite prior to set up for drilling to ensure proper decontamination.

2.3 The same steam cleaning procedures will be followed between boreholes (at a fixed on-site location[s], if appropriate) and before leaving the site at the end of the study.

2.4 All on-site steam cleaning (decontamination) activities will be monitored and documented by a member(s) of the staff of Roux Associates, Inc.

2.5 If drilling activities are conducted in the presence of thick, sticky oils (e.g., PCBs) which coat drilling equipment, then special decontamination procedures may have to be utilized before steam cleaning (e.g., hexane scrub and wash).

2.6 Containment of decontamination fluids may be necessary (e.g., rinseate from steam cleaning) or will be required (e.g., hexane), and disposal must be in accordance with state and/or federal procedures.

3.0 PROCEDURE FOR SOIL-SAMPLING EQUIPMENT

The following is a minimum decontamination procedure for soil-sampling equipment (e.g., split spoons, stainless-steel spatulas). Soil-sampling equipment decontamination procedures, especially any variation from the method itemized below, will be documented on an appropriate field form or in the field notebook.

3.1 Wear disposable gloves while cleaning equipment to avoid cross-contamination and change gloves as needed.

3.2 Steam clean the sampler or rinse with potable water. If soil-sampling activities are conducted in the presence of thick, sticky oils (e.g., PCBs) which coat sampling equipment, then special decontamination procedures may have to be utilized before steam cleaning and washing in detergent solution (e.g., hexane scrub and wash).

3.3 Prepare a non-phosphate, laboratory-grade detergent solution and distilled or potable water in a clean bucket.

3.4 Disassemble the sampler, as necessary and immerse all parts and other sampling equipment in the solution.

3.5 Scrub all equipment in the bucket with a brush to remove any adhering particles.

3.6 Rinse all equipment with copious amounts of potable water followed by distilled or deionized water.

3.7 Place clean equipment on a clean plastic sheet (e.g., polyethylene)

3.8 Reassemble the cleaned sampler, as necessary.

3.9 Transfer the sampler to the driller (or helper) making sure that this individual is also wearing clean gloves or wrap the equipment with a suitable material (e.g., plastic bag, aluminum foil.

As part of the decontamination procedure for soil-sampling equipment, state and/or federal protocols must be considered. These may require procedures above those specified as minimum for Roux Associates, Inc., such as the use of nitric acid, acetone, etc. Furthermore, the containment and proper disposal of decontamination fluids must be considered with respect to regulatory agency(ies) requirements.

4.0 PROCEDURE FOR WATER-SAMPLING EQUIPMENT

The following is a decontamination procedure for water-sampling equipment (e.g., bailers, pumps). Water-sampling equipment decontamination procedures, especially any variation from the method itemized below, will be documented on an appropriate field form or in the field notebook.

4.1 Decontamination procedures for bailers follow:

a. Wear disposable gloves while cleaning bailer to avoid cross-contamination and change gloves as needed.

b. Prepare a non-phosphate, laboratory-grade detergent solution and potable water in a bucket.

c. Disassemble bailer (if applicable) and discard cord in an appropriate manner and scrub each part of the bailer with a brush and solution.

d. Rinse with potable water and reassemble bailer.

e. Rinse with copious amounts of distilled or deionized water.

f. Air dry.

g. Wrap equipment with a suitable material (e.g., clean plastic bag, aluminum foil).

h. Rinse bailer at least three times with distilled or deionized water before use.

4.2 Decontamination procedures for pumps follow:

a. Wear disposable gloves while cleaning pump to avoid cross-contamination and change gloves as needed.

b. Prepare a non-phosphate, laboratory-grade detergent solution and potable water in a clean bucket, clean garbage can, or clean 55-gallon drum.

c. Flush the pump and discharge hose (if not disposable) with the detergent solution and discard disposable tubing and/or cord in an appropriate manner.

d. Flush the pump and discharge hose (if not disposable) with potable water.

e. Place the pump on clear plastic sheeting.

f. Wipe any pump-related equipment (e.g., electrical lines, cables, discharge hose) that entered the well with a clean cloth and detergent solution, and rinse or wipe with a clean cloth and potable water.

g. Air dry.

h. Wrap equipment with a suitable material (e.g., clean plastic bag).

As part of the decontamination procedure for water-sampling equipment, state and/or federal protocols must be considered. These may require procedures above those specified as minimum for Roux Associates, Inc., such as the use of nitric acid, acetone, etc. Furthermore, the containment and proper disposal of decontamination fluids must be considered with respect to regulatory agency(ies) requirements.

1.0 PURPOSE

The purpose of this standard operating procedure (SOP) is to describe the considerations and procedures, and to establish the guidelines for drilling (soil borings, wells, or piezometers) and formation sampling activities in unconsolidated formations. There are several drilling techniques available which include: direct push (Geoprobe® or cone penetrometer testing [CPT]), hollow-stem auger, cable tool, hydraulic rotary, cased-hole rotary, air rotary, and Sonic. Formation (sediment/soil) sample collection options include: disturbed (drill cuttings), intact (split-spoon or continuous core), and undisturbed (Shelby-tube or Denison-core). Borehole abandonment (closure) procedures will also be addressed in this SOP.

The objective of drilling is to collect accurate subsurface information. Consequently, the lithologic data is essential information that characterizes subsurface conditions and describes geologic coefficients qualitatively and/or quantitatively.

2.0 DRILLING TECHNIQUE-SELECTION

Verify that the drilling technique is the one specified in the investigation work plan, and that the drilling equipment mobilized by the driller is in good condition and proper working order. Do not permit the driller to use a drilling rig that appears to be substandard, in disrepair, etc., and/or is questionable as to whether or not the rig has the capabilities to accomplish the goals of the drilling program. Complete a drill rig inspection checklist before starting any drilling activities. The drilling rig must be capable of:

a. Penetration of all anticipated subsurface materials and formations at a desired rate, and construction of a borehole of desired diameter.

b. Identification of lithology for development of a geologic log of all unconsolidated formations and materials penetrated, including physical characteristics and visual description of color, grain sizes, sorting and mineralogy.

c. Collection of intact and/or undisturbed soil samples from the center line or sidewall of the borehole. This objective requires the drilling to be halted while soil samples are taken from the bottom or side of the incomplete borehole.

d. Implementation of borehole geophysical logging (when applicable and possible) to enable more accurate vertical and horizontal extrapolation of borehole data to the lithology of the hydrogeologic system.

Drilling will not commence until the following have been completed:

- Development and approval of a drilling specific job safety analysis (JSA)
- a utility mark-out/one call has been conducted at the drilling location(s); and
- the completion of a subsurface clearance procedure checklist.

3.0 DRILLING TECHNIQUE - DESCRIPTION

3.1 Direct Push – The direct push technology includes several types of drilling rigs and drilling equipment that advances a drill string by pushing or hammering without rotating the drill string. Direct push rigs include both Geoprobe® and CPT rigs. Geoprobe® rigs are typically limited to drilling in unconsolidated soil up to approximately 100 feet below ground surface (bgs) under compatible conditions. Formation samples are collected in acetate/plastic sleeves. Advantages include: access and maneuverability due to the rig's small size; fluids are not introduced into the subsurface during drilling; and sampling is relatively inexpensive. Disadvantages include: limitation to drilling depth; limitation to unconsolidated or soft rock drilling; and limitation to small diameter borings. CPT rigs also provide a continuous profile of the soil strata as the rig's sensing equipment is advanced.

3.2 Hollow-Stem Auger - This drilling method is rapid and extremely effective in most cohesive sediments but less so in loose sandy material. A major advantage of this technique is that normally no fluids are introduced into the formation. If the auger flights can be removed and the integrity of the borehole maintained, then electrical and radiation (e.g., gamma, neutron, etc.) geophysical logs can be run. If the auger flights must remain in the borehole, then only radiation geophysical logs can be run. Casing, screen, and sampling devices can then be lowered through the hollow stem by removing the removable plug at the bottom of the auger flights, and gravel/sand packing and cementing can be accomplished within the hollow stem. However, this can be difficult especially below the water table. Auger flight outside diameters (OD) range from 5 inches (in.) to 12 in.

3.3 Cable Tool (Percussion) - This drilling method is slow because the borehole is advanced by lifting and dropping a heavy string of drilling tools. Cuttings accumulate in the drill casing and are removed by a sand bailer. A steel casing is driven in as the hole is deepened. Cable-tool rigs can be used in unconsolidated sediment and bedrock to depths of hundreds or thousands of feet and often employ telescoping techniques for drilling deep boreholes. Electrical geophysical logs cannot be run through the steel cased borehole, but radiation logs (e.g., gamma, neutron, etc.) can be run. Well casing and screen can be installed within the cased hole after which the outer casing is pulled back (removed). Because the boring is cased as it is being drilled, cross-contamination between various depths is practically eliminated. The method provides an excellent means to collect good, representative formation samples.

3.4 Hydraulic Rotary - This drilling method uses a rotating bit to drill (advance) the borehole. Drill cuttings are removed using a recirculated drilling fluid (mud or water). Although setting up the drilling equipment is slow, the drilling process is reasonably fast. In the mud-rotary method, drilling mud forms a cake on the

borehole wall which prevents excessive loss of fluid to the formation being drilled. The hydrostatic pressure combined with the weight and density of the mud slurry keeps the hole open. This allows the drill rods to be removed from the borehole and geophysical logs (electric and radiation) to be run in the open borehole.

In reverse hydraulic rotary drilling, the drilling fluid moves downward through annular space and then upward inside the drill pipe. If the drilling fluid does not contain mud, then sufficient water flow is required as make-up water because the borehole wall is not sealed; therefore, significant water loss can occur to the formation being drilled. The borehole is held open by hydrostatic pressure only. A serious obstacle to this drilling method occurs when the static water level is less than 15 feet below land surface because of insufficient hydrostatic head difference between the borehole and the water table. However, the problems of excessive water loss and shallow depths to water may be overcome by using mud as the drilling fluid.

In mud-rotary drilling, the drilling fluid (mud or polymer) moves downward through the drill pipe and then upward through the annular space. Therefore, the borehole is held open by hydrostatic pressure and the mud cake lining the wall of the borehole. The mud-rotary method can be used to construct moderate to deep wells in unconsolidated (and consolidated material), while the reverse rotary technique can be used to construct moderate to deep wells in unconsolidated materials. The principal disadvantage may be the difficulty in removing mud cake from the formation at the screened zone. Extensive well development may be required to remove the mud cake.

3.5 Cased-Hole Rotary - Several rotary drilling techniques have been developed in which a steel casing is advanced with an air-rotary or mud-rotary drill. This technique is highly desirable for use in exploratory drilling at monitoring sites because water and soil samples may be collected under conditions which preclude contamination from shallower depths. Furthermore, this technique is extremely effective in boulder or cavernous zones which would inhibit or preclude drilling using other techniques. Drilling results are comparable to cable-tool drilling but with greatly enhanced speeds. In all the cased-hole techniques, the main benefit is that the only portion of the borehole which is open, is at the bottom of the drill casing; thus, no soil or water from shallower depths can move down and impact the depth drilled and/or sampled. Electrical geophysical logs cannot be run through the steel-cased borehole, however, radiation logs (e.g., gamma, neutron, etc.) can be run.

Presently, there are three cased-hole rotary techniques which include:

a. The drill-thru casing hammer technique in which the casing is advanced by percussion with a casing hammer or vibratory driver similar to the method

used in a borehole drilled by the air-rotary method. The casing hammer can also pull out the casing (air drilling only).

b. The Odex™ Drilling System (European system) which "pulls" the casing using a fixture attached to an air-hammer type drill bit (air drilling only).

c. The Barber™ Drilling System in which drilling is done with a top-head drive and a rotary table that spins casing into the ground. Casing can be fitted with a carbide "shoe" to cut boulders and an air hammer can be used above the bit. Air or mud rotary can be used to lift cuttings.

Two potential problems may be encountered using the cased-hole rotary technique which include: 1) "sand heave" when drilling stops (which can be quickly drilled or bailed out) and 2) possible aeration of water in the cased borehole if volatiles are being tested (which can be overcome by pumping or bailing the standing water out before sampling). The minimum drill casing diameter is 6 inches and depth is limited to approximately 450 feet.

3.6 Air Rotary - This drilling method uses a rotating bit to drill, and high-velocity compressed air to remove cuttings from the borehole. A pneumatic down-hole hammer is often used to add percussion to the rotary drilling action. This drilling method is very fast and, although it is most suitable for penetrating hard bedrock, it can be used in unconsolidated formations. The borehole may be cased or uncased depending on geologic conditions. If an open borehole is drilled, then electrical and radiation (e.g., gamma, neutron, etc.) geophysical logs can be run. If a cased borehole is drilled, then only radiation geophysical logs can be run.

Four potential problems may be encountered when using the air-rotary technique:

a. When a prolific aquifer is tapped, the compressed air may not be able to lift the water to the surface.

b. Aeration of water in the borehole (and finished well) immediately prior to sampling can interfere with a number of inorganic and organic water-quality parameters.

c. Low yield water entry zones may not be identified because the air pressure prevents water from entering the borehole. Care should be taken to prevent overdrilling of the borehole.

d. Air rotary drilling can induce the migration of volatile organics to the surface or adjacent structures causing potential aesthetic or health and safety concerns.

If the air-rotary technique is used then the following special procedures will be implemented:

a. The type of air compressor and lubricating oil will be documented on an appropriate field form and in the field notebook and a 1-pint sample of the oil will be retained for characterization in the event organic compounds are detected in a well sample.

b. An air line oil filter will be required and changed per manufacturer's recommendations during operation with documentation of this maintenance on an appropriate field form and in the field notebook. More frequent oil filter changes will be made if oil is visibly detected in the filtered air.

c. The use of any additive will be prohibited, except approved water (e.g., potable water) for dust control and cuttings removal.

3.7 Sonic - This drilling method uses a rotating bit to drill, and high-frequency resonant vibrations created by a Sonic drill head. The drill head contains the mechanism necessary for rotary motion as well as an oscillator, which causes a high frequency force to be superimposed on the drill string. The frequency can be varied to suit operating conditions and is generally between 50 and 120 hertz (cycles per second). The vibrations are sent down the drill string to the drill bit, magnifying the amplitude of the drill bit, which (in overburden) fluidizes the soil particles at the bit face. The drill bit is physically vibrating up and down in addition to being pushed down and rotated. These three combined forces allow for relatively fast and easy penetration through most geological formations. The oscillator is driven by a hydraulic motor and uses out of balance weights to generate high sinusoidal forces that are transmitted to the drill bit. An internal spring system isolates these vibrational forces from the rest of the drill rig. Typically, Sonic drilling uses a drilling fluid (i.e., potable water) to facilitate the advancement of the drill bit. The amount of drilling fluid used should be limited during soil collection as to minimize wash-out of the sample.

4.0 DECONTAMINATION

Drilling equipment decontamination procedures are outlined in the field equipment decontamination SOP. Proper decontamination in accordance with regulatory guidelines must be clearly documented in the field notebook.

5.0 PROCEDURE FOR DRILLING

5.1 Safety first. Obtain the appropriate work permit, Job Safety Analysis (JSA) and personal protection equipment (PPE), as specified in the site Health and Safety Plan (HASP).

5.2 Document all drilling-related activities (e.g., starting, stopping, footage, problems, decontamination, etc.) on the daily log form and in the field notebook. Record dates and times of activities, and names of Roux Associates personnel providing oversight.

5.3 Monitor and record drill fluid mix, speed of rotation, pressure on the drill fluid, rate of drilling, and length of drill rods or casing in the borehole, as applicable.

5.4 Confirm that the drill rods and core barrel are straight, or discontinue drilling.

5.5 Pay particular attention to the advancement of the boring because differences in the rate of drilling may be indicative of differences in subsurface geologic conditions (e.g., sand and gravel versus clay).

5.6 Maintain a continuous dialogue with the driller to track and keep informed of all drilling activities (e.g., the speed of the drill and drilling pressure, difficult and easy drilling conditions, etc.).

5.7 Collect formation samples as described in accordance with the work plan. Sample jars must be labeled appropriately (e.g., project number and name, site location, boring number, date, sample interval, blow counts, and initials of Roux Associates personnel collecting sample).

5.8 Record geologic information in the soil boring log form and in the field notebook.

5.9 Handle and ship split-spoon sample jars carefully to avoid breakage and handle and ship tubes or cores carefully to prevent disturbance.

6.0 PROCEDURE FOR FORMATION SAMPLING

6.1 Safety first. Obtain the appropriate JSA and PPE, as specified in the site HASP.

6.2 Intact formation sampling will be implemented using continuous core or split-spoon samplers (which are driven), Shelby-tube samplers (which are pushed), or Denison-core samplers (which are rotated) depending on the drilling technique employed. Formation samples will be retained in core barrel liners/tubes or suitable size jars for physical descriptions and potential physical and chemical analysis. The appropriately labeled jars and tubes will be stored in a safe place to avoid breakage, agitation, and over-heating/freezing. Intact formation samples will be collected at specified intervals as described in the work plan. Geologic information will be recorded on a geologic log form on the appropriate field form. Detailed descriptions of the type(s) of intact sample(s) collected, sampling intervals and conditions, and objective(s) of the sample collection will be provided in the work plan.

6.3 Soil cores from the wells drilled at the Site are used for lithologic identification and physical property analysis. Soil core samples will be collected using a direct push continuous core (acetate/PVC liners) or split-spoon sampler (6-inch stainless steel sample containers). The soil core sample intervals will be specified in the work plan.

6.4 Sampling equipment will be decontaminated by steam cleaning and/or a non-phosphate, laboratory-grade and distilled/deionized wash followed by a distilled/deionized water rinse. (Refer to the field equipment decontamination SOP for a detailed description of minimum and special decontamination procedures.) Decontamination of sediment sampling equipment will take place prior to the collection of the first sample and following the collection of each subsequent sample.

7.0 BOREHOLE ABANDONMENT OR CLOSURE

7.1 Safety first. Obtain the appropriate JSA and PPE, as specified in the site HASP.

7.2 Upon the completion of the investigation, boreholes will be abandoned as specified in the workplan.

7.3 For each abandoned borehole, the procedure will be documented in the field notebook.

END OF PROCEDURE

Date: May 5, 2000

1.0 PURPOSE

The purpose of this standard operating procedure (SOP) is to establish guidelines for screening soil samples for volatile organic vapors using a portable photoionization detector (PID). This SOP is applicable to soil samples collected from split-spoon samplers during drilling, hand auger samples, and grab samples from stockpiled soils.

2.0 CONSIDERATIONS

The primary objective of photoionization screening of soil samples is to obtain a qualitative understanding of the distribution of volatile organic compounds (VOCs) in soil. The proper design of an organic vapor screening program requires an understanding of site hydrogeology, potential source areas, and potential constituents of concern. Sample locations and frequency must be fully defined in the work plan. The work plan should outline the type of lamp to be utilized in the PID based on the ionization potentials and response factors of the constituents of concern. The work plan must also clearly describe the heating or equilibration procedures to be employed if they differ from those described in this SOP. Regardless of the specific equilibration procedure employed, it is imperative that each sample be treated identically to allow the photoionization results from different locations to be compared. Observations such as water, clay, and organic content should be noted to facilitate interpretation of the data. Every effort should be made to collect a representative portion of soil from the sampling device.

3.0 MATERIALS/EQUIPMENT

a. A work plan which outlines photoionization screening requirements.

b. Decontamination supplies (including: non-phosphate, laboratory grade detergent, buckets, brushes, potable water, distilled water, regulatory-required reagents [e.g., acetone, nitric acid, hexane, etc.], aluminum foil, plastic sheeting, etc.).

c. Field notebook, field form(s), maps, chain-of-custody forms.

d. Sampling device (split-spoon sampler, stainless steel hand auger, stainless steel trowel, etc.).

e. Stainless steel spoons or spatulas.

f. Disposable plastic spoons.

g. Plastic sheeting.

h. Aluminum foil.

i. Mason jars or driller's jars.

j. Water bath (hot plate, extension cord, water tray, thermometer).

k. Photoionization detector with charging unit.

l. Calibration gases with regulator.

m. Indelible marker.

n. Masking tape.

o. Disposable sampling gloves.

4.0 DECONTAMINATION

Where possible, thoroughly pre-cleaned and wrapped sampling equipment must be used and dedicated to individual sampling locations. Disposable items such as sampling gloves, aluminum foil, and sample jars will be changed after each use and discarded in an appropriate manner. If only photoionization results are to be obtained, then split-spoon samples and hand augers may be cleaned with a soap and water wash and potable water rinse or steam cleaning, and a final distilled water rinse. However, if samples are to be collected concurrently for laboratory analytical results, then all reusable sampling equipment must be thoroughly decontaminated according to the SOP for decontamination of field equipment.

5.0 CALIBRATION

The PID must be calibrated according to the manufacturer's specifications at a minimum frequency of once per day prior to collecting photoionization readings. In addition, periodic checks (e.g., every 2 hours or every ten samples) with the standard gas will be conducted to confirm that the calibration has not drifted. The time, date, and calibration procedure must be clearly documented in the field notebook and the calibration log. If at any time the photoionization results appear erratic or inconsistent with field observations, then the unit must be recalibrated. If calibration is difficult to achieve, then the unit's lamp should be checked for dirt or moisture and cleaned, as necessary. During humid or wet conditions, the unit should be calibrated on a more frequent basis as determined by field personnel.

6.0 PROCEDURE

6.1 Extract the soil sample from the sampler, quickly measure the recovery, and separate the wash from the true sample by using a dedicated, stainless steel spatula. Where allowed by regulatory agency(ies), disposable plastic spoons may be used.

6.2 Place the sample in a pre-cleaned glass jar (as quickly as possible to avoid loss of VOCs) filling the jar half full. Place an aluminum foil seal between the glass and metal cap and screw tight.

6.3 Label jars with the boring number, depth of sample, date of collection and blow counts. In addition, the field personnel will ensure the following: samples are taken at appropriate depths; unrepresentative portions of the sample are discarded properly; that the sampler is decontaminated properly between use; and the driller uses proper methods during sample collection and does not use oil or grease on tools entering the borehole.

6.4 Log the sample in detail and record sediment characteristics (color, odor, moisture, texture, density, consistency, organic content, and layering).

6.5 After the sample has been collected, heat the sample under controlled conditions in a water bath for a 2 minute period.

6.6 Ensure that the PID has been calibrated and that the calibration information is documented in the field book. Pierce the aluminum foil seal with the probe from the PID and measure the relative concentration of VOCs in the headspace of the soil sample. The initial (peak) reading must be recorded.

6.7 Record the PID reading in the field notebook, on an appropriate field form, and on the base map, if appropriate.

6.8 Place any material not representative of the interval sampled in a pile with the other cuttings from the borehole.

6.9 If only photoionization results are to be obtained, then reusable sampling devices may be cleaned with a soap and water wash and a potable water rinse. The sampler will then be rinsed with distilled water, assembled and placed on plastic sheeting for reuse. A more rigorous decontamination procedure is required when samples are also being collected for laboratory analysis. Refer to the SOP for collection of soil samples for laboratory analysis for additional information.

END OF PROCEDURE

Date: May 5, 2000

1.0 PURPOSE

The purpose of this standard operating procedure (SOP) is to establish guidelines for the sampling of ground-water monitoring wells for dissolved constituents. As part of the SOP for the sampling of ground-water monitoring wells, sample collection equipment and devices must be considered, and equipment decontamination and pre-sampling procedures (e.g., measuring water levels, sounding wells, and purging wells) must be implemented. Sampling objectives must be firmly established in the work plan before considering the above.

Valid water-chemistry data are integral to a hydrogeologic investigation that characterizes ground-water quality conditions. Water-quality data are used to evaluate both current and historic aquifer chemistry conditions, as well as to estimate future conditions (e.g., trends, migration pathways). Water-quality data can be used to construct ground-water quality maps to illustrate chemical conditions within the flow system, to generate water-quality plots to depict conditions with time and trends, and to perform statistical analyses to quantify data variability, trends, and cleanup levels.

2.0 EQUIPMENT AND MATERIALS

2.1 In order to sample ground water from monitoring wells, specific equipment and materials are required. The equipment and materials list may include, but not necessarily be limited to, the following:

a. Bailers (Teflon™ or stainless steel).

b. Pumps (centrifugal, peristaltic, bladder, electric submersible, bilge, hand-operated diaphragm, etc.).

c. Gas-displacement device(s).

d. Air-lift device(s).

e. Teflon™ tape, electrical tape.

f. Appropriate discharge hose.

g. Appropriate discharge tubing (e.g., polypropylene, teflon, etc.) if using a peristaltic pump.

h. Appropriate compressed gas if using bladder-type or gas-displacement device.

i. Portable generator and gasoline or alternate power supply if using an electric submersible pump.

j. Non-absorbent cord (e.g., polypropylene, etc.).

k. Plastic sheeting.

l. Tape measure (stainless steel, steel, fiberglass) with 0.01-foot measurement increments and chalk (blue carpenter's).

m. Electronic water-level indicators (e.g., m-scope, etc.) or electric water-level/product level indicators.

n. Non-phosphate, laboratory-grade detergent.

o. Distilled/Deionized water.

p. Potable water.

q. Paper towels, clean rags.

r. Roux Associates' field forms (e.g., daily log, well inspection checklist, sampling, etc.) and field notebook.

s. Well location and site map.

t. Well keys.

u. Stop watch, digital watch with second increments, or watch with a second hand.

v. Water Well Handbook.

w. Calculator.

x. Black pen and water-proof marker.

y. Tools (e.g., pipe wrenches, screwdrivers, hammer, pliers, flashlight, pen knife, etc.).

z. Appropriate health and safety equipment, as specified in the site health and safety plan (HASP).

aa. pH meter(s) and buffers.

bb. Conductivity meter(s) and standards.

cc. Thermometer(s).

dd. Extra batteries (meters, thermometers, flashlight).

ee. Filtration apparatus, filters, pre-filters.

ff. Plasticware (e.g., premeasured buckets, beakers, flasks, funnels).

gg. Disposable gloves.

hh. Water jugs.

ii. Laboratory-supplied sample containers with labels.

jj. Cooler(s).

kk. Ice (wet, blue packs).

ll. Masking, duct, and packing tape.

mm. Chain-of-custody form(s) and custody seal(s).

nn. Site sampling and analysis plan (SAP).

oo. Site health and safety plan (HASP).

pp. Packing material (e.g., bubble wrap)

qq. "Zip-lock" plastic bags.

rr. Overnight (express) mail forms.

3.0 DECONTAMINATION

3.1 Make sure all equipment is decontaminated and cleaned before use (refer to the SOP for Decontamination of Field Equipment for detailed decontamination methods, summaries for bailers and pumps are provided below). Use new, clean materials when decontamination is not appropriate (e.g., non-absorbent cord, disposable gloves). Document, and initial and date the decontamination procedures on the appropriate field form and in the field notebook.

a. Decontaminate a bailer by: 1) wearing disposable gloves, 2) disassembling (if appropriate) and scrubbing in a non-phosphate, laboratory-grade detergent and distilled/deionized water solution, and 3) rinsing first with potable water and then distilled/deionized water.

b. Decontaminate a pump by: 1) wearing disposable gloves, 2) flushing the pump and discharge hose (if not disposable) first with a non-phosphate, laboratory-grade detergent and potable water solution in an appropriate

container (clean bucket, garbage can, or 55-gallon drum) and then with distilled/deionized water or potable water, and 3) wiping pump-related equipment (e.g., electrical lines, cables, discharge hose) first with a clean cloth and detergent solution and then rinsing or wiping with a clean cloth and distilled/deionized water or potable water.

3.2 Note that the decontamination procedures for bailers and pumps are the minimum that must be performed. Check the work plan to determine if chemicals specified by individual state regulatory agencies must also be used for decontamination procedures (e.g., hexane, nitric acid, acetone, isopropanol, etc.).

4.0 CALIBRATION OF FIELD ANALYSIS EQUIPMENT

Calibrate field analysis equipment before use (e.g., thermometers, pH and conductivity meters, etc.). Refer to the specific SOP for field analysis for each respective piece of equipment. Document, and initial and date the calibration procedures on the appropriate field form, in the field notebook, and in the calibration log book.

5.0 PROCEDURE

5.1 Document, and initial and date well identification, pre-sampling information, and problems encountered on the appropriate field form and in the field notebook as needed.

5.2 Inspect the protective casing of the well and the well casing, and note any items of concern such as a missing lock, or bent or damaged casing(s).

5.3 Place plastic sheeting around the well to protect sampling equipment from potential cross contamination.

5.4 Remove the well cap or plug and, if necessary, clean the top of the well off with a clean rag. Place the cap or plug on the plastic sheeting. If the well is not vented, allow several minutes for the water level in the well to equilibrate. If fumes or gases are present, then diagnose these with the proper safety equipment. Never inhale the vapors.

5.5 Measure the depth to water (DTW) from the measuring point (MP) on the well using a steel tape and chalk or an electronic sounding device (m-scope). Refer to the specific SOPs for details regarding the use of a steel tape or a m-scope for measuring water levels. Calculate the water-level elevation. Document, and initial and date the information on the appropriate field form and in the field notebook.

5.6 Measuring the total depth of the well from the MP with a weighted steel tape. Calculate and record the volume of standing water in the well casing on the appropriate field form and in the field notebook.

5.7 Decontaminate the equipment used to measure the water level and sound the well with a non-phosphate, laboratory-grade detergent solution followed by a distilled/deionized water rinse.

5.8 Purge the well prior to sampling (refer to the SOP for Purging a Well). The well should be pumped or bailed to remove the volume of water specified in the work plan. Usually three to five casing volumes are removed if the recharge rate is adequate to accomplish this within a reasonable amount of time.

If the formation cannot produce enough water to sustain purging, then one of two options must be followed. These include: 1) pumping or bailing the well dry, or 2) pumping or bailing the well to "near-dry" conditions (i.e., leaving some water in the well). The option employed must be specified in the work plan and be in accordance with regulatory requirements.

If the well is purged dry, then all the standing water has been removed and upon recovery the well is ready for sampling. However, depending on the rate of recovery and the time needed to complete the sampling round, one of the following procedures may have to be implemented: 1) the well may have to be sampled over a period of more than one day; 2) the well may not yield enough water to collect a complete suite of samples and only select (most important) samples will be collected; or 3) the well may not recover which will preclude sampling. Regardless of the option that must be followed, the sampling procedure must be fully documented. When preparing to conduct a sampling round, review drilling, development, and previous sampling information (if available) to identify low-yielding wells in order to purge them first, and potentially allow time for the well to recover for sampling.

5.9 Record the physical appearance of the water (i.e. color, turbidity, odor, etc.) on the appropriate field form and in the field notebook, as it is purged. Note any changes that occur during purging.

5.10 If a bailer is used to collect the sample, then:

a. Flush the decontaminated bailer three times with distilled/deionized water.

b. Tie the non-absorbent cord (polypropylene) to the bailer with a secure knot and then tie the free end of the bailer cord to the protective casing or, if possible, some nearby structure to prevent losing the bailer and cord down the well.

c. Lower the bailer slowly down the well and into the water column to minimize disturbance of the water surface. If a bottom-filling bailer is used, then do not submerge the top of the bailer; however, if a top-filling bailer is used, then submerge the bailer several feet below the water surface.

d. Remove and properly discard one bailer volume from the well to rinse the bailer with well water before sampling. Again, lower the bailer slowly down the well to the appropriate depth depending on the bailer type (as discussed above in 5.11 c). When removing the bailer from the well, do not allow the bailer cord to rest on the ground but coil it on the protective plastic sheeting placed around the well. Certain regulatory agencies require that the first bailer volume collected be utilized for the samples.

5.11 If a pump is used to collect the sample, then use the same pump used to purge the well and, if need be, reduce the discharge rate to facilitate filling sample containers and to avoid problems that can occur while filling sample containers (as listed in Number 5.14, below). Alternately, the purge pump may be removed and a thoroughly decontaminated bailer can be used to collect the sample.

5.12 Remove each appropriate container's cap only when ready to fill each with the water sample, and then replace and secure the cap immediately.

5.13 Fill each appropriate, pre-labeled sample container carefully and cautiously to prevent: 1) agitating or creating turbulence; 2) breaking the container; 3) entry of, or contact with, any other medium; and 4) spilling/splashing the sample and exposing the sampling team to contaminated water. Immediately place the filled sample container in an ice-filled (wet ice or blue pack) cooler for storage. If wet ice is used it is recommended that it be repackaged in zip-lock bags to help keep the cooler dry and the sample labels secure. Check the work plan as to whether wet ice or blue packs are specified for cooling the samples because certain regulatory agencies may specify the use of one and not the other.

5.14 "Top-off" containers for volatile organic compounds (VOCs) and tightly seal with Teflon™-lined septums held in place by open-top screw caps to prevent volatilization. Ensure that there are no bubbles by turning the container upside down and tapping it gently.

5.15 Filter water samples (Procedure 4.6) collected for dissolved metals analysis prior to preservation to remove the suspended sediment from the sample. If water samples are to be collected for total metals analysis, then collect a second set of samples without field filtering.

In the event that the regulatory agency(ies) want unfiltered samples for metals analysis, a second set of filtered samples should also be collected. Because unfiltered samples are indications of total metals (dissolved and suspended) they are not representative of aquifer conditions because ground water does not transport sediment (except in some rare cases). Thus, the results for dissolved metals in ground water should be based on filtered samples even if both filtered and unfiltered sets are presented in a report.

5.16 Add any necessary preservative(s) to the appropriate container(s) prior to, or after (preferred), the collection of the sample, unless the appropriate preservative(s) have already been added by the laboratory before shipment.

5.17 Collect quality control (QC) samples as required in the work plan to monitor sampling and laboratory performance. Refer to the SOP for Collection of Quality Control Samples.

5.18 Conduct field analyses after sample collection is complete by measuring and recording the temperature, conductivity, pH, etc. (as called for in the work plan). Note and record the "final" physical appearance of the water (after purging and sampling) on an appropriate field form and in the field notebook.

5.19 Wipe the well cap with a clean rag, replace the well cap and protective cover (if present). Lock the protective cover.

5.20 Verify that each sample is placed in an individual "zip-lock" bag, wrapped with "bubble wrap," placed in the cooler, and that the cooler has sufficient ice (wet ice or blue packs) to preserve the samples for transportation to the analytical laboratory.

5.21 Decontaminate bailers, hoses, and pumps as discussed in the decontamination SOP. Wrap decontaminated equipment with a suitable material (e.g., clean plastic bag or aluminum foil). Discard cords, rags, gloves, etc. in a manner consistent with site conditions.

5.22 Complete all necessary field forms, field notebook entries, and the chain-of-custody forms. Retain one copy of each chain-of-custody form. Secure the cooler with sufficient packing tape and a custody seal.

5.23 Samples collected from Monday through Friday will be delivered within 24 hours of collection. If Saturday delivery is not available, samples collected on Friday must be delivered by Monday morning. Consult the work plan to determine if any of the analytes require a shorter delivery time.

END OF PROCUDURE

Date: May 5, 2000

1.0 PURPOSE

The purpose of this Standard Operating Procedure (SOP) is to establish guidelines for the collection of soil samples for laboratory analysis. This SOP is applicable to soil samples collected from split-spoon samplers during drilling, hand auger samples, grab samples from stockpiled soils, surface samples, test pit samples, etc.

2.0 CONSIDERATIONS

Soil samples may be collected in either a random or biased manner. Random samples can be based on a grid system or statistical methodology. Biased samples can be collected in areas of visible impact or suspected source areas. Soil samples can be collected at the surface, shallow subsurface, or at depth. When samples are collected at depth the water content should be noted, since generally "soil sampling" is restricted to the unsaturated zone. Equipment selection will be determined by the depth of the sample to be collected. A thorough description of the sampling locations and proposed methods of sample collection should be included in the work plan.

Commonly, surface sampling refers to the collection of samples at a 0 to 6-inch depth interval. Certain regulatory agencies may define the depth interval of a surface sample differently, and this must be defined in the work plan. Collection of surface soil samples is most efficiently accomplished with the use of a stainless-steel trowel or scoop. For samples at greater depths a decontaminated bucket auger or power auger may be needed to advance the hole to the point of sample collection. Another clean bucket auger should then be used to collect the sample. To collect samples at depths of greater than approximately six feet the use of a drill rig and split spoon samples will usually be necessary. In some situations, sample locations are accessed with the use of a backhoe.

3.0 MATERIALS/EQUIPMENT

a. A work plan which outlines soil sampling requirements.

b. Field notebook, field form(s), maps, chain-of-custody forms, and custody seals.

c. Decontamination supplies (including: non-phosphate, laboratory grade detergent, buckets, brushes, potable water, distilled water, regulatory-required reagents, aluminum foil, plastic sheeting, etc.).

d. Sampling device (split-spoon sampler, stainless steel hand auger, stainless steel trowel, etc.).

e. Stainless steel spoons or spatulas.

f. Disposable sampling gloves.

g. Laboratory-supplied sample containers with labels.

h. Cooler with blue or wet ice.

i. Plastic sheeting.

j. Black pen and indelible marker.

k. Zip-lock bags and packing material.

l. Tape measure.

m. Paper towels or clean rags.

n. Masking and packing tape.

o. Overnight (express) mail forms.

4.0 DECONTAMINATION

All reusable sampling equipment will be thoroughly cleaned according to the decontamination SOP. Where possible, thoroughly pre-cleaned and wrapped sampling equipment should be used and dedicated to individual sampling locations. Disposable items such as sampling gloves, aluminum foil, and plastic sheeting will be changed after each use and discarded in an appropriate manner.

5.0 PROCEDURE

5.1 Prior to collecting soil samples, ensure that all sampling equipment has been thoroughly cleaned according to the decontamination SOP. If samples are to be collected at depth, then the boring must be advanced with thoroughly cleaned equipment to the desired sampling horizon and a different thoroughly cleaned sampler must be used to collect the sample.

5.2 Using disposable gloves and a pre-cleaned, stainless steel spatula or spoon, extract the soil sample from the sampler, measure the recovery, and separate the wash from the true sample. Where allowed by regulatory agency(ies), disposable plastic spoons may be used.

5.3 Place the sample in a laboratory-supplied, pre-cleaned sample container. This should be done as quickly as possible and this is especially important when sampling for volatile organic compounds (VOCs). Samples to be analyzed for VOCs must be collected prior to other constituents.

5.4 The sample container will be labeled with appropriate information such as, client name, site location, sample identification (location, depth, etc.), date and time of collection, and sampler's initials.

5.5 Using the remaining portion of soil from the sampler, log the sample in detail and record sediment characteristics (color, odor, moisture, texture, density, consistency, organic content, layering, grain size, etc.).

5.6 If soil samples are to be composited in the field, then equal portions from selected locations will be placed on a clean plastic sheet and homogenized. Alternately, several samples may be submitted to the laboratory for compositing by weight. The method used is dependent upon regulatory requirements. Specific compositing procedures shall be approved by the appropriate regulatory agency and described in the work plan. Samples to be analyzed for VOCs will not be composited unless required by a regulatory agency.

5.7 After the sample has been collected, labeled, and logged in detail, it is placed in a zip-lock bag and stored in a cooler at 4°C.

5.8 A chain-of-custody form is completed for all samples collected. One copy is retained and two are sent with the samples in a zip-lock bag to the laboratory. A custody seal is placed on the cooler prior to shipment.

5.9 Samples collected from Monday to Friday are to be delivered to the laboratory within 24 hours of collection. If Saturday delivery is unavailable, samples collected on Friday must be delivered by Monday morning. Check the work plan to determine if any analytes require a shorter delivery time.

5.10 The field notebook and appropriate forms should include, but not be limited to the following: client name, site location, sample location, sample depth, sample identification, date and time collected, sampler's name, method of sample collection, number and type of containers, geologic description of material, description of decontamination procedures, etc. A site map should be prepared with exact measurements to each sample location in case follow-up sampling is necessary.

5.11 All reusable sampling equipment must be thoroughly cleaned in accordance with the decontamination SOP. Following the final decontamination (after all samples are collected) the sampling equipment is wrapped in aluminum foil. Discard any gloves, foil, plastic, etc. in an appropriate manner that is consistent with site conditions.

END OF PROCEDURE

1.0 PURPOSE

The purpose of this Standard Operating Procedure (SOP) is to provide guidance for the installation of temporary soil gas probes for the collection of shallow soil gas samples. This SOP should be used where its application is consistent with the project's data quality objectives (DQOs) and in conjunction with the SOP for soil gas collection.

2.0 MATERIALS

- 1/8 to 1/4 inch sampling tubing – metal, nylon, PEEK, Teflon
- Appropriate Fittings
- Bentonite Chips
- Water
- Drilling Apparatus

Note: It is necessary to coordinate the hardware (i.e. size of tubing, fittings, sampling interface assembly, etc.) for the soil gas probe sampling line with the sampling system (i.e. Tedlar bags, Summa canisters, etc.). This step is critical to achieve a leak free system.

3.0 PROCEDURE

Temporary soil gas probe installation procedures are described below to ensure that a quality sample is able to be obtained and to minimize ambient air migrating into the sample. Soil gas wells may be installed using various types of drilling methods, however, some drilling methods can disrupt the surrounding soil gas and will require a longer equilibration time prior to sampling. The steps to installing the temporary point are:

1) Drill a borehole to the required depth as shown on the sample plan or scope of work.

2) Install a 6-12 inches sand pack at the bottom and install the probe tip (with attached tubing) approximately 3-4 inches into the sand pack. Use extra tubing so that sufficient amount (1-2 feet) will be left above ground. Plug the exposed end of the tubing.

3) Install 12 inches of dry granular bentonite on top of the sand pack.

4) Fill the remaining annular space with hydrated bentonite in 6" lifts.

   - If multiple probes depths are to be installed at the same location, the hydrated bentonite shall be installed to the top the next testing interval. Sand pack and the dry bentonite will then be installed as normal.

5) Repair the ground surface to original condition.

6) Secure and mark the tubing at the surface with the location ID and depth.

END OF PROCEDURE

1.0 PURPOSE

The purpose of this Standard Operating Procedure (SOP) is to establish guidance to obtain accurate and consistent samples of soil gas.

2.0 MATERIALS/EQUIPMENT

- Teflon or Nylaflow tubing, one-quarter or one-eighth inch diameter sample tubing.
- Swagelok® ¼-inch nut and ferrule sets for connecting the probe tubing to the sampling manifold, as appropriate for the collection method
- Helium leak check equipment, as dictated by Site-specific data quality objectives (DQOs), including the enclosure, helium cylinder (high purity helium), and helium detector (Dialectric MGD is preferred). The enclosure and helium detector may be provided by the driller.
- Air pump for purging and electric supply for the pump (either battery, generator, or power inverter with adapter for car battery). Must be capable of a flow of 200 milliliters per minute (mL/min) and a vacuum of 20” Hg.
- Canister, tedlar bag or syringe, as appropriate for the collection method.

3.0 DECONTAMINATION

All reusable sampling equipment will be thoroughly cleaned according to the decontamination SOP. Where possible, thoroughly pre-cleaned and wrapped sampling equipment should be used and dedicated to individual sampling locations. Disposable items such as sampling gloves and plastic sheeting will be changed after each use and discarded in an appropriate manner.

4.0. SITE-SPECIFIC CONSIDERATIONS

Prior to attempting soil gas sampling there should be an understanding of subsurface conditions at the Site. Soil gas samples should be collected in the vadose zone and generally, soil gas samples should not be collected at a depth less than above 5 feet below ground surface (bgs), unless sub-slab soil gas samples are needed. It may also not be feasible to collect soil gas from tighter grain soils with little pore volume, such as clays, and these layers should be avoided.

Soil gas sampling should not be performed until 24-hours after a significant rain event (>1/2 inch of rainfall).

5.0 PROCEDURE

5.1 System Set-up

1. Acquire all the necessary hardware and sampling equipment. Be sure to use one-quarter or one-eighth inch diameter Teflon or Nylaflow sample tubing.

2. Assemble or obtain the necessary fittings and vacuum gauge to create a soil gas probe and sampling manifold (vacuum gauge and valving). This manifold must be clean, free of oils, and flushed free of VOCs prior to use. If appropriate, be sure to place the helium leak check enclosure over the probe, and push the sample tubing through the hole in the cap before attaching the sampling manifold.

3. Adjust the purge system evacuation pump sampling rate to achieve the desired flow rate of 200 mL/min. This should be performed at the outlet of the vacuum pump prior to purging, either by using a suitable flow meter, or determining the amount of time required to fill a 1-liter Tedlar bag.

5.2 Shut-In Test

Prior to purging or sampling, a shut-in test should be conducted to check for leaks in the above-ground sampling system.

1. Assemble the above-ground valves, lines and fittings downstream from the top of the probe.

2. Evacuate the system to a minimum measured vacuum of about 100 inches of water using the purge pump.

3. Observe the vacuum gauge for 1-2 minutes. If there is any observable loss of vacuum, adjust the above-ground sampling system until the vacuum is maintained.

5.3 System Leak Checking and Purging

Perform a leak check of the sample manifold system by:

1. Make sure the gas probe valve is off and the sample valves are closed.

2. Open the purge valve and start the purge pump. Verify that the flow is set to 200 mL/min until a vacuum of approximately 15" Hg is achieved.

3. Turn off the purge pump and observe the vacuum gauge for 1-2 minutes. If there is any observable loss of vacuum, the leaks must be fixed prior to sampling.

4. Record the leak check date and time on the field notebook.

5.4 Purge Volume Test (Mobile Laboratory Only)

The purpose of the purge volume test is to ensure that stagnant air is removed from the sampling system and to ensure that samples are representative of subsurface conditions. The test well should be located where soil gas concentrations are anticipated to be elevated, if possible.

Perform a purge test of the test well by:

1. Purge the well one purge volume and collect a sample.

2. Have the mobile laboratory analyze the sample for target compounds. Sample procedures are explained in Section 5.6, below.

3. Purge an additional two purge volumes (for a total of 3 purge volumes), collect a sample and submit to the mobile laboratory for analysis.

    a. One purge volume is equal to the sum of the following volumes:

        - The internal volume of tubing;
        - The void space of the sand pack around the probe tip;
        - The void space of the dry bentonite in the annular space.

4. Repeat for a purge of 10 total purge volumes.

5. The site purge volume will be chosen based on the sample with the highest concentration of target compounds from the purge test. All of other sample locations will utilize this purge volume (either one, three, or ten).

5.5 Helium Leak Check (as dictated by DQOs)

The helium leak check procedure is accomplished by:

1. Start the flow of helium under the leak check enclosure. Position the tube so the helium is directed at the interface of the probe and the ground. Let the helium fill the enclosure for a couple of minutes.

2. Turn the helium leak detector on and make sure that the detector is not reading any helium before proceeding.

3. Verify that the helium concentration inside the leak check enclosure is >10% by placing the probe of the helium detector into the hole where the sample tubing comes out or under the enclosure wall. It is not necessary to verify that the helium concentration is 100% as this is bad for the detector.

4. Purging is carried out by pulling soil gas through the system at a rate of 200 mL/min for a time period sufficient to achieve three purge volumes, equal to the sum of the internal volume of the in-ground annular space, sample line, and sampling manifold system.

   Note: When calculating the purge volume, be sure to take into account the inside diameter and length of the sample tubing, as well as the probe outside diameter and retract distance for the annular space for temporary probes. If during the purge (or sampling) the vacuum exceeds 7 "Hg, then reduce the pump flow rate. The system vacuum must stay below this level at all times.

5. To start the soil gas probe purge, open the gas probe valve and close the sample valve at the same time, and start timing. Verify that the flow rate is still 200 mL/min.

6. During the last 5 minutes of the purge (or the entire purge time if less than 5 minutes), attach a Tedlar bag to the purge pump exhaust and open the bag's valve.

7. At the end of the purge time, close the purge valve, close the valve to the Tedlar bag, and turn off the pump.

8. Attach the Tedlar bag to the helium detector and open the valve. If a helium reading of greater than or equal to 5% of the helium concentration inside the leak check enclosure is observed, then the probe leak check has failed and corrective action should be taken.

9. Record the purge date, time, purge rate, leak check result, and purge volume on the field sampling log.

10. Immediately move on to the sampling phase. Little to no delay should occur between purging and sampling.

5.6 Sample Collection

'Clean' sampling protocols must be followed when handling and collecting samples. This requires care in the shipping, storage, and use of sampling equipment. Sharpie markers should not be used for labeling or note-taking during sampling.

1. Attach the canister, tedlar bag or syringe to the sample tubing.

2. Before taking the sample, confirm that the sampling system valves are set as follows: the purge valve is confirmed to be closed, gas probe valve is open, and the sample valve is open.

3. After sampling for the appropriate amount of time, close the sample valve and the canister/tedlar bag valve. Remove the sample container from the sampling manifold.

4. Record the sampling date, time, canister identification (ID), flow controller ID, and any other observation pertinent to the sampling event on the field sampling log. The temperature and barometric pressure should be recorded.

5. Fill out all appropriate documentation (sampling forms, sample labels, chain of custody, sample tags, etc.).

6. Disassemble the sampling system.

END OF PROCEDURE

Date: May 5, 2000

1.0 PURPOSE

The purpose of this standard operating procedure (SOP) is to establish guidelines for sample handling which will allow consistent and accurate results. Valid chemistry data are integral to investigations that characterize media-quality conditions. Thus, this SOP is designed to ensure that once samples are collected, they are preserved, packed and delivered in a manner which will maintain sample integrity to as great an extent as possible. The procedures outlined are applicable to most sampling events and any required modifications must be clearly described in the work plan.

2.0 CONSIDERATIONS

Sample containers, sampling equipment decontamination, quality assurance/quality control (QA/QC), sample preservation, and sample handling are all components of this SOP.

2.1 Sample Containers

Prior to collection of a sample, considerations must be given to the type of container that will be used to store and transport the sample. The type and number of containers selected is usually based on factors such as sample matrix, potential contaminants to be encountered, analytical methods requested, and the laboratory's internal quality assurance requirements. In most cases, the overriding considerations will be the analytical methodology, or the state or federal regulatory requirements because these regulations generally encompass the other factors. The sample container selected is usually based on some combination of the following criteria:

a. Reactivity of Container Material with Sample

Choosing the proper composition of sample containers will help to ensure that the chemical and physical integrity of the sample is maintained. For sampling potentially hazardous material, glass is the recommended container type because it is chemically inert to most substances. Plastic containers are not recommended for most hazardous wastes because the potential exists for contaminants to adsorb to the surface of the plastic or for the plasticizer to leach into the sample.

In some instances, however, the sample characteristics or analytes of interest may dictate that plastic containers be used instead of glass. Because some metals species will adhere to the sides of the glass containers in an aqueous matrix, plastic bottles (e.g., nalgene) must be used for samples collected for metals analysis. A separate, plastic

container should accompany glass containers if metals analysis is to be performed along with other analyses. Likewise, other sample characteristics may dictate that glass cannot be used. For example, in the case of a strong alkali waste or hydrofluoric solution, plastic containers may be more suitable because glass containers may be etched by these compounds and create adsorptive sites on the container's surface.

b. Volume of the Container

The volume of sample to be collected will be dictated by the analysis being performed and the sample matrix. The laboratory must supply bottles of sufficient volume to perform the required analysis. In most cases, the methodology dictates the volume of sample material required to complete the analysis. However, individual laboratories may provide larger volume containers for various analytes to ensure sufficient quantities for duplicates or other QC checks.

To facilitate transfer of the sample from the sampler into the container and to minimize spillage and sample disturbance, wide-mouth containers are recommended. Aqueous volatile organic samples must be placed into 40-milliliter (ml) glass vials with polytetrafluoroethylene (PTFE) (e.g., TeflonTM) septums. Non-aqueous volatile organic samples should be collected in the same type of vials or in 4-ounce (oz) wide-mouth jars provided by the laboratory. These jars should have PTFE-lined screw caps.

c. Color of Container

Whenever possible, amber glass containers should be used to prevent photodegradation of the sample, except when samples are being collected for metals analysis. If amber containers are not available, then containers holding samples should be protected from light (i.e., place in cooler with ice immediately after filling).

d. Container Closures

Container closures must screw on and off the containers and form a leak-proof seal. Container caps must not be removed until the container is ready to be filled with the sample, and the container cap must be replaced (securely) immediately after filling it. Closures should be constructed of a material which is inert with respect to the sampled material, such as PTFE (e.g., TeflonTM). Alternately, the closure may be separated from the sample by a closure liner that is inert to the sample material such as PTFE sheeting. If soil or sediment samples are being collected, the threads of the container must be wiped clean with a dedicated paper towel or cloth, so the cap can be threaded properly.

e. Decontamination of Sample Containers

Sample containers must be laboratory cleaned by the laboratory performing the analysis. The cleaning procedure is dictated by the specific analysis to be performed on the sample. Sample containers must be carefully examined to ensure that all containers appear clean. Do not mistake the preservative as unwanted residue. The bottles should not be field cleaned. If there is any question regarding the integrity of the bottle, then the laboratory must be contacted immediately and the bottle(s) replaced.

f. Sample Bottle Storage and Transport

No matter where the sample bottles are, whether at the laboratory waiting to be packed for shipment or in the field waiting to be filled with sample, care must be taken to avoid contamination. Sample shuttles or coolers, and sample bottles must be stored and transported in clean environments. Sample bottles and clean sampling equipment must never be stored near solvents, gasoline, or other equipment that is a potential source of cross-contamination. When under chain of custody, sample bottles must be secured in locked vehicles, and custody sealed in shuttles or in the presence of authorized personnel. Information which documents that proper storage and transport procedures have been followed must be included in the field notebook and on appropriate field forms.

2.2 Decontamination of Sampling Equipment

Proper decontamination of all re-usable sampling equipment is critical for all sampling episodes. The SOP for Decontamination of Field Equipment and SOPs for method-specific or instrument-specific tasks must also be referred to for guidance for decontamination of various types of equipment.

2.3 Quality Assurance/Quality Control Samples

QA/QC samples are intended to provide control over the proper collection and tracking of environmental measurements, and subsequent review, interpretation and validation of generated analytical data. The SOPs for Collection of Quality Control Samples, for Evaluation and Validation of Data, and for Field Record Keeping and Quality Assurance/Quality Control must be referred to for detailed guidance regarding these respective procedures. SOPs for method-specific or instrument-specific tasks must also be referred to for guidance for QA/QC procedures.

2.4 Sample Preservation Requirements

Certain analytical methodologies for specific analytes require chemical additives in order to stabilize and maintain sample integrity. Generally, this is accomplished under the following two scenarios:

a. Sample bottles are preserved at the laboratory prior to shipment into the field.

b. Preservatives are added in the field immediately after the samples are collected.

Many laboratories provide pre-preserved bottles as a matter of convenience and to help ensure that samples will be preserved immediately upon collection. A problem associated with this method arises if not enough sample could be collected, resulting in too much preservative in the sample. More commonly encountered problems with this method include the possibility of insufficient preservative provided to achieve the desired pH level or the need for additional preservation due to chemical reactions caused by the addition of sample liquids to pre-preserved bottles. The use of pre-preserved bottles is acceptable; however, field sampling teams must always be prepared to add additional preservatives to samples if the aforementioned situations occur. Furthermore, care must be exercised not to overfill sample bottles containing preservatives to prevent the sample and preservative from spilling and therefore diluting the preservative (i.e., not having enough preservative for the volume of sample).

When samples are preserved after collection, special care must be taken. The transportation and handling of concentrated acids in the field requires additional preparation and adherence to appropriate preservation procedures. All preservation acids used in the field should be trace-metal or higher-grade.

2.5 Sample Handling

After the proper sample bottles have been received under chain-of-custody, properly decontaminated equipment has been used to collect the sample, and appropriate preservatives have been added to maintain sample integrity, the final step for the field personnel is checking the sample bottles prior to proper packing and delivery of the samples to the laboratory.

All samples should be organized and the labels checked for accuracy. The caps should be checked for tightness and any 40-ml volatile organic compound (VOC) bottles must be checked for bubbles. Each sample bottle must be placed in an individual Ziploc® bag to protect the label, and placed on ice. The bottles must be carefully packed to prevent breakage during transport. When several bottles have been collected for an individual sample, they should not be placed adjacent to each other in the cooler to prevent possible breakage of all bottles for a given sample. If there are any samples which are known or suspected to be highly

contaminated, these should be placed in an individual cooler under separate chain-of-custody to prevent possible cross contamination. Sufficient ice (wet or blue packs) should be placed in the cooler to maintain the temperature at 4 degrees Celsius (°C) until delivery at the laboratory. Consult the work plan to determine if a particular ice is specified as the preservation for transportation (e.g., the United States Environmental Protection Agency does not like the use of blue packs because they claim that the samples will not hold at 4°C). If additional coolers are required, then they should be purchased. The chain-of-custody form should be properly completed, placed in a "zip-lock" bag, and placed in the cooler. One copy must be maintained for the project files. The cooler should be sealed with packing tape and a custody seal. The custody seal number should be noted in the field book. Samples collected from Monday through Friday will be delivered to the laboratory within 24 hours of collection. If Saturday delivery is not available, samples collected on Friday must be delivered by Monday morning. Check the work plan to determine if certain analytes require a shorter delivery time. If overnight mail is utilized, then the shipping bill must be maintained for the files and the laboratory must be called the following day to confirm receipt.

3.0 EQUIPMENT AND MATERIALS

3.1 General equipment and materials may include, but not necessarily be limited to, the following:

a. Sample bottles of proper size and type with labels.

b. Cooler with ice (wet or blue pack).

c. Field notebook, appropriate field form(s), chain-of-custody form(s), custody seals.

d. Black pen and indelible marker.

e. Packing tape, "bubble wrap," and "zip-lock" bags.

f. Overnight (express) mail forms and laboratory address.

g. Health and safety plan (HASP).

h. Work plan/scope of work.

i. Pertinent SOPs for specified tasks and their respective equipment and materials.

3.2 Preservatives for specific samples/analytes as specified by the laboratory. Preservatives must be stored in secure, spillproof glass containers with their content, concentration, and date of preparation and expiration clearly labeled.

3.3 Miscellaneous equipment and materials including, but not necessarily limited to, the following:

a. Graduated pipettes.

b. Pipette bulbs.

c. Litmus paper.

d. Glass stirring rods.

e. Protective goggles.

f. Disposable gloves.

g. Lab apron.

h. First aid kit.

i. Portable eye wash station.

j. Water supply for immediate flushing of spillage, if appropriate.

k. Shovel and container for immediate containerization of spillage-impacted soils, if appropriate.

4.0 PROCEDURE

4.1 Examine all bottles and verify that they are clean and of the proper type, number, and volume for the sampling to be conducted.

4.2 Label bottles carefully and clearly with project name and number, site location, sample identification, date, time, and the sampler's initials using an indelible marker.

4.3 Collect samples in the proper manner (refer to specific sampling SOPs).

4.4 Conduct preservation activities as required after each sample has been collected. Field preservation must be done immediately and must not be done later than 30 minutes after sample collection.

4.5 Conduct QC sampling, as required.

4.6 Seal each container carefully and place in an individual "zip lock" bag.

4.7 Organize and carefully pack all samples in the cooler immediately after collection (e.g., bubble wrap). Insulate samples so that breakage will not occur.

4.8 Complete and place the chain-of-custody form in the cooler after all samples have been collected. Maintain one copy for the project file. If the cooler is to be transferred several times prior to shipment or delivery to the laboratory, it may be easier to tape the chain-of-custody to the exterior of the sealed cooler. When exceptionally hazardous samples are known or suspected to be present, this should be identified on the chain-of-custody as a courtesy to the laboratory personnel.

4.9 Add additional ice as necessary to ensure that it will last until receipt by the laboratory.

4.10 Seal the cooler with packing tape and a custody seal. Record the number of the custody seal in the field notebook and on the field form. If there are any exceptionally hazardous samples, then shipping regulations should be examined to ensure the sample containers and coolers are in compliance and properly labeled.

4.11 Samples collected from Monday through Friday will be delivered to the laboratory within 24 hours of collection. If Saturday delivery is not available, samples collected on Friday must be delivered by Monday morning. Check the work plan to determine if certain analytes require a shorter delivery time.

4.12 Maintain the shipping bill for the project files if overnight mail is utilized and call the laboratory the following day to confirm receipt.

END OF PROCEDURE