Remedial Investigation Work Plan

BCP SITE NO. C915349
3077 UNION ROAD
ORCHARD PARK, NEW YORK

Revised September 2020 T0105-017-010

Prepared For: 570 DAB 4, LLC



Prepared By:

TurnKey Environmental Restoration, LLC

In Association With:

Benchmark Environmental Engineering & Science, PLLC

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RI WORK PLAN

3077 Union Road Site
Orchard Park, New York

Certification

I, Thomas H. Forbes, certify that I am currently a NYS registered professional engineer and that this September 2020 revised Remedial Investigation Work Plan for the 3077 Union Road Site was prepared in accordance with applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

10-6-20
Date



BENCHMARK TURNKEY

RI WORK PLAN

3077 Union Road Site
Orchard Park, New York

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1.0 INTRODUCTION

This document presents the proposed scope of work and implementation procedures for completion of a Remedial Investigation (RI) at the 3077 Union Road Site (Site), located at 3077 Union Road, Orchard Park, New York (see Figures 1 and 2).

The Applicant, 570 DAB 4, LLC (570 DAB 4), acting as a Volunteer, elected to pursue cleanup and redevelopment of the Site under the New York State Brownfield Cleanup Program (BCP) and submitted a BCP Application to the New York State Department of Environmental Conservation (NYSDEC) in July 2019 (revised September 2019). 570 DAB 4 and NYSDEC executed the Brownfield Cleanup Agreement (BCA) on January 22, 2020. The RI will be completed by TurnKey Environmental Restoration, LLC in association with Benchmark Environmental Engineering & Science, PLLC (herein referred to as TurnKey-Benchmark), on behalf of the Applicant. The work will be completed in accordance with NYSDEC DER-10 guidance (Ref. 1). Following investigation and remediation, a portion of the Site along Union Road will be redeveloped for commercial retail use.

1.1 Site Background

The 17.91-acre Site consists of one tax parcel designated as 3077 Union Road, SBL No. 152.12-4-6.1. The western portion of the Site is developed with two vacant structures and an associated parking lot. Building 1 is a vacant plaza with historic tenants that included a dry cleaner and automotive repair. Building 2 has a history of being used for storage and equipment repair/maintenance. The remaining area is wooded vacant land.

The Site was identified as having been vacant/agricultural land from 1894 to 1965. The Site has been commercial and vacant wooded land since 1965. Historical uses of Building 1 include dry cleaning, automotive repair, and other commercial tenants. Historical uses of Building 2 include concrete/masonry contractor storage and equipment repair/maintenance. The historic use of the Site as a dry cleaner has apparently impacted the Site as evidenced by chlorinated volatile organic compounds (CVOCs) that have been detected in the soil and groundwater exceeding 6 NYCRR Part 375 Unrestricted soil cleanup objectives (USCOs, Ref. 2), Residential SCOs (RSCOs), Protection of Groundwater SCOs (PGWSCOs), and T.O.G.S 1.1.1 Groundwater Quality Standards/Guidance Values (GWQS/GV, Ref. 3)).

1.2 Project Objectives

For sites entering the BCP at the point of investigation, NYSDEC requires completion of an RI. The primary objectives of this RI are to:

- Collect additional media samples, under appropriate quality assurance/ quality control criteria, better delineate the nature and extent of contamination.
- Assess the groundwater flow direction and groundwater quality conditions at the Site.
- Determine if the concentrations of constituents of concern in site media pose potential unacceptable risks to human health and the environment.
- Provide the data needed to evaluate potential remedial measures and determine appropriate actions to address potential risks.

As part of the RI, sampling data will be used to evaluate whether remedial alternatives can meet the cleanup objectives. The intended uses of these data dictate the confidence levels. Two data confidence levels will be employed in the RI: screening level data and definitive level data. In general, screening level confidence will apply to field measurements, including photoionization detector (PID) measurements, groundwater elevation measurements, and field analyses (i.e., pH, temperature, turbidity, dissolved oxygen (DO), oxidation-reduction potential (ORP), and specific conductivity). Definitive level confidence will apply to samples for chemical analysis. The applicability of these levels of data will be further specified in the Quality Assurance Project Plan (QAPP) in Section 4.0. Sampling and analytical acceptance and performance criteria such as precision, accuracy, representativeness, comparability, completeness, and sensitivity, are defined in the QAPP.

1.3 Project Organization and Responsibilities

The Applicant, 570 DAB 4, has applied to the New York State BCP as a non-responsible party (Volunteer) per ECL§27-1405. TurnKey-Benchmark will complete the RI field work and manage the brownfield cleanup on behalf of the Applicant. The Region 9 NYSDEC Division of Environmental Remediation (DER), in consultation with the New York State Department of Health (NYSDOH), shall observe the RI and remedial actions to be performed, to ensure compliance with the Brownfield Cleanup Agreement (BCA) and the approved RI Work Plan (RIWP).

TurnKey-Benchmark personnel as well as subcontractors for this project have not been determined at this time. Once pricing is secured, subcontract agreements are in place, and a field schedule determined, resumes for the selected project team will be provided to the Department, if requested. Appendix A includes the résumé for TurnKey-Benchmark's Project Manager. The table below presents the planned project team.

Company	Role	Name	Contact Information
570 DAB 4, LLC	Applicant Contact	Adam Harris	(716) 886-1100 ajh@benderson.com
TurnKey-Benchmark	Project Officer	Michael Lesakowski	(716) 856-0599 mlesakowski@bm-tk.com
TurnKey-Benchmark	Project Manager	Bryan Mayback	(716) 856-0599 bmayback@bm-tk.com
TurnKey-Benchmark	QA Officer	Lori Riker	(716) 856-0599 lriker@bm-tk.com
TurnKey-Benchmark	Field Team Leader/ Site Safety and Health Officer	TBD	TBD
TBD	Analytical Testing	TBD	TBD
TBD	Drilling Services	TBD	TBD
TurnKey-Benchmark	Excavation Services	Michael Lesakowski	(716) 856-0599 mlesakowski@bm-tk.com
Data Validation Services	Data Validation	Judy Harry	518-251-4429 harry@frontiernet.net
NYSDEC	NYSDEC Project Manager	David Locey	(716) 851-7220 david.locey@dec.ny.gov
NYSDEC	NYSDEC	Andrea Caprio	(716) 851-7220 andrea.caprio@dec.ny.gov
NYSDOH	NYSDOH Project Manager	Mark S. Sergott	(518) 402-7860 beeidoh.ny.gov

2.0 SITE DESCRIPTION

2.1 General

The Site is located between Union Road and Southwestern Boulevard in a moderately developed commercial and residential area in the Town of Orchard Park, Erie County, New York. The Site is bordered by vacant wooded land and commercial properties to the north and to the south, Union Road to the west, and Southwestern Boulevard and wooded land to the east. The western portion of the Site is developed with two vacant structures and an associated parking lot. Building 1 is a vacant plaza with historic tenants that included a dry cleaner and automotive repair. Building 2 has a history of being used for storage and equipment repair/maintenance by a contractor/masonry company. The remaining area is wooded vacant land.

2.2 Site Topography and Drainage

The Site has moderate topographic relief, sloping from the eastern portion of the Site toward Union Road, and slightly sloping toward Southwestern Boulevard. Exterior surfaces are primarily covered with green space, with some asphalt parking and access roads along Union Road. Precipitation (i.e., rain or melting snow) primarily infiltrates into the ground surface; precipitation that falls on the impervious surfaces moves to storm drains in the parking lots and roadways via overland flow. Surface and shallow groundwater flow are likely affected by various cycles of development and filling, as well as utilities and foundations.

2.3 Geology and Hydrogeology

2.3.1 Overburden

The Site is located within the Erie-Ontario Lowlands, which is typified by little topographic relief, and gently slopes westward toward Lake Erie, except in the immediate vicinity of major drainage ways. The surficial geology of the Erie-Ontario Lowlands has developed from lacustrine deposits or till that may contain both limestone and shale. According to the United States Department of Agriculture (USDA) Web soil survey, Site soils are characterized as Remsen silty clay loam with 3 to 8 percent slopes (RfB) and Remsen silty clay loam with 0 to 3 percent slopes (RFA). The Remsen silty clay loam is

described as a somewhat poorly drained soil derived from calcareous or neutral shale (see Ref. 4).

The Site overburden geology is generally described as asphalt pavement and subbase or topsoil overlying mixtures of sand, silt, clay, and/or gravel, underlain by 1 to 4 ft of weathered shale over shale bedrock. Fill is also observed underlying the asphalt/subbase in the top 1-2 ft of the overburden in the area surrounding Building 1. A layer of red brick pieces is observed at SB-1 and SB-2. of The RI will include further investigation of the overburden at the Site.

2.3.2 Bedrock

Based on the bedrock geologic map of Erie County (Ref. 5), the Site is situated over the Cashaqua and Middlesex Shales of the Sonyea Group, which are identified as Upper Devonian-aged gray shale with limestone nodules and basal black shale respectively (see Ref. 5). Subsurface investigations completed during previous investigations determined on-Site depth to bedrock to be approximately 6.5 to 13 feet below ground surface (fbgs). The RI will include further investigation of bedrock at the Site.

2.3.3 Hydrogeology

The Site is located within the Lake Erie-Niagara River major drainage basin, which is typified by little topographic relief, except in the immediate vicinity of major drainage ways. In the Erie-Niagara Basin, the major areas of groundwater are within coarser overburden deposits and limestone and shale bedrock. Regional groundwater generally flows west toward Lake Erie. Groundwater elevations surveyed during the previous investigations suggest that on-Site groundwater in the overburden and bedrock on the western portion of the Site flows northwest toward Smokes Creek. An intermittent stream runs through the eastern portion of the Site and flows north toward a tributary of Cazenovia Creek. Local groundwater flow may be influenced by subsurface features, such as excavations, utilities, and localized fill conditions. On-site groundwater flow will be further investigated during the RI.

2.4 Climate

Western New York has a cold continental climate, with moisture from Lake Erie causing increased precipitation. Average annual precipitation is reportedly 40.47 inches for

rainfall and 94 inches for snowfall. Average temperature is 48.25 degrees Fahrenheit. The ground and lakes typically remain frozen from December to March. Winds are generally from the southwest (USClimateData.com).

2.5 Population and Land Use

The Town of Orchard Park, encompassing 40.38 square miles, has a population of 29,054 (2010 US Census Bureau). The Site is currently zoned for commercial use.

The surrounding land is mixed use, including residential, commercial, and vacant commercial. Properties adjacent to the Site primarily include residential, commercial and vacant land.

2.6 Utilities and Groundwater Use

The Site has access to all major public and private utilities, including potable water (Erie County Water Authority), sanitary and storm sewers (Erie County Sewer District), electric (National Grid), and natural gas (National Fuel).

Groundwater at the Site is assigned Class "GA" by 6NYCRR Part 701.15. Currently, there are no deed restrictions on the use of groundwater at the Site; however, there are no groundwater supply wells on the property. Regionally, groundwater in the area has not been developed for industrial, agriculture, or public supply purposes.

2.7 Wetlands and Floodplains

There are state wetlands located within 0.5 miles of the Site and freshwater forested/shrub federal wetlands located within 1 mile of the site. The Site is not located within a flood zone.

2.8 Previous Investigations

A summary of the investigations that have occurred at the Site are presented below. Previous investigations described below are provided in Appendix B. Figure 3 illustrates previous investigation locations and areas of concern.

2.8.1 January 2018 – Phase I Environmental Site Assessment

TurnKey completed a Phase I Environmental Site Assessment, dated January 2018, on the subject Site. TurnKey identified the following recognized environmental conditions (RECs) as they relate to the 3077 Union Road Site:

- The dry cleaner and septic system identified in a 1967 survey, due to the anticipated use of solvents and the potential for subsurface soil and/or groundwater impacts.
- Historic automotive repair at Building 1 and equipment repair/maintenance with a floor drain at Building 2.
- The remaining hazardous/regulated materials and vehicle components (engines, etc.) remaining at the Site will require proper off-site disposal if not intended for future use.

Due to the history of dry cleaning, automotive repair, and equipment repair/maintenance, TurnKey recommended a Phase II Environmental Investigation at 3077 Union Road to assess subsurface soil and groundwater conditions.

2.8.2 February 2018 – Phase II Environmental Investigation

TurnKey completed a Phase II Environmental Investigation, dated February 2018, on the subject Site. The investigation consisted of sixteen soil borings (SB-1 through SB-16) with five piezometers (PZ-1 through PZ-5) installed. All soil borings and piezometers were located on the developed portion of the Site near Union Road. Findings of the Phase II are detailed below:

- The highest PID reading identified during the work was 2,200 ppm at SB-7 (4-6 ft). PID readings decreased to 150 ppm at SB-7 at the deeper 6 to 7 ft interval, which is just above bedrock.
- Laboratory analytical results revealed the presence of CVOC-impacted soil and groundwater east of the former dry cleaner at Building 1. The highest CVOC concentrations in soil and groundwater were identified at SB-7/PZ-3, located approximately five feet off the east wall of building 1. Additional information relative to soil and groundwater impacts identified at the Site is provided below:
    - Soil – Tetrachloroethene (PCE) and its degradation compounds trichloroethene (TCE) and cis-1,2-dichloroethene (cis-1,2-DCE) exceeded Part 375 USCOs, RSCOs, and/or PGWSCOs in soil samples collected from four soil borings (SB-3, SB-7, SB-8, and SB-11). PCE in soil at SB-7 (4-6 ft) was identified at a concentration exceeding its respective characteristic hazardous waste threshold.

- Groundwater – PCE and/or its degradation compounds TCE, cis-1,2-DCE, and vinyl chloride (VC) exceeded GWQS at PZ-2, PZ-3, and PZ-4. In addition, total xylenes exceeded its respective GWQS at PZ-2.

- The source of the CVOC-impacted soil and groundwater is reasonably attributable to the historic dry cleaner formerly located within the previous Gold N Ham tenant space. Xylenes in water may be attributed to the dry cleaner if a Stoddard/petroleum-based solvent was used.
- Based on the proximity of the existing building to the CVOC impacts, there is the potential for CVOC-impacted soil and groundwater beneath the existing building slab
- The elevated CVOC concentrations represent a potential vapor encroachment condition (VEC) whereby sub-slab soil vapor and/or indoor air with elevated concentrations of CVOCs may be present within the existing and future buildings if left unremediated.

2.8.3 January 2019 – Supplemental Phase II Environmental Investigation Report

TurnKey completed a Supplemental Phase II Environmental Investigation, dated January 2019, at the subject Site. The investigation consisted of one overburden monitoring well (MW-1) and three (3) bedrock monitoring wells (MW-1D, MW-2D, and MW-4D). Findings of the Supplemental Phase II are detailed below:

- TurnKey's initial Phase II activities completed at the Site in January 2018 identified CVOC impacts in overburden soil as high as 120 mg/kg total CVOCs (SB-7) and overburden groundwater concentrations as high as 56,020 ug/L total CVOCs (PZ-3) east of the former dry cleaner. Overburden total CVOC concentrations were as high as 38,100 ug/L (PZ-3) during the supplemental overburden groundwater sampling activities in January 2019.
- Acetone was observed in one overburden groundwater well above its respective GWQS (PZ-5).
- Based on the results of supplemental Phase II activities, VOCs in bedrock groundwater were not detected or were at concentrations significantly below GWQS except for a VC concentration of 4.7 ug/L at MW-2D, which slightly exceeds its GWQS of 2 ug/L.
- In conclusion, CVOC-impacted soil and overburden groundwater is present on-Site, which will require remediation.

2.9 Primary Constituents of Potential Concern (COPCs)

Based on findings to date, the Constituents of Potential Concern (COPCs) are presented by media below:

- ***Soil:*** CVOCs
- ***Groundwater:*** CVOCs
- ***Soil Vapor:*** CVOCs

3.0 REMEDIAL INVESTIGATION SCOPE OF WORK

The RI scope of work is focused on defining the nature and extent of on-site contamination and potential for off-site migration, identifying the source of contamination, defining chemical constituent migration pathways, qualitatively assessing human health and ecological risks (if necessary), and obtaining data of sufficient quantity and quality to perform an alternatives analysis.

Field team personnel will collect environmental samples in accordance with the rationale and protocols described in the QAPP in Section 4.0. United States Environmental Protection Agency (USEPA) and NYSDEC-approved sample collection and handling techniques will be used. Samples for chemical analysis will be analyzed in accordance with USEPA SW-846 methodology with an equivalent Category B deliverable package to meet the definitive-level data requirements. Analytical results will be evaluated by a third-party data validation expert in accordance with provisions described in the QAPP. Data submittals will be provided to the NYSDEC in accordance with the most current electronic data deliverables (EDD) protocols.

During intrusive outdoor RI activities, a Community Air Monitoring Plan (CAMP) will be followed. The CAMP is consistent with the requirements for community air monitoring at remediation sites as established by the NYSDOH and NYSDEC. Accordingly, it follows procedures and practices outlined under NYSDEC's DER-10 Appendix 1A (NYSDOH's Generic Community Air Monitoring Plan) and Appendix 1B (Fugitive Dust and Particulate Monitoring).

3.1 Preparation Activities

3.1.1 Utility Clearance

Prior to any intrusive activities, Dig Safely New York (Call 811) will be contacted by the Site contractor a minimum of three business days in advance of the work and informed of the intent to perform excavation work at the Site. If underground utilities are present on the property and anticipated to interfere with intrusive activities, the Applicant and NYSDEC will be contacted to discuss mitigating measures.

3.1.2 Clearing and Grubbing

Clearing and grubbing will be required in the portion of the Site located east/southeast of Building 2 due to the presence of dense vegetation which would impede

the advancement of test pits and soil borings. Prior to remedial investigation activities, trees and vegetation will be removed in order to create a path to each RI location and clear the space needed to operate the RI equipment.

3.1.3 Building 2 Inspection

The interior of Building 2 will be inspected prior to RI activities including any areas previously inaccessible during the Phase I ESA. The Phase I identified a floor drain and various hazardous/regulated materials in containers of five gallons or less in the eastern portion of Building 2. The floor drain will be assessed to determine whether it leads to the sanitary sewer. Any sediment discovered in the floor drain will be examined for any odors or a sheen, and a sample will be collected for analytical analysis as discussed in Section 3.4. Additionally, the abandoned hazardous/regulated materials discovered during the Phase I ESA including hydraulic oil, muriatic acid, clean strip, insulite, latex bending mixture, and roof cement will be removed and properly disposed.

3.2 Sewer and Drain Investigation

Two sanitary sewer manholes were observed on the property, one located east of the north end of Building 1, and one located southeast of Building 1. Benchmark will conduct a sewer and drain investigation on the sanitary sewer line that runs north-south between the manholes to identify if the sewer line is a potential offsite migration pathway for CVOCs. The investigation will include a sewer inspection, in which the orientation of sewer penetrations will be checked and sediment in the manhole will be evaluated for visual or olfactory evidence of impacts by CVOCs. Additionally, historic building permit and utility drawings will be reviewed to check the alignment, size, invert depth, and direction of flow of the sewer on the property. This information will be evaluated in the context of potential localized hydrogeological effects and factors potentially impacting contaminant fate and transport.

3.3 RI Soil/Fill Investigation

A soil/fill investigation will be completed on the ±1.91-acre developed, western portion of the Site (west end) and the ±16-acre undeveloped, eastern portion of the Site (east end) to further assess the extent of known historical contamination in the west end and to assess whether additional impacts exist throughout the Site. The soil/fill investigation will include the collection of surface soil samples and the completion of test pits and soil borings

to allow for characterization of soil/fill material and sample collection. Figure 4 presents the planned RI sample locations. Table 1 identifies the planned sampling and analytical program.

3.3.1 Surface Soil/Fill Investigation

Twenty surface soil samples (SS-1 through SS-20) will be collected across the Site. Four of the surface soil samples (SS-1 through SS-4) will be located in the west end, one located east of Building 1, and one each located north, east, and west of Building 2. The remaining sixteen surface soil samples (SS-5 through SS-20) will be spread out evenly throughout the east end. The surface soil samples will be collected from 0 to 2 inches below vegetative cover to allow for assessment of human exposure via incidental soil ingestion, inhalation of soil, or dermal contact with soil. As summarized on Table 1, the twenty surface soil samples will be analyzed for Target Compound List (TCL) SVOCs and Target Analyte List (TAL) metals. The four samples located in the west end and twelve of the samples located in the east end will also be analyzed for polychlorinated biphenyls (PCBs), herbicides, pesticides, 1,4-Dioxane, and per- and polyfluoroalkyl substances (PFAS). Soil samples to be analyzed for 1,4-dioxane and PFAS will be collected and analyzed in accordance with the Department's current sampling protocols. If elevated PID readings are noted during field screening, additional VOC samples may be collected in consultation with the Department. The soil/fill samples will be analyzed in accordance with USEPA SW 846 methodology with equivalent Category B deliverables to allow for independent third-party data usability assessment.

3.3.2 Subsurface Soil/Fill Investigation

Test pits and soil borings will be advanced to investigate the subsurface and collect soil samples All soil samples will be field screened for the presence of volatile organics using a calibrated PID with a 11.7 eV lamp, as a procedure for ensuring the health and safety of personnel at the Site and to identify potential impacts in soil samples for laboratory analysis. Upon reaching the completion depth of each location, field visual/olfactory and PID results will be reviewed and sample intervals will be determined at each sampling location.

3.3.2.1 Test Pit Investigation

Thirty-four test pits (TP-1 through TP-34) will be excavated to investigate the subsurface and collect soil samples. One test pit (TP-1) will be excavated in the west end, east of building 2 and proximate to SB-7. The remaining thirty-three test pits (TP-2 through TP-34) will be excavated in the undeveloped, east end. Test pits will be excavated to a

maximum depth of 15 feet, at least five feet into the upper water bearing zone, or until equipment refusal, whichever is shallower. Test pits will be completed using a track-mounted excavator.

3.3.2.2 Soil Boring Investigation

Seven internal soil borings (SB-17 through SB-23), seven external overburden soil borings (MW-8 through MW-14), and one external bedrock soil boring (MW-8D) will be advanced to investigate the subsurface and collect soil samples. Three of the internal soil borings (SB-17, SB-21, and SB-23) will be converted into piezometers (PZ-6, PZ-7, and PZ-8, respectively), and all eight external soil borings will be converted into monitoring wells (MW-8 through MW-14, and MW-8D). The interior borings will be completed with a mobile direct-push rig due to interior access limitations. Interior soil boring locations are subject to change based on building accessibility, and in consultation with the Department. Exterior overburden borings will be advanced using a traditional hollow stem auger (HSA) drill rig to a target depth of 15 feet, at least five feet into the upper water bearing zone, or until equipment refusal, whichever is shallower [based on previous investigations depth to bedrock on the western portion of the Site ranged from approximately 4 to 13 fbgs]. The exterior bedrock well will be advanced using an HSA drill rig until equipment refusal at bedrock. An NQ-2 core barrel will be used to advance the boring to a depth of approximately 10 ft below the top of bedrock.

3.3.3 Soil/Fill Sample Collection and Analysis

Soil/fill samples will be collected to further delineate the horizontal and/or vertical extent of the known contamination and to determine if other impacts requiring remediation are present at the Site. The vegetated eastern portion of the Site is undeveloped and therefore unlikely to be contaminated. Additionally, CVOCs identified in the developed western end of the Site are not likely to be transported toward the undeveloped eastern end of the Site as groundwater flow direction was previously determined to be toward the northwest. Therefore, samples will be collected from eleven of the thirty-three test pit locations and the six soil boring locations in the east end. The remaining exploratory test pits will be used for overburden characterization and field screening. However, in consultation with the Department, additional samples may be collected from additional test pit or soil boring locations for laboratory analysis if field conditions warrant additional samples.

Samples will be also be collected from all six internal soil borings and the test pit (TP-1) and soil boring (MW-8) locations in the west end to further characterize the developed area.

The sample interval identified as the most impacted (i.e., greatest PID scan result and/or evidence of visual/olfactory impacts) at investigation locations will be selected for laboratory analysis. If either the impacts are ubiquitous from grade to final depth or no impacts were identified, the soil/fill directly above the water table will be selected for analysis. However, if water is not encountered at the depth of sampling, the sample interval will be selected based on the professional discretion of the field personnel and in consultation with the NYSDEC. If differentiable impacts are noted within a given sample location during the investigation, additional samples will be collected to characterize the different material.

Samples will be collected and analyzed for TCL VOCs, SVOCs, TAL metals PCBs, pesticides, and herbicides at the eleven test pit locations and six external soil boring locations in the east end. The eleven test pit locations will also be analyzed for 1,4-dioxane and PFAS. In the west end, samples will be collected and analyzed for TCL SVOCs, TAL metals PCBs, pesticides, herbicides, 1,4-dioxane, and PFAS at the test pit (TP-1) and external soil boring (MW-8) locations. MW-8 will also be analyzed for TCL VOCs. One internal soil boring (SB-23) will be analyzed for TCL VOCs, TCL SVOCs, TAL metals, PCBs, pesticides, and herbicides. TCL VOCs only will be analyzed at the remaining six interior soil boring locations within Building 1 proximate to the known area of VOC contamination (SB-17 through SB-22). Soil samples to be analyzed for 1,4-dioxane and PFAS will be collected and analyzed in accordance with the Department's current sampling protocols. En Core® samplers will be used to collect RI VOC soil samples. Remaining samples will be collected and placed into pre-cleaned laboratory provided sample bottles, cooled to 4ºC in the field, and transported under chain-of-custody (COC) command to a NYSDOH Environmental Laboratory Approval Program (ELAP) certified analytical laboratory.

3.4 Surface Water and Sediment Investigation

An unnamed, intermittent stream enters the Site from the east, flows north through the eastern end of the Site, and exits the Site through the northern boundary. Two sediment samples (SED-1 and SED-2) and two surface water samples (SW-1 and SW-2) will be collected from the stream as shown on Figure 4 at the culvert on the west side of Southwestern Boulevard and downstream along the northern boundary. The samples will be

analyzed for TCL VOCs, TCL SVOCs, metals, PCBs, pesticides, and herbicides, in accordance with the sampling and analysis plan (see Table 1). If any sediment is discovered in the Building 2 floor drain as discussed in Section 3.1.3, an additional sediment sample (SED-3) will be collected and analyzed for TCL VOCs, TCL SVOCs, metals, PCBs, pesticides, and herbicides. Field personnel will be prepared to collect additional samples, in consultation with the Applicant and NYSDEC, if additional potential impacts are noted during the RI.

3.5 Groundwater Investigation

One shallow overburden well (MW-8), one bedrock well (MW-8D), and three one-inch interior piezometers (PZ-6, PZ-7, and PZ-8) will be installed in the west end of the Site and six shallow overburden wells (MW-9 through MW-14) will be installed in the east end of the Site. The well locations were chosen to supplement the layout of the existing wells and piezometers to better understand groundwater flow and CVOC contamination across the Site.

Overburden wells will be drilled using an HSA drill rig to monitor the same groundwater interval as previously monitored in the existing overburden wells. The shallow overburden wells will be drilled to approximately 15 fbgs with a target minimum of five feet below the first encountered groundwater. Interior wells will be drilled with a mobile direct-push rig due to interior access limitations. Bedrock wells will be drilled to the top of competent bedrock, estimated at 4-13 fbgs, using an HSA drill rig and 10 ft into bedrock using a NQ-2 core barrel.

3.5.1 Monitoring Well Installation

All non-dedicated drilling tools and equipment will be decontaminated between boring locations using potable tap water and a phosphate-free detergent (e.g., Alconox).

Each shallow and bedrock monitoring well will be constructed with two-inch diameter Schedule (SCH) 40 PVC with a minimum 10-foot flush joint SCH 40 PVC 0.010-inch machine-slotted well screen. The piezometers will be installed as one-inch diameter wells due to space and drilling equipment requirements. Each well screen and attached riser will be placed at the bottom of each borehole and a silica sand filter pack (size #0) will be installed from the base of the well to a maximum of two feet above the top of the screen. A bentonite chip seal will then be installed and allowed to hydrate sufficiently to mitigate the

potential for downhole grout contamination. The newly installed monitoring wells will be completed with keyed-alike locks, a lockable J-plug, and a steel flush mounted road box.

Drill cuttings will be redeposited on-site unless gross contamination (i.e., visible product) is encountered or there are excess cuttings, in which case they will be placed in sealed New York State Department of Transportation (NYSDOT)-approved drums and labeled for subsequent characterization and disposal.

3.5.2 Well Development

After installation, but not within 24 hours, newly installed monitoring wells and piezometers will be developed in accordance with TurnKey-Benchmark and NYSDEC protocols. Overburden and bedrock monitoring wells (MW-1, MW-1D, MW-2D, and MW-4D) and piezometers (PZ-2 through PZ-5) remaining from the previous investigations will also be re-developed prior to sampling. Development of the monitoring wells and piezometers will be accomplished with dedicated disposable polyethylene bailers via surge and purge methodology. Field parameters including pH, temperature, turbidity, DO, ORP, and specific conductance will be measured periodically (i.e., every well volume or as necessary) during development. Field measurements will continue until they became relatively stable. Stability will be defined as variation between measurements of approximately 10 percent or less with no overall upward or downward trend in the measurements. A minimum of three well volumes will be evacuated from each monitoring well. Development water from the monitoring wells will be discharged to the ground surface in the vicinity of the monitoring well being developed. If impacts are noted during development including odors, sheen, light non-aqueous phase liquid (LNAPL) or dense non-aqueous phase liquid (DNAPL), well development water will be containerized in NYSDOT-approved drums and labeled per monitoring well location. Based on the RI groundwater analytical results, TurnKey-Benchmark and the Department will determine if the containerized development water is acceptable for surface discharge or requires subsequent on-site treatment and/or off-site disposal.

3.5.3 Groundwater Sample Collection

Sampling will be performed as soon as practical after purging provided the well has recovered sufficiently to sample or within 24 hours after evacuation if the well recharges slowly. Prior to sample collection, static water levels will be measured and recorded from all new and previously installed monitoring wells and piezometers to facilitate the preparation

of a Site-wide isopotential map. Following water level measurement, field personnel will purge and sample monitoring wells using a submersible pump with dedicated pump tubing following low-flow/minimal drawdown purge and sample collection procedures. In the event of pump failure or the saturated unit does not permit the proper implementation of low-flow sampling, a dedicated polyethylene bailer will be used to purge and sample the well. Prior to sample collection via low-flow methodology, groundwater will be evacuated from each well at a low-flow rate (typically less than 0.1 L/min) while maintaining a generally consistent water level. Field measurements for pH, temperature, turbidity, DO, ORP, specific conductance and water level, as well as visual and olfactory field observations will be periodically recorded and monitored for stabilization. Low-flow purging will be considered complete when field parameters stabilize and when turbidity measurements fall below 50 Nephelometric Turbidity Units (NTU) or become stable above 50 NTU regardless of volume purged. Purging via disposable bailer, if necessary, will be considered complete following the removal of three well volumes and field parameter stabilization or to dryness, whichever occurs first. Upon stabilization of field parameters, groundwater samples will be collected and analyzed as discussed below.

Groundwater sampling methods will conform with protocol acceptable for the collection of the PFAS in accordance with the Department's recent emerging contaminant initiative. Sampling personnel will wear nitrile gloves while handling empty sample containers, filling sample containers, sealing sample containers, and placement into sample coolers. Clean nitrile gloves be worn while handling sample containers, during the groundwater sampling, and sealing/placement of samples into the laboratory supplied cooler. Sample collection methods that will be implemented during the RI include:

- **Submersible Pump with Dedicated Pump Tubing**
  Monitoring wells will be purged and sampled using a non-dedicated plastic submersible pump and dedicated HDPE or PVC tubing following low-flow (minimal drawdown) purge and sample collection procedures, as described above. Non-dedicated pumps will require decontamination prior to use at each well location and the collection of an equipment blank.

- **Disposable Bailer**
  If low flow is not feasible (e.g., due to depth to groundwater), wells of any depth (up to 100 fbgs) may be purged and sampled using a disposable HDPE or PVC bailer via direct grab. In general, a bottom filling dedicated bailer is attached to a length of dedicated hollow-braid polypropylene rope and lowered into the well smoothly and slowly as not to agitate the groundwater or damage

the well. Purging continues until a predetermined volume of water has been removed (typically three well volumes) or to dryness. Measurements for pH, temperature, specific conductance, dissolved oxygen and turbidity are recorded following removal of each well volume. The well is purged until the readings for indicator parameters stabilize or the well is purged to dryness.

Prior to, and immediately following collection of groundwater samples, field measurements for pH, temperature, turbidity, DO, ORP, specific conductance, and water level, as well as visual and olfactory field observations will be recorded. All collected groundwater samples will be placed in pre-cleaned, pre-preserved laboratory provided sample bottles, cooled to 4°C in the field, and transported under COC command to a NYSDOH ELAP-approved laboratory for analysis.

3.5.4 Groundwater Sample Analyses

The seven shallow overburden wells, one bedrock well, and three piezometers installed during the RI and the one overburden well, three bedrock wells, and four remaining piezometers that were installed during the previous investigations will be sampled and analyzed for TCL VOCs. Samples will be analyzed for TCL SVOCs, TAL metals, PCBs, pesticides, and herbicides at one piezometer (PZ-8). Samples will also be analyzed for TCL SVOCs, TAL metals, PCBs, pesticides, herbicides, 1,4-dioxane and PFAS at the eight shallow overburden wells (MW-1, MW-8, MW-9 through MW-14) and two of the four bedrock wells (MW-1D and MW-8D). Note that MW-1/MW-1D and MW-8/MW-8D are paired overburden and bedrock wells and will be sampled for all parameters. Groundwater samples will be collected and analyzed in accordance with USEPA SW 846 methodology with equivalent NYSDEC Category B deliverables to allow for independent third-party data usability assessment. Samples collected for 1,4-dioxane will be analyzed via EPA Method 8270 Selective Ion Monitoring (SIM) mode and samples collected for PFAS analysis will be analyzed via a modified EPA Method 537 to achieve reporting limits of 2 nanograms per liter (ng/L) (see Table 2).

3.6 Soil Vapor Investigation

Although there is not currently a redevelopment plan, the existing on-site buildings will be demolished during future remediation/redevelopment activities. Therefore, no soil vapor intrusion investigation will be completed within Building 1 or Building 2 at this time. However, four soil vapor samples will be collected within the western portion of the Site to

evaluate whether VOC vapors from the former dry-cleaning operation have migrated into the shallow soils of the Site. Three of the four soil vapor samples will be sub-slab soil vapor samples collected from beneath Building 1, SV-1 will be collected from north of the former dry cleaner, SV-2 will be collected south of the former dry cleaner, and SV-3 will be collected southeast of the former dry cleaner. The fourth soil vapor sample (SV-4) will be collected from beneath the parking lot west of Building 1. Soil vapor sample locations are shown on Figure 4. One ambient outdoor air sample will also be collected concurrent with the soil vapor samples. The outdoor field-located air sample will be collected from ground level at an upwind location at the Site, as determined on the day of soil vapor sampling activities. Soil vapor probes will be installed in general conformance with the NYSDOH Soil Vapor Intrusion Guidance.

Each soil vapor sampling probe will be installed using specialized stainless-steel soil probe rods. Sampling equipment includes 6-inch long sampling screens, ¼-inch inside diameter inert sample tubing and dedicated Summa canisters. Soil boreholes will be advanced to a target depth of 6-8 fbgs using ¾-inch inside diameter steel rods. The steel rod will be equipped with an anchor point at the driving end of the rod. The anchor point will be connected to the sampling screen and tubing on the inside of the steel rod. Once the steel rod is advanced to the target depth, the steel rod will be retracted, leaving the anchor point, sampling screen and sampling tubing within the borehole annulus. Glass beads will be poured around the sampling screen in a manner to cover the entire length of the sampling screen. Bentonite or bentonite/soil mixture will be placed above the glass beads to the ground surface to create a seal to prohibit infiltration of ambient air into the sampling area.

Once the sample probes are installed, the probe and tubing will be purged (three volumes) using a calibrated syringe as required by NYSDOH guidance and helium tracer gas will be used during the purging phase (in the same manner as recommended for subslab vapor probes) to ensure that the probes are well sealed. Samples will be collected over an approximate 8-hour period. All soil vapor samples will be collected and analyzed by EPA Method TO-15 in laboratory provided certified-clean sampling cannisters and regulators.

Each canister will be fitted with a sampling valve that uses a critical orifice and mass flow controller to regulate the air flow into the canister for the selected sampling period. The mass flow controller will maintain a relative constant air flow rate throughout the sampling period. Summa canister valves will remain closed until the sample holes are complete and all the canisters are in their respective positions. The valves will then be

opened for the designated collection period. Full chain of custody will be maintained for all canisters from time of shipping from the laboratory to the time of analysis.

3.7 Field Specific Quality Assurance/Quality Control Sampling

In addition to the soil/fill and groundwater samples described above, field-specific quality assurance/quality control (QA/QC) samples will be collected and analyzed to ensure the reliability of the generated data as described in the QAPP (see Section 4.0) and to support the required third-party data usability assessment effort. Site-specific QA/QC samples will include matrix spikes, matrix spike duplicates, blind duplicates, and trip blanks.

3.8 Decontamination and Investigation-Derived Waste Management

Every attempt will be made to use dedicated sampling equipment during the RI; however, if non-dedicated equipment is required and/or used, the equipment will be decontaminated, at a minimum, with a non-phosphate detergent (i.e., Alconox®) and potable water mixture, rinsed with distilled water, and air-dried before each use in accordance with TurnKey-Benchmark's field operating procedure (FOP) presented in Appendix C (see Table 3). All decontaminated sampling equipment will be kept in a clean environment prior to sample collection. Heavy equipment, such as an excavator (if used) and drilling tools, will be decontaminated by the subcontractor, as necessary.

RI generated drilling spoils, groundwater, decontamination rinse water, or other investigative-derived waste (IDW) not exhibiting gross contamination (i.e., visible product, odor, sheen, etc.) will be returned to the borehole from which it was removed (soil/fill) or discharged to the ground surface (groundwater and rinse water) if it can infiltrate the ground in the vicinity from which it was generated. IDW exhibiting gross contamination will be placed in sealed NYSDOT-approved drums and labeled for subsequent characterization and disposal. All generated IDW drums will be labeled alpha-numerically with regard to contents, origin, and date of generation using a paint stick marker on two sides and the top of each drum. Characterization analytical results of containerized IDW will be used to determine if spoils can be returned to the ground surface or used on-site, or if the spoils require treatment and/or off-site disposal. Drums will be securely staged on-site pending characterization analyses and remedial measures assessment. Field personnel will coordinate the on-site handling and temporary storage of IDW drums, including transportation, characterization sampling, and off-site disposal arrangements.

Discarded personal protective equipment (PPE) (i.e., latex gloves, Tyvek, paper towels, etc.) and disposable sampling equipment (i.e., bailers) will be placed in sealed plastic garbage bags and disposed as municipal solid waste.

3.9 Site Mapping

A Site map showing sampling locations and relevant Site features will be developed during the field investigation. TurnKey-Benchmark will employ a handheld GPS unit to identify the sample locations relative to State planar grid coordinates. Monitoring well elevations will be measured by TurnKey-Benchmark's surveyor. An isopotential map showing the general direction of groundwater flow will be prepared based on water level measurements relative to United States Geological Survey (USGS) vertical datum.

3.10 Documentation

RI field activities will be documented in a project field book, field activities daily log (FADL) and/or handheld Rugged Reader® personal digital assistant (PDA). This logbook/ PDA will provide a record of activities conducted at the Site. Entries will be signed and dated at the end of each day of fieldwork (or as produced) by the Field Team Leader. Field notes will include the date and time of all entries; names of personnel on-site; weather conditions (temperature, precipitation, etc.); and location and description of activity. Progress photographs from a set location will be collected to document development activities and intrusive construction activities. Field personnel will, at a minimum, complete the following standard field forms (included in Appendix D):

- COC Form (per selected laboratory)
- Equipment Calibration Log
- Field Activity Daily Log (FADLs)
- Field Borehole/Monitoring Well Log
- Groundwater Field Form
- Investigative-Derived Waste Container Log (if necessary)
- Photographic Log
- Real-Time Air Monitoring Log
- Test Pit Excavation Log
- Problem Identification Report (if necessary)
- Corrective Measures Report

4.0 QUALITY ASSURANCE PROJECT PLAN

A Quality Assurance Project Plan (QAPP) has been prepared in support of the RI activities. The QAPP dictates implementation of the investigation tasks delineated in this Work Plan. A Sampling and Analysis Plan (SAP) identifying methods for sample collection, decontamination, handling, and shipping is provided below.

The QAPP will assure the accuracy and precision of data collection during the Site characterization and data interpretation periods. The QAPP identifies procedures for sample collection to mitigate the potential for cross-contamination, as well as analytical requirements necessary to allow for independent data validation. The QAPP has been prepared in accordance with USEPA's Requirements for QAPPs for Environmental Data Operations (Ref. 6); the EPA Region II CERCLA Quality Assurance Manual (Ref. 7), and NYSDEC's DER-10 Technical Guidance for Site Investigation and Remediation (Ref. 1).

4.1 Scope of the QAPP

This QAPP was prepared to provide quality assurance guidelines to be implemented during RI activities and may be modified for subsequent phases of investigative work. The QAPP provides:

- A means to communicate to the persons executing the various activities exactly what is to be done, by whom, and when.
- A culmination to the planning process that ensures that the program includes provisions for obtaining quality data (e.g., suitable methods of field operations).
- A historical record that documents the investigation in terms of the methods used, calibration standards and frequencies planned, and auditing planned.
- A document that can be used by the Project Manager and QA Officer to assess if the activities planned are being implemented and their importance for accomplishing the goal of quality data.
- A means to document and track project data and results.
- Detailed descriptions of the data documentation materials and procedures, project files, and tabular and graphical reports.

The QAPP is primarily concerned with the quality assurance and quality control (QA/QC) aspects of the procedures involved in the collection, preservation, packaging, and transportation of samples; field testing; record keeping; data management; COC procedures;

laboratory analyses; and other necessary matters to assure that the investigation activities, once completed, will yield data whose integrity can be defended.

QA refers to the conduct of all planned and systematic actions necessary to perform satisfactorily all task-specific activities and to provide information and data confidence as a result of such activities. The QA for task-specific activities includes the development of procedures, auditing, monitoring and surveillance of the performance.

QC refers to the activity performed to determine if the work activities conform to the requirements. This includes activities such as inspections of the work activities in the field (e.g., verification that the items and materials installed conform to applicable codes and design specifications). QA is an overview monitoring of the performance of QC activities through audits rather than first time inspections.

4.2 QAPP Organization and Responsibility

The principal organizations involved in verifying achievement of data collection goals for the 3077 Union Road Site include the NYSDEC, NYSDOH, 570 DAB 4 (Volunteer), TurnKey-Benchmark (Volunteer's Consultant), the test pit and drilling subcontractor(s), the independent environmental laboratory, and the independent third-party data validator. Roles, responsibilities, and required qualifications of these organizations are discussed in the following subsections. Appendix A includes select resumes.

4.2.1 Volunteer

570 DAB 4 ("Volunteer") will be responsible for complying with the QA requirements as specified herein and for monitoring and controlling the quality of the Brownfield cleanup construction either directly or through their designated environmental consultant and/or legal counsel. The Applicant will also have the authority to select Remedial Action Contractor(s) to assist in fulfilling these responsibilities. The designated Project Manager is responsible for implementing the project and has the authority to commit the resources necessary to meet project objectives and requirements.

4.2.2 Environmental Consultant

TurnKey Environmental Restoration, LLC in association with Benchmark Environmental Engineering & Science, PLLC is the prime engineering and scientific consultant on this project and is responsible for the implementation of the RI Work Plan including, but not limited to, field operations, laboratory testing, data management, data

analysis, and reporting. Any one member of TurnKey-Benchmark's staff may fill more than one of the identified project positions (e.g., field team leader and site safety and health officer). The various quality assurances, field, laboratory, and management responsibilities of key project personnel are defined below.

- *Project Officer (PO):* *Michael Lesakowski*

  The PO has the responsibility for ensuring conformance with the BCP program requirements. The PO will:

  - Report directly to the Applicant and the NYSDEC/ NYSDOH Project Coordinators.
  - Be responsible for project oversight.
  - Define project objectives and develop a detailed work plan schedule.
  - Acquire and apply technical and corporate resources as needed to assure performance within budget and schedule constraints.
  - Review the work performed on the project to assure its quality, responsiveness, and timeliness.
  - Certify deliverables before their submission to NYSDEC.

- *Project Manager (PM):* *Bryan Mayback*

  The PM has the responsibility for ensuring that the project meets the Work Plan objectives. The PM will:

  - Report directly to the Applicant Project Coordinator and the NYSDEC/ NYSDOH Project Coordinators.
  - Be responsible for technical and project oversight.
  - Define project objectives and develop a detailed work plan schedule.
  - Establish project policy and procedures to address the specific needs of the project as a whole, as well as the objectives of each task.
  - Develop and meet ongoing project and/or task staffing requirements, including mechanisms to review and evaluate each task product.
  - Review the work performed on each task to assure its quality, responsiveness, and timeliness.
  - Review and analyze overall task performance with respect to planned requirements and authorizations.
  - Review all deliverables before their submission to NYSDEC.
  - Develop and meet ongoing project and/or task staffing requirements, including mechanisms to review and evaluate each task product.

- Ultimately be responsible for the preparation and quality of interim and final reports.
- Represent the project team at meetings.

- *FTL/SSHO:* *To Be Determined*

  The Field Team Leader (FTL) has the responsibility for implementation of specific project tasks identified at the Site and reports directly to the Project Manager. The FTL will:

  - Be responsible for the supervision of project field personnel, subconsultants, and subcontractors.
  - Define daily work activities.
  - Orient field staff concerning the project's special considerations.
  - Monitor and direct subcontractor personnel.
  - Review the work performed on each task to ensure its quality, responsiveness, and timeliness.
  - Assure that field activities, including sample collection and handling, are carried out in accordance with this QAPP.

  For this project the FTL will also serve as the Site Safety and Health Officer (SSHO) and, as such, be responsible for implementing the procedures and required components of the Site Health and Safety Plan (HASP), determining levels of protection needed during field tasks, controlling Site entry/exit, briefing the field team and subcontractors on site-specific health and safety issues, and all other responsibilities as identified in the HASP.

4.3 Quality Assurance (QA) Responsibilities

The QA Officer will have direct access to corporate executive staff as necessary, to resolve any QA dispute, and is responsible for auditing the implementation of the QA program in conformance with the demands of specific investigations and TurnKey-Benchmark policies, and NYSDEC requirements. The QA Officer has the authority to stop work on the investigation as deemed necessary in the event of serious QA issues.

- *Project QA Officer:* *Lori Riker*

  Specific function and duties of the QA Officer include:

  - Performing QA audits on various phases of the field operations.
  - Reviewing and approving QA plans and procedures.
  - Providing QA technical assistance to project staff.

- Reporting on the adequacy, status, and effectiveness of the QA program on a regular basis to the Project Officer.
- Responsible for assuring third party data review of all sample results from the analytical laboratory.

4.4 Field Responsibilities

TurnKey-Benchmark field staff for this project is drawn from a pool of qualified resources. The Project Manager will use staff to gather and analyze data and prepare various task reports and support materials. The designated technical team members are experienced professionals who possess the degree of specialization and technical competence required to effectively and efficiently perform the required work.

4.5 Quality Assurance Objectives for Measurement Data

The overall objectives and criteria for assuring quality for this effort are discussed below. This QAPP addresses how the acquisition and handling of samples and the review and reporting of data will be documented. The objectives of this QAPP are to address the following:

- The procedures to be used to collect, preserve, package, and transport groundwater samples.
- Field data collection.
- Record keeping.
- Data management.
- COC procedures.
- Precision, accuracy, completeness, representativeness, decision rules, comparability and level of QC effort conformance for sample analysis and data management by laboratory under EPA analytical methods.

4.6 Level of QC Effort for Sample Parameters

Field blank, method blank, trip blank, field duplicate, laboratory duplicate, laboratory control, standard reference materials (SRM) and matrix spike samples will be analyzed to assess the quality of the data resulting from the field sampling and analytical programs. The following QC samples will be provided:

- Field and trip blanks consisting of distilled water will be submitted to the analytical laboratories to provide the means to assess the quality of the data resulting from the field-sampling program. Field (equipment) blank samples are analyzed to check for procedural chemical constituents at the facility that may cause sample contamination. Trip blanks are used to assess the potential for contamination of samples due to contaminant migration during sample shipment and storage.
- Method blank samples are generated within the laboratory and used to assess contamination resulting from laboratory procedures.
- Duplicate samples are analyzed to check for sampling and analytical reproducibility.
- Matrix spike/matrix spike duplicate (MS/MSD) samples provide information about the effect of the sample matrix on the digestion and measurement methodology. Depending on site-specific circumstances, one MS/MSD should be collected for every 20 or fewer investigative samples to be analyzed for organic and inorganic chemicals of a given matrix (see Table 1).

The general level of QC effort will be one field (blind) duplicate and one field blank (when non-dedicated equipment is used) for every 20 or fewer investigative samples of a given matrix. Additional sample volume will also be provided to the laboratory to allow one site-specific MS/MSD for every 20 or fewer investigative samples of a given matrix. One trip blank consisting of distilled, deionized water will be included along with each sample delivery group of aqueous VOC samples.

4.7 Sampling and Analysis Plan

Methods and protocol to be used to collect environmental samples (i.e., soil/fill and groundwater) for this investigation are described in the TurnKey-Benchmark FOPs, which are summarized on Table 3 and presented electronically in Appendix C.

Table 1 summarizes the number and types of environmental samples to be collected. Table 2 summarizes the sample parameter lists, holding times and sample container requirements. To the extent allowed by existing physical conditions at the facility, sample collection efforts will adhere to the specific methods presented herein. If alternative sampling locations or procedures are implemented in response to facility specific constraints, each will be selected on the basis of meeting data objectives. Such alternatives will be approved by NYSDEC before implementation and subsequently documented for inclusion in the project file.

4.7.1 Custody Procedures

Sample custody is controlled and maintained through COC procedures. COC is the means by which the possession and handling of samples is tracked from the source (field) to the final disposition (i.e., the laboratory). A sample is considered to be in a person's custody if it is in the person's possession or view (after being in his or her possession) or it was in that person's possession and that person has locked it in a vehicle or room. Sample containers will be cleaned and preserved at the laboratory before shipment to the Site. The following section, and FOP for Sampling, Labeling, Storage, and Shipment, located in Appendix C, describes procedures for maintaining sample custody from the time samples are collected to the time they are received by the analytical laboratory.

4.7.2 Sample Storage

Samples are stored in secure limited-access areas. Walk-in coolers or refrigerators are maintained at 4°C±2°C, or as required by the applicable regulatory program. The temperatures of all refrigerated storage areas are monitored and recorded a minimum of once per day. Deviations of temperature from the applicable range require corrective action, including moving samples to another storage location if necessary.

4.7.3 Sample Custody

Sample custody is defined by this document as when any of the following occur:

- It is in someone's actual possession.
- It is in someone's view after being in his or her physical possession.
- It was in someone's possession and then locked, sealed, or secured in a manner that prevents unsuspected tampering.
- It is placed in a designated and secured area.

Samples are removed from storage areas by the sample custodian or analysts and transported to secure laboratory areas for analysis. Access to the laboratory and sample storage areas is restricted to laboratory personnel and escorted visitors only; all areas of the laboratory are therefore considered secure. If required by the applicable regulatory program, internal COC is documented in a log by the person moving the samples between laboratory and storage areas.

Laboratory documentation used to establish COC and sample identification may include the following:

- Field COC forms or other paperwork that arrives with the sample.
- The laboratory COC.
- Sample labels or tags are attached to each sample container.
- Sample custody seals.
- Sample preparation logs (i.e., extraction and digestion information) recorded in hardbound laboratory books that are filled out in legible handwriting and signed and dated by the chemist.
- Sample analysis logs (e.g., metals, GC/MS, etc.) information recorded in hardbound laboratory books that are filled out in legible handwriting and signed and dated by the chemist.
- Sample storage log (same as the laboratory COC).
- Sample disposition log, which documents sample disposal by a contracted waste disposal company.

4.7.4 Sample Tracking

All samples are maintained in the appropriate coolers prior to and after analysis. The analysts remove and return their samples as needed. Samples that require internal COC are relinquished to the analysts by the sample custodians. The analyst and sample custodian must sign the original COC relinquishing custody of the samples from the sample custodian to the analyst. When the samples are returned, the analyst will sign the original COC returning sample custody to the sample custodian. Sample extracts are relinquished to the instrumentation analysts by the preparatory analysts. Each preparation department tracks internal COC through their logbooks/spreadsheets. Any change in the sample during the time of custody will be noted on the COC (e.g., sample breakage or depletion).

4.7.5 Split Sampling

During the RI, the Department may split any soil, groundwater, or collect additional air samples at the Department's expense. TurnKey-Benchmark personnel will cooperate with the Department to facilitate split sampling, as requested.

4.8 Calibration Procedures and Frequency

This section describes the calibration procedures and frequency at which these procedures will be performed for both field and laboratory instruments.

4.8.1 Field Instrument Calibration

Quantitative field data to be obtained during groundwater sampling includes pH, turbidity, specific conductance, temperature, and depth to groundwater. Quantitative water level measurements will be obtained with an electronic sounder or steel tape, which require no calibration. Quantitative field data to be obtained during soil sampling include screening for the presence of volatile organic constituents using a PID.

FOPs located in Appendix C describe the field instruments used to monitor for these parameters and the calibration methods, standards, and frequency requirements for each instrument. Calibration results will be recorded on the appropriate field forms and in the Project Field Book.

4.9 Analytical Procedures

Samples collected during RI field activities will be analyzed by a NYSDOH ELAP-approved laboratory.

4.9.1 Field Analytical Procedures

Field procedures for collecting and preserving groundwater and soil samples are described in the FOPs (see Appendix C and Table 3).

4.10 Data Usability Evaluation

Data usability evaluation procedures shall be performed for both field and laboratory operations as described below.

4.10.1 Procedures Used to Evaluate Field Data Usability

Procedures to validate field data for this project will be facilitated by adherence to the FOPs (see Appendix C). The performance of all field activities, calibration checks on all field instruments at the beginning of each day of use, manual checks of field calculations, checking for transcription errors and review of field logbooks is the responsibility of the FTL.

4.10.2 Procedures Used to Evaluate Laboratory Data Usability

Data evaluation will be performed by the third-party data validator using the most current methods and quality control criteria from the USEPA's Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review (Ref. 8), and

Contract Laboratory Program, National Functional Guidelines for Inorganic Data Review (Ref. 9). The data review guidance will be used only to the extent that it is applicable to the SW-846 methods; SW-846 methodologies will be followed primarily and given preference over CLP when differences occur. Also, results of blanks, surrogate spikes, MS/MSDs, and laboratory control samples will be reviewed/evaluated by the data validator. All sample analytical data for each sample matrix shall be evaluated. The third-party data validation expert will also evaluate the overall completeness of the data package. Completeness checks will be administered on all data to determine whether deliverables specified in this QAPP are present. The reviewer will determine whether all required items are present and request copies of missing deliverables.

5.0 INVESTIGATION SUPPORT DOCUMENTS

5.1 Health and Safety Protocols

TurnKey-Benchmark has prepared a Site-specific HASP for use by TurnKey-Benchmark employees in accordance with 40CFR 300.150 of the NCP and 29CFR 1910.120. The HASP, provided in Appendix E, includes the following Site-specific information:

- A hazard assessment.
- Training requirements.
- Definition of exclusion, contaminant reduction, and other work zones.
- Monitoring procedures for site operations.
- Safety procedures.
- Personal protective clothing and equipment requirements for various field operations.
- Disposal and decontamination procedures.

The HASP also includes a contingency plan that addresses potential site-specific emergencies, and a Community Air Monitoring Plan (CAMP) that describes required particulate and vapor monitoring to protect the neighboring community during intrusive site investigation and remediation activities.

Health and safety activities will be monitored throughout the field investigation. A member of the field team will be designated to serve as the on-site SSHO throughout the field program. This person will report directly to the Project Manager and the Corporate Health and Safety Coordinator. The HASP will be subject to revision as necessary, based on new information that is discovered during the field investigation and/or remedial activities.

5.1.1 Community Air Monitoring

Real-time community air monitoring will be performed during the RI activities at the Site. A CAMP is included within TurnKey-Benchmark's HASP (see HASP Appendix E). Particulate and VOC monitoring will be performed along the downwind perimeter of the work area during installation of soil borings and monitoring wells in accordance with this plan. Interior air monitoring will be performed during interior work activities as described in Section 8.1.3 of the HASP. The CAMP is consistent with the requirements for community air monitoring at remediation sites as established by the NYSDOH and NYSDEC. Accordingly, it follows procedures and practices outlined under NYSDEC's DER-10

Appendix 1A (NYSDOH's Generic Community Air Monitoring Plan) and Appendix 1B (Fugitive Dust and Particulate Monitoring).

5.2 Citizen Participation Activities

NYSDEC will coordinate and lead community relations throughout the course of the project. TurnKey-Benchmark will support NYSDEC's community relations activities, as necessary. A Citizen Participation (CP) Plan will be prepared by TurnKey-Benchmark and submitted to NYSDEC under separate cover. The CP Plan will follow NYSDEC's CP Plans template for sites entering the BCP at the point of site investigation. The CP Plan and a copy of this RIWP will be available for review by the community at the following Document Repository:

Orchard Park Public Library
4570 South Buffalo Street
Orchard Park, New York 14127
Phone: (716) 662-9851
Fax: (716) 667-3098
Peggy Errington, Director

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Empire State Plaza – Corning Tower, Room 1787
Albany, New York 12237
(518) 402-7860
beei@health.ny.gov

6.0 REPORTING AND SCHEDULE

Upon completion of the RI fieldwork, a comprehensive Remedial Investigation/ Alternatives Analysis (RI/AA) Report will be completed summarizing the RI tasks completed.

6.1 Remedial Investigation Reporting

The RI section of the Report will include the following information and documentation, consistent with the NYSDEC's DER-10 Technical Guidance for Site Investigation and Remediation (Ref. 1):

- Introduction and background.
- A description of the Site and the investigation areas.
- A description of the field procedures and methods used during the RI.
- The collection of geospatial data and presentation of investigation drawings detailing the investigation locations, potential areas of concern, presence of buildings, and subgrade utilities.
- A discussion of the nature and rationale for any significant variances from the scope of work described in this RI Work Plan.
- The data obtained during the RI and historical investigations, considered by TurnKey-Benchmark to be of useable quality, including geochemical data, field measurements, validated analytical results, etc.
- Comparative criteria that may be used to calculate cleanup levels during the AA process, such as NYSDEC soil cleanup objectives (SCOs) and other pertinent regulatory standards or criteria.
- A discussion of contaminant fate and transport. This will provide a description of the hydrologic parameters of the Site and an evaluation of the lateral and vertical movement of groundwater.
- Conclusions regarding the extent and character of environmental impact in the media being investigated.
- The conclusions of the on-site and off-site qualitative human health and environmental exposure assessment completed in accordance with DER-10.
- Supporting materials for RI data including boring logs, monitoring well construction diagrams, laboratory analytical reports, and similar information.

- Data generated for the Site will be reported to NYSDEC electronically via EQuIS software where it will be stored in NYSDEC's Environmental Management System (EIMS).

In addition, TurnKey-Benchmark will require third-party analytical data review by a qualified, independent data validation expert for the RI and historic investigation data. Specifically, a Data Usability Summary Report (DUSR) will be prepared, with appropriate data qualifiers added to the results. The DUSR will follow NYSDEC format per the NYSDEC's September 1997 DUSR guidelines and May 2010 DER-10 guidance. The DUSR and any necessary qualifications to the data will be appended to the RI/AA Report.

6.2 Alternatives Analysis Report

The AA Report is developed in accordance with DER-10 to provide a forum for evaluating and selecting a recommended remedial approach. The results of the RI will be used to establish remedial goals and remedial action objectives (RAOs). A list of RAOs will be developed based on findings of the RI and the requirement for the selected remedial measures to be protective of public health and the environment under the proposed future use scenario. Proposed SCOs for the property will also be presented based on the proposed future use of the Site. SCOs will be based on published standards, criteria, and guidance (SCGs) and other NYSDEC and NYSDOH-accepted values.

Based on the RAOs and SCOs, volumes and areas of media potentially requiring additional remediation will be calculated. General response actions (GRAs) will then be delineated to address each of the Site problem areas. These GRAs will form the foundation for the development and screening of applicable remedial alternatives against the following criteria as described in 6NYCRR 375-1.8(f) and DER-10-4.2:

- Overall protection of public health and the environment
- Compliance with SCGs
- Long-term effectiveness and permanence
- Reduction in toxicity, mobility or volume of contamination through treatment
- Short-term impacts and effectiveness
- Implementability
- Cost-effectiveness
- Community acceptance

- Land use

The criteria of community acceptance will be considered based on public comments on the RI/AA Report and proposed remedial action.

Following the screening of alternatives, a comparative analysis will be performed against the above criteria. The comparative analysis will allow for better understanding of the relative advantages and disadvantages of each of the alternatives and will facilitate identification of a recommended remedial approach.

7.0 PROJECT SCHEDULE

Figure 5 presents a tentative project schedule for the major tasks to be performed in support of the RI/AA.

8.0 REFERENCES

1. New York State Department of Environmental Conservation. *DER-10; Technical Guidance for Site Investigation and Remediation.* May 2010.
2. New York State Department of Environmental Conservation. *6 NYCRR Part 375 Environmental Remediation Programs*. December 2006.
3. New York State Department of Environmental Conservation Division of Water Technical and Operational Guidance (TOGS). *1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations*. June 1998.
4. United States Department of Agriculture (USDA), Soil Conservation Service. *Soil Survey of Erie County, New York.* December 1986.
5. Edward J. Buehler and Irving H. Tesmer. *Geologic Map of Erie County, New York Bedrock Geology*. Buffalo Society of Natural Sciences Bulletin, Vol. 21, No. 3. 1963.
6. U.S. Environmental Protection Agency. *Requirements for Quality Assurance Project Plans for Environmental Data Operations (EPA QA/R-5).* October 1998.
7. U.S. Environmental Protection Agency, Region II. *CERCLA Quality Assurance Manual, Revision I.* October 1989.
8. U.S. Environmental Protection Agency. *National Functional Guidelines for Organic Superfund Methods Data Review*. January 2017.
9. U.S. Environmental Protection Agency. *National Functional Guidelines for Inorganic Superfund Methods Data Review*. January 2017.

TABLES

TABLE 1

SAMPLING AND ANALYSIS PLAN
REMEDIAL INVESTIGATION
3077 UNION ROAD SITE
ORCHARD PARK, NEW YORK

Matrix	Investigation Location	Sample Type	TCL VOCs [3]	CP-51 VOCs	TCL SVOCS	CP-51 SVOCs	TAL Metals	PCBs	Pesticide	Herbicide	1,4-Dioxane	PFAS
Soil/Fill	**Western, Developed Portion**											
	Historical Samples											
	SB-1 (10-12')	Subsurface	1	1	-	-	-	-	-	-	-	-
	SB-3 (4-4.5')		1	1	-	-	-	-	-	-	-	-
	SB-4 (2-4')		-	-	1	1	-	-	-	-	-	-
	SB-7 (4-6')		1	1	-	-	-	-	-	-	-	-
	SB-7(6-8')		1	1	-	-	-	-	-	-	-	-
	SB-8 (4-6')		1	1	-	-	-	-	-	-	-	-
	SB-11 (2-4')		1	1	-	-	-	-	-	-	-	-
	Proposed Samples											
	SS-1	Surface (0 to 2")	-	-	1	-	1	1	1	1	1	1
	SS-2		-	-	1	-	1	1	1	1	1	1
	SS-3		-	-	1	-	1	1	1	1	1	1
	SS-4		-	-	1	-	1	1	1	1	1	1
	SB-17	Subsurface	1	-	-	-	-	-	-	-	-	-
	SB-18		1	-	-	-	-	-	-	-	-	-
	SB-19		1	-	-	-	-	-	-	-	-	-
	SB-20		1	-	-	-	-	-	-	-	-	-
	SB-21		1	-	-	-	-	-	-	-	-	-
	SB-22		1	-	-	-	-	-	-	-	-	-
	SB-23		1	-	1	-	1	1	1	1	-	-
	MW-8/8D		1	-	1	-	1	1	1	1	1	1
	TP-1		-	-	1	-	1	1	1	1	1	1
	Eastern, Undeveloped Portion											
	Proposed Samples											
	SS-5	Surface (0 to 2")	-	-	1	-	1	1	1	1	1	1
	SS-6		-	-	1	-	1	1	1	1	1	1
	SS-7		-	-	1	-	1	1	1	1	1	1
	SS-8		-	-	1	-	1	1	1	1	1	1
	SS-9		-	-	1	-	1	1	1	1	1	1
	SS-10		-	-	1	-	1	-	-	-	-	-
	SS-11		-	-	1	-	1	-	-	-	-	-
	SS-12		-	-	1	-	1	1	1	1	1	1
	SS-13		-	-	1	-	1	1	1	1	1	1
	SS-14		-	-	1	-	1	1	1	1	1	1
	SS-15		-	-	1	-	1	1	1	1	1	1
	SS-16		-	-	1	-	1	-	-	-	-	-
	SS-17		-	-	1	-	1	-	-	-	-	-
	SS-18		-	-	1	-	1	1	1	1	1	1
	SS-19		-	-	1	-	1	1	1	1	1	1
	SS-20		-	-	1	-	1	1	1	1	1	1
	TP-2	Subsurface	-	-	-	-	-	-	-	-	-	-
	TP-3		1	-	1	-	1	1	1	1	1	1
	TP-4		-	-	-	-	-	-	-	-	-	-
	TP-5		-	-	-	-	-	-	-	-	-	-
	TP-6		1	-	1	-	1	1	1	1	1	1
	TP-7		-	-	-	-	-	-	-	-	-	-
	TP-8		1	-	1	-	1	1	1	1	1	1
	TP-9		-	-	-	-	-	-	-	-	-	-
	TP-10		-	-	-	-	-	-	-	-	-	-
	TP-11		-	-	-	-	-	-	-	-	-	-
	TP-12		1	-	1	-	1	1	1	1	1	1
	TP-13		-	-	-	-	-	-	-	-	-	-
	TP-14		-	-	-	-	-	-	-	-	-	-
	TP-15		-	-	-	-	-	-	-	-	-	-
	TP-16		-	-	-	-	-	-	-	-	-	-
	TP-17		1	-	1	-	1	1	1	1	1	1
	TP-18		-	-	-	-	-	-	-	-	-	-
	TP-19		1	-	1	-	1	1	1	1	1	1
	TP-20		-	-	-	-	-	-	-	-	-	-
	TP-21		-	-	-	-	-	-	-	-	-	-
	TP-22		1	-	1	-	1	1	1	1	1	1
	TP-23		1	-	1	-	1	1	1	1	1	1
	TP-24		-	-	-	-	-	-	-	-	-	-
	TP-25		-	-	-	-	-	-	-	-	-	-
	TP-26		-	-	-	-	-	-	-	-	-	-
	TP-27		-	-	-	-	-	-	-	-	-	-
	TP-28		1	-	1	-	1	1	1	1	1	1
	TP-29		-	-	-	-	-	-	-	-	-	-
	TP-30		-	-	-	-	-	-	-	-	-	-
	TP-31		-	-	-	-	-	-	-	-	-	-
	TP-32		1	-	1	-	1	1	1	1	1	1
	TP-33		-	-	-	-	-	-	-	-	-	-
	TP-34		1	-	1	-	1	1	1	1	1	1
	MW-9		1	-	1	-	1	1	1	1	-	-
	MW-10		1	-	1	-	1	1	1	1	-	-
	MW-11		1	-	1	-	1	1	1	1	-	-
	MW-12		1	-	1	-	1	1	1	1	-	-
	MW-13		1	-	1	-	1	1	1	1	-	-
	MW-14		1	-	1	-	1	1	1	1	-	-
QA/QC	Soil	MS [4]	2	-	2	-	2	2	2	2	2	2
		MSD	2	-	2	-	2	2	2	2	2	2
		Blind Dup	2	-	2	-	2	2	2	2	2	2
TOTAL RI SOIL SAMPLES:			**31**	**0**	**46**	**0**	**46**	**42**	**42**	**42**	**35**	**35**

TABLE 1

SAMPLING AND ANALYSIS PLAN
REMEDIAL INVESTIGATION
3077 UNION ROAD SITE
ORCHARD PARK, NEW YORK

Matrix	Investigation Location	Sample Type	TCL VOCs [3]	CP-51 VOCs	TCL SVOCS	CP-51 SVOCs	TAL Metals	PCBs	Pesticide	Herbicide	1,4-Dioxane	PFAS
Groundwater	**Western, Developed Portion**											
	Historical Samples											
	MW-1	Overburdan Groundwater Monitoring Wells	1	1	-	-	-	-	-	-	-	-
	PZ-1 (removed)	Overburdan Groundwater Piezometers	1	1	-	-	-	-	-	-	-	-
	PZ-2		2	2	-	-	-	-	-	-	-	-
	PZ-3		2	2	-	-	-	-	-	-	-	-
	PZ-4		2	2	-	-	-	-	-	-	-	-
	PZ-5		2	2	-	-	-	-	-	-	-	-
	MW-1D	Bedrock Groundwater	1	1	-	-	-	-	-	-	-	-
	MW-2D		1	1	-	-	-	-	-	-	-	-
	MW-4D		1	1	-	-	-	-	-	-	-	-
	Proposed Samples											
	MW-1	Overburdan Groundwater Monitoring Wells	1	-	1	-	1	1	1	1	1	1
	MW-8		1	-	1	-	1	1	1	1	1	1
	PZ-2	Overburdan Groundwater Piezometers	1	-	-	-	-	-	-	-	-	-
	PZ-3		1	-	-	-	-	-	-	-	-	-
	PZ-4		1	-	-	-	-	-	-	-	-	-
	PZ-5		1	-	-	-	-	-	-	-	-	-
	PZ-6		1	-	-	-	-	-	-	-	-	-
	PZ-7		1	-	-	-	-	-	-	-	-	-
	PZ-8		1	-	1	-	1	1	1	1	-	-
	MW-1D	Bedrock Groundwater	1	-	1	-	1	1	1	1	1	1
	MW-2D		1	-	-	-	-	-	-	-	-	-
	MW-4D		1	-	-	-	-	-	-	-	-	-
	MW-8D		1	-	1	-	1	1	1	1	1	1
	Eastern, Undeveloped Portion											
	Proposed Samples											
	MW-9	Overburdan Groundwater Monitoring Wells	1	-	1	-	1	1	1	1	1	1
	MW-10		1	-	1	-	1	1	1	1	1	1
	MW-11		1	-	1	-	1	1	1	1	1	1
	MW-12		1	-	1	-	1	1	1	1	1	1
	MW-13		1	-	1	-	1	1	1	1	1	1
	MW-14		1	-	1	-	1	1	1	1	1	1
QA/QC	Groundwater	MS	1	-	1	-	1	1	1	1	1	1
		MSD	1	-	1	-	1	1	1	1	1	1
		Duplicate	1	-	1	-	1	1	1	1	1	1
		Trip Blank [5]	1	-	-	-	-	-	-	-	-	-
		Field Blank	1	-	-	-	-	-	-	-	1	1
	Submersible Pump	Equipment Blank	1	-	1	-	1	1	1	1	1	1
TOTAL RI GROUNDWATER SAMPLES:			**25**	**0**	**15**	**0**	**15**	**15**	**15**	**15**	**15**	**15**
Sediment	**Western, Developed Portion**											
	Proposed Samples											
	SED-3 [6]	Sediment	1	-	1	-	1	1	1	1	-	-
	Eastern, Undeveloped Portion											
	Proposed Samples											
	SED-1	Sediment	1	-	1	-	1	1	1	1	-	-
	SED-2		1	-	1	-	1	1	1	1	-	-
QA/QC	Sediment	MS	1	-	1	-	1	1	1	1	-	-
		MSD	1	-	1	-	1	1	1	1	-	-
		Duplicate	1	-	1	-	1	1	1	1	-	-
TOTAL RI SEDIMENT SAMPLES:			**5**	**0**	**5**	**0**	**5**	**5**	**5**	**5**	**0**	**0**
Surface Water	**Eastern, Undeveloped Portion**											
	Proposed Samples											
	SW-1	Surface Water	1	-	1	-	1	1	1	1	-	-
	SW-2		1	-	1	-	1	1	1	1	-	-
QA/QC	Surface Water	MS	1	-	1	-	1	1	1	1	-	-
		MSD	1	-	1	-	1	1	1	1	-	-
		Duplicate	1	-	1	-	1	1	1	1	-	-
TOTAL RI SURFACE WATER SAMPLES:			**5**	**0**	**5**	**0**	**5**	**5**	**5**	**5**	**0**	**0**
Soil Vapor (TO-15 Method)	**Western, Developed Portion**											
	Proposed Samples											
	SV-1	Soil Vapor	1	-	-	-	-	-	-	-	-	-
	SV-2		1	-	-	-	-	-	-	-	-	-
	SV-3		1	-	-	-	-	-	-	-	-	-
	SV-4		1	-	-	-	-	-	-	-	-	-
	Ambient Air		1	-	-	-	-	-	-	-	-	-
QA/QC	Soil Vapor	Duplicate	1	-	-	-	-	-	-	-	-	-
TOTAL RI SOIL VAPOR SAMPLES:			**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Notes:

1. All locations shall be sampled and archived by the laboratory for potential analysis / reanalysis.
2. GW field parameters including: pH, specific conductance, temperature, DO, ORP, and turbidity will be collected and recorded.
3. Additional VOC samples may be collected if field screening results indicate potential contamination (e.g., elevated PID readings above 5 ppm).
4. Blind duplicate and MS/MSD samples will be collected at a frequency of 1 per 20 samples/media collected.
5. Trip blanks will be submitted to the laboratory each day aqueous volatile organic samples are collected.
6. SED-3 will be collected from sediment in the Building 2 floor drain. If no sediment is observed in the floor drain, SED-3 will not be collected.

Acronyms:

TCL = Target Compound List
VOCs = volatile organic compounds
SVOCs = semi-volatile organic compounds
TAL = Target Analyte List
CP-51 = Commissioner's Policy 51/ Soil Cleanup Guidance
PCBs = Polychlorinated Biphenyls
PFAS = Per- and polyfluoroalkyl Substances
QA/QC = quality control/quality assurance sample
MS = matrix spike
MSD = matrix spike duplicate

TABLE 2
SAMPLE CONTAINER, VOLUME, PRESERVATION & HOLDING TIME REQUIREMENTS

3077 UNION ROAD SITE
ORCHARD PARK, NEW YORK

Matrix	Parameter [1]	Method [1]	Container Type	Minimum Volume	Preservation (Cool to 2-4 °C for all samples)	Holding Time from Sample Date
Soil	TCL VOCs	8260B	EnCore/WMG	5 gm / 4 oz.	Cool to 2-4 °C, Zero Headspace	48 hours / 14 days
	TCL SVOCs	8270C	WMG	16 oz.	Cool to 2-4 °C	14 days extrac./40 days
	TAL Metals [2]	6010	WMG	4 oz.	Cool to 2-4 °C	6 months/Hg 28 days
	Pesticides	8081	WMG	8oz	Cool to 2-4 °C	14 days extrac./40 days
	Herbicides	8151	WMG	8oz	Cool to 2-4 °C	14 days extrac./40 days
	PCBs	8082	WMG	4 oz.	Cool to 2-4 °C	14 days extrac./40 days
	PFAS	modified 537	HDPE/Polypropylene	4-8 oz.	Cool to 2-4 °C	14 days extrac./40 days
Groundwater	TCL VOCs	8260B	glass vial	3 - 4 oz.	HCl to pH<2, Zero Headspace, Cool to 2-4 °C	14 days
	TCL SVOCs	8270C	amber glass	1000 ml	Cool to 2-4 °C	7 days extrac/40 days
	TAL Metals [2]	6010	plastic	600 ml	HNO_3 to pH<2, Cool to 2-4 °C	6 months/Hg 28 days
	Pesticides	8081B	amber glass	1000 ml	Cool to 2-4 °C	14 days extrac./40 days
	Herbicides	8151A	amber glass	1000 ml	Cool to 2-4 °C	14 days extrac./40 days
	PCBs	8082	amber glass	1000 ml	Cool to 2-4 °C	7 days extrac/40 days
	PFAS	modified 537	HDPE/Polypropylene	2 - 500 mL	Trizma, Cool to 2-4 °C	14 days
	1,4-dioxane	8270 SIM mode	amber glass	2 - 500 mL	Cool to 2-4 °C	7 days extrac./40 days

References:

1. Test Methods for Evaluating Solid Wastes, USEPA SW-846, Update III, 1991.

Notes:

1. EPA-approved methods published in Reference 1 above may be used. The list of analytes, laboratory method and the method detection limit for each parameter are included in Tables 1 and 2 of the QAPP.
2. Mercury sampling in soil/groundwater via EPA methods 7471/7470 respectively.

Acronyms:

VOCs = Volatile Organic Compounds
PFAS = Per- and Polyfluoroalkyl Substances
SVOCs = Semi-Volatile Organic Compounds
TCL = Target Compound List
TAL = Target Analyte List
WMG = Wide Mouth Glass
PCBs = Polychlorinated Biphenyls

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TURNKEY ENVIRONMENTAL RESTORATION, LLC

TABLE 3
SUMMARY OF FIELD OPERATING PROCEDURES

3077 UNION ROAD SITE
ORCHARD PARK, NEW YORK

FOP Number	Description	No. of Attachments	Total Pages	FOPs Referenced
001.1	Abandonment of Borehole Procedures	1	4	--
002.0	Abandonment of Monitoring Wells Procedure	1	5	018, 032
003.0	Air Rotary Drilling Procedure	0	2	026, 041, 042, 043
006.0	Calibration and Maintenance of Combustible Gas/Oxygen Meter	1	11	--
007.0	Calibration and Maintenance of Portable Dissolved Oxygen Meter	1	3	--
008.0	Calibration and Maintenance of Portable Field pH/Eh Meter	1	4	--
009.0	Calibration and Maintenance of Portable Field Turbidity Meter	1	7	--
010.0	Calibration and Maintenance of Portable Flame Ionization Detector	1	4	--
011.1	Calibration and Maintenance of Portable Photoionization Detector	3	31	--
012.0	Calibration and Maintenance of Portable Specific Conductance Meter	1	5	--
013.0	Composite Sample Collection Procedure for Non-Volatile Organic Analysis	1	3	040, 046
015.0	Documentation Requirements for Drilling and Well Installation	6	11	--
017.0	Drill Site Selection Procedure	0	1	--
018.0	Drilling and Excavation Equipment Decontamination Procedures	0	2	--
021.0	Establishing Horizontal and Vertical Control	0	2	--
022.0	Groundwater Level Measurement	1	3	040
023.1	Groundwater Purging Procedures Prior to Sample Collection	2	8	011, 022, 024, 040
024.1	Groundwater Sample Collection Procedures	1	10	007, 008, 009, 011, 012, 022, 023, 031, 040, 046
025.0	Hand Augering Procedure	1	3	013, 017, 040, 046, 054, 057
026.1	Hollow Stem Auger (HSA) Drilling Procedures	2	6	001, 010, 011, 017, 018, 058
031.2	Low Flow (Minimal Drawdown) Groundwater Purging & Sampling Procedure	1	7	007, 008, 009, 011, 012, 022, 024, 040, 046
032.1	Management of Investigation-Derived Waste (IDW)	2	5	--
033.0	Monitoring Well Construction for Hollow Stem Auger Boreholes	2	6	015, 026, 032, 036
035.0	Monitoring Well Construction in Bedrock	2	9	003, 015, 017, 026, 032, 036, 041, 042, 043, 070
036.0	Monitoring Well Development Procedures	1	3	015, 040
039.1	NAPL Detection and Sample Collection Procedure	1	7	011, 040, 046
040.1	Non-Disposable and Non-Dedicated Sampling Equipment Decontamination	0	4	032
041.0	Overburden Casing Installation Procedure	3	7	018
042.0	Pressure Packer Test Procedure	1	6	--
043.0	Rock Core Classification Procedure	7	20	041, 044
044.0	Rock Quality Designation (RQD) Procedure	0	4	--
046.0	Sample Labeling, Storage and Shipment Procedures	5	9	--
047.0	Screening of Soil Samples for Organic Vapors During Drilling Activities	2	4	010, 011, 015, 058
054.2	Soil Description Procedures Using The Visual-Manual Method	5	22	010, 011, 015, 025, 032, 046, 047, 058, 065
057.0	Soil Sample Collection for VOC Analysis - EnCore Sampling	1	6	046
058.0	Split-Spoon Sampling Procedures	0	3	015, 046, 047, 054
063.2	Surface and Subsurface Soil Sampling Procedures	3	7	006, 010, 011, 040, 046, 073
065.1	Test Pit Excavation and Logging Procedures	3	7	006, 010, 011, 018, 063
070.0	Well/Piezometer Construction Materials and Design	0	2	--
073.2	Real-Time Air Monitoring During Intrusive Activities	1	12	006, 010, 011, 084
076.0	"Before Going Into the Field" Procedure	0	4	--
077.0	Temporary Well (Piezometer) Construction Procedures	3	8	015, 032, 065, 078
078.0	Geoprobe Drilling Procedures	2	6	001, 017, 018, 054, 077
079.0	Stockpile Sampling Procedures for Chemical Analysis	0	3	046
080.0	Stockpile-Borrow Source Sampling Procedures for Physical Analysis	1	5	--
082.0	Waste Sampling Procedures	1	15	011, 046
084.0	Calibration and Maintenance of Portable Particulate Meter	0	8	--
085.0	Field Quality Control Procedures	0	3	040
090.0	Outdoor Ambient Air VOC Sample Collection Procedure	1	6	--

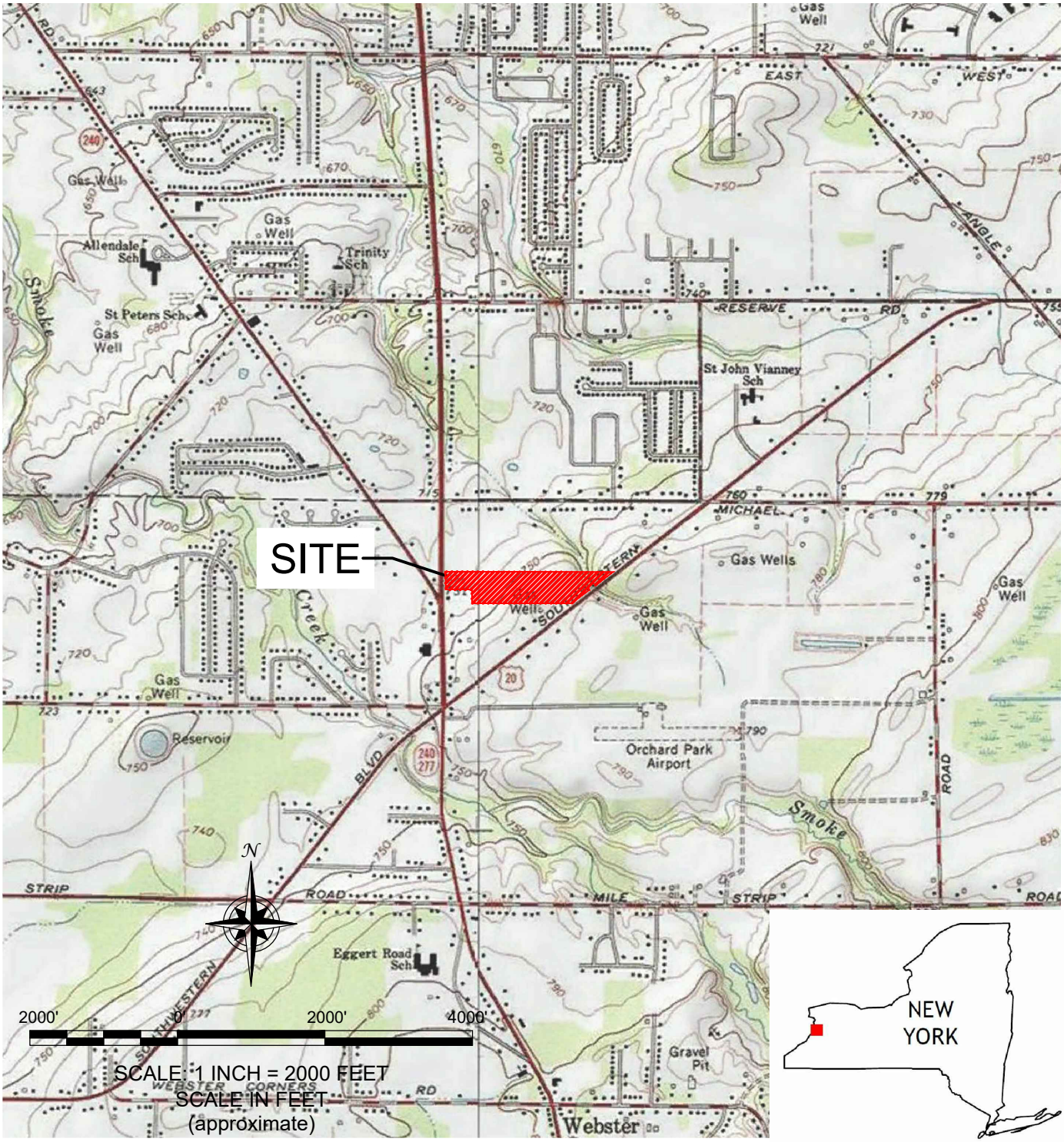
Notes:

1. FOPs are identified by the sequential FOP number and revision number. For example, FOP number 011.1 indicates FOP 11, revision 1.

FIGURES

F:\CAD\TurnKey\Benderson\3077 Union Road and Associated Parcels\RIWP\Figure 1 - Site Location and Vicinity Map.dwg, 2/10/2020 3:09:43 PM

FIGURE 1



BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC
TURNKEY ENVIRONMENTAL RESTORATION, LLC
2558 HAMBURG TURNPIKE, SUITE 300, BUFFALO, NY 14218, (716) 856-0599

PROJECT NO.: T0105-017-010

DATE: FEBRUARY 2020

DRAFTED BY: CCB

SITE LOCATION AND VICINITY MAP

REMEDIAL INVESTIGATION WORK PLAN

3077 UNION ROAD SITE

ORCHARD PARK, NEW YORK

PREPARED FOR

570 DAB 4, LLC

DISCLAIMER: ***PROPERTY OF BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC. & TURNKEY ENVIRONMENTAL RESTORATION, LLC*** *IMPORTANT: THIS DRAWING PRINT IS LOANED FOR MUTUAL ASSISTANCE AND AS SUCH IS SUBJECT TO RECALL AT ANY TIME. INFORMATION CONTAINED HEREON IS NOT TO BE DISCLOSED OR REPRODUCED IN ANY FORM FOR THE BENEFIT OF PARTIES OTHER THAN NECESSARY SUBCONTRACTORS & SUPPLIERS WITHOUT THE WRITTEN CONSENT OF BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC & TURNKEY ENVIRONMENTAL RESTORATION, LLC.*

F:\CAD\TurnKey\Benderson\3077 Union Road and Associated Parcels\RIWP\Figure 2 - Site Plan (Aerial).dwg, 2/10/2020 3:10:20 PM



BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

IN ASSOCIATION WITH

TURNKEY ENVIRONMENTAL RESTORATION, LLC

2558 HAMBURG TURNPIKE, SUITE 300, BUFFALO, NY 14218 (716) 856-0599

PROJECT NO.: 0105-017-010

DATE: FEBRUARY 2020

DRAFTED BY: CMS/RFL

SITE PLAN (AERIAL)

REMEDIAL INVESTIGATION WORK PLAN

3077 UNION ROAD SITE
ORCHARD PARK, NEW YORK

PREPARED FOR
570 DAB 4, LLC

FIGURE 2

***DISCLAIMER:* PROPERTY OF BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC. & TURNKEY ENVIRONMENTAL RESTORATION, LLC** *IMPORTANT: THIS DRAWING PRINT IS LOANED FOR MUTUAL ASSISTANCE AND AS SUCH IS SUBJECT TO RECALL AT ANY TIME. INFORMATION CONTAINED HEREON IS NOT TO BE DISCLOSED OR REPRODUCED IN ANY FORM FOR THE BENEFIT OF PARTIES OTHER THAN NECESSARY SUBCONTRACTORS & SUPPLIERS WITHOUT THE WRITTEN CONSENT OF BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC & TURNKEY ENVIRONMENTAL RESTORATION, LLC.*

F:\CAD\TurnKey\Benderson\3077 Union Road and Associated Parcels\RWP\Figure 3 - Prevous Investigation Locations and Areas of Concern.dwg, 2/10/2020 3:12:30 PM

LEGEND:

- BCP SITE BOUNDARY
- PARCEL BOUNDARY
- SB-2 ● HISTORIC SOIL BORING
- SB-1/PZ-1 ● SOIL BORING/PIEZOMETER
- MW-2D ◈ BEDROCK MONITORING WELL
- MW-1 ◈ OVERBURDEN MONITORING WELL
- (MH) SANITARY SEWER MANHOLE

NOTE:
1. GROUNDWATER CONCENTRATIONS IN µg/L.
2. SOIL CONCENTRATIONS IN mg/kg.

QUALIFIERS:
- J = ESTIMATED VALUE; RESULT IS LESS THAN THE SAMPLE QUANTITATION LIMIT BUT GREATER THAN ZERO.
- B = COMPOUND DETECTION IN LABORATORY BLANK.
- ND = NOT DETECTED.

CONCENTRATION EXCEEDS NYSDEC GROUNDWATER QUALITY STANDARDS.

CONCENTRATION EXCEEDS NYSDEC PROTECTION OF GROUNDWATER QUALITY STANDARDS AND UNRESTRICTED USE SOIL CLEANUP OBJECTIVES.

CONCENTRATION EXCEEDS NYSDEC RESIDENTIAL USE SOIL CLEANUP OBJECTIVES.

PZ-4	1/23/2018	1/2/2019
1,1-DICHLOROETHENE	ND	2.9
CIS-1,2-DICHLOROETHENE	37	600
TETRACHLOROETHENE	22	95
TRANS-1,2-DICHLOROETHENE	3	31
TRICHLOROETHENE	61	380
VINYL CHLORIDE	7.7	160

SB-8	(4-6')
CIS-1,2-DICHLOROETHENE	0.26
METHYLENE CHLORIDE	0.11 JB
TRICHLOROETHENE	0.61

PZ-5	1/23/2018	1/2/2019
ACETONE	3.2	54
TETRACHLOROETHENE	0.66	14

SB-7	(4-6')	(6-8')
CIS-1,2-DICHLOROETHENE	ND	0.28
METHYLENE CHLORIDE	2 JB	0.19
TETRACHLOROETHENE	120	19
TRICHLOROETHENE	ND	0.94

SB-3	(4-4.5')
METHYLENE CHLORIDE	0.33 JB
TETRACHLOROETHENE	44
TRICHLOROETHENE	1.5

PZ-3	1/23/2018	1/2/2019
CIS-1,2-DICHLOROETHENE	2200	2100
METHYLENE CHLORIDE	220	ND
TETRACHLOROETHENE	51000	34000
TRICHLOROETHENE	2600	2000

SB-11	(2-4')
METHYLENE CHLORIDE	0.2 JB
TETRACHLOROETHENE	13

SB-1	(10-12')
METHYLENE CHLORIDE	0.1 JB

MW-2D	12/26/2018
VINYL CHLORIDE	4.7

PZ-2	1/23/2018	1/2/2019
CIS-1,2-DICHLOROETHENE	9.8	1.3 J
VINYL CHLORIDE	3.6	0.43 J
TOTAL XYLENES	30	ND

MW-1D
MW-1
SB-16
SB-8/PZ-4
MW-4D
SB-9
SB-10/PZ-5
SB-7/PZ-3
SB-15
BUILDING 2
SB-2
SB-1/PZ-1
(REMOVED)
HISTORIC DRY CLEANER
(PER 1967 SITE SURVEY)
MW-2D
SB-3
SB-11
SB-14
SB-6/PZ-2
SB-13
SB-12
SB-4
SB-5
BUILDING 1
HAROLD SQUARE
SEWER LINE TO HISTORIC SEPTIC TANK (PER 1967 SITE SURVEY)
UNION ROAD

N

50' 0' 50' 100'

SCALE: 1 INCH = 50 FEET
SCALE IN FEET
(approximate)

DATE: FEBRUARY 2020
DRAFTED BY: CMS/RFL

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC
TURNKEY ENVIRONMENTAL RESTORATION, LLC
2558 HAMBURG TURNPIKE, SUITE 300, BUFFALO, NY 14218, (716) 856-0599

JOB NO.: 0105-017-010

PREVIOUS INVESTIGATION LOCATIONS AND AREAS OF CONCERN

REMEDIAL INVESTIGATION WORK PLAN

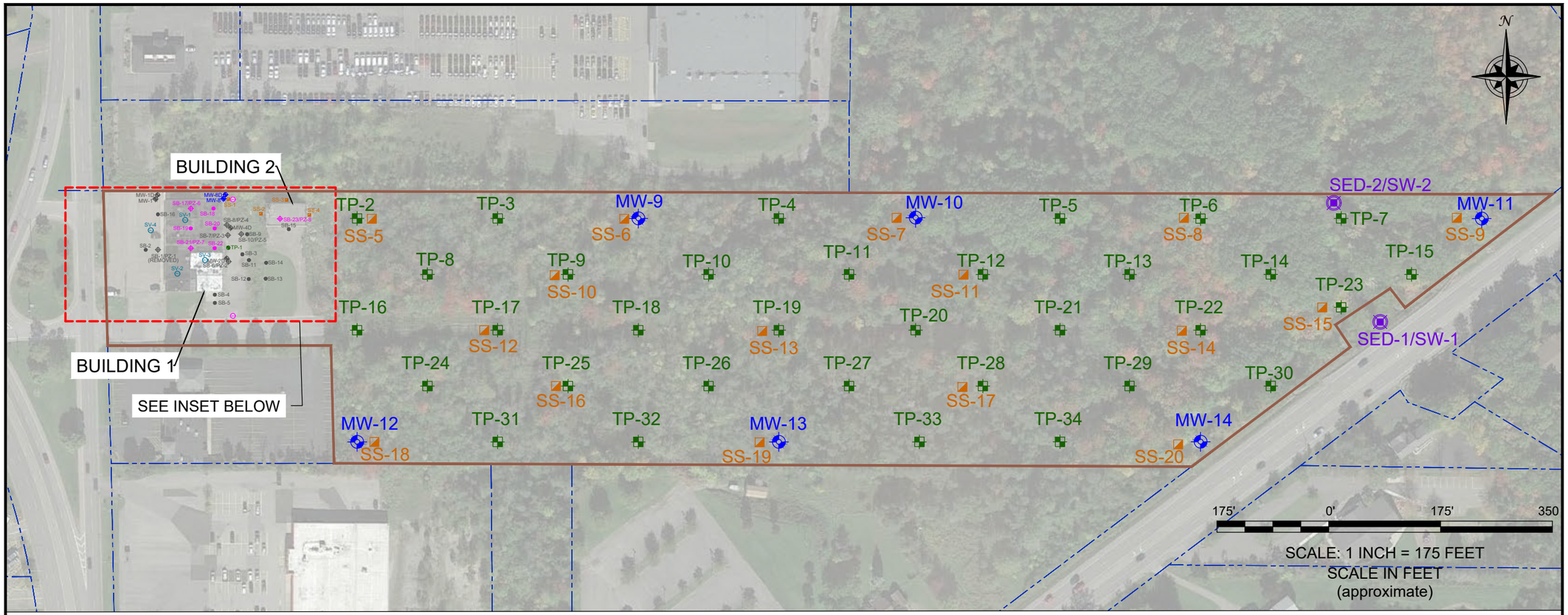
3077 UNION ROAD SITE
ORCHARD PARK, NEW YORK

PREPARED FOR
570 DAB 4, LLC

FIGURE 3

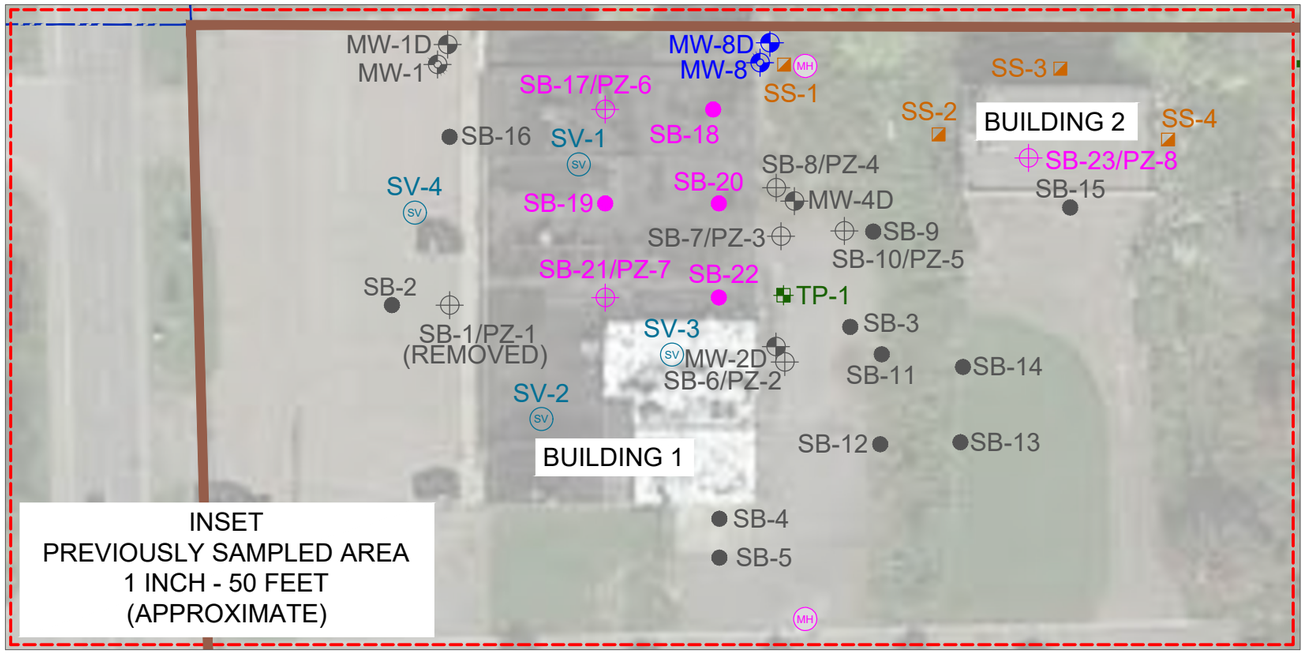
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F:\CAD\TurnKey\Benderson\3077 Union Road and Associated Parcels\RIWP\Figure 4 - Proposed Remedial Investigation Locations_rev2.dwg, 9/16/2020 4:11:38 PM



LEGEND:

- BCP SITE BOUNDARY
- PARCEL BOUNDARY
- SB-2 — HISTORIC SOIL BORING
- SB-1/PZ-1 — HISTORIC SOIL BORING/PIEZOMETER
- MW-1 — HISTORIC OVERBURDEN MONITORING WELL
- MW-1D — HISTORIC BEDROCK MONITORING WELL
- SS-1 — RI SURFACE SOIL SAMPLE
- TP-1 — RI TEST PIT
- SB-18 — RI SOIL BORING (INTERIOR)
- SB-17/PZ-6 — RI SOIL BORING/PIEZOMETER
- MW-8 — RI OVERBURDAN MONITORING WELL
- MW-8D — RI BEDROCK MONITORING WELL
- SV-1 — RI SOIL VAPOR SAMPLE LOCATION
- SED-1/SW-1 — RI SEDIMENT/SURFACE WATER LOCATION
- MH — SANITARY SEWER MANHOLE



INSET
PREVIOUSLY SAMPLED AREA
1 INCH - 50 FEET
(APPROXIMATE)

DATE: SEPTEMBER 2020
DRAFTED BY: CNK

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC
TURNKEY ENVIRONMENTAL RESTORATION, LLC
2558 HAMBURG TURNPIKE, SUITE 300, BUFFALO, NY 14218, (716) 856-0599

JOB NO.: 0105-017-010

PROPOSED REMEDIAL INVESTIGATION LOCATIONS

REMEDIAL INVESTIGATION WORK PLAN
3077 UNION ROAD SITE
BUFFALO, NEW YORK

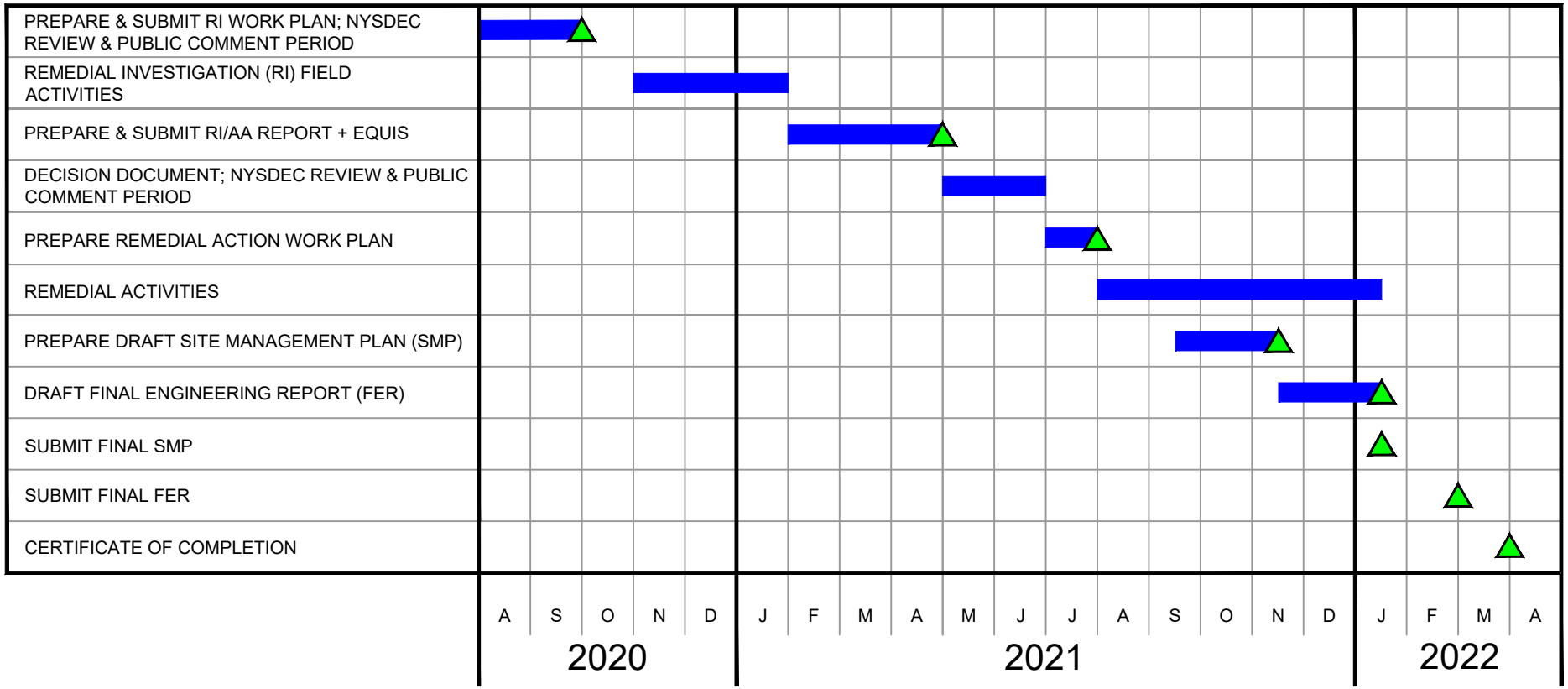
PREPARED FOR
570 DAB 4, LLC

FIGURE 4

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F:\CAD\TurnKey\Benderson\3077 Union Road and Associated Parcels\RIWP\Figure 5 - Preliminary Project Schedule_REV.dwg, 9/16/2020 4:18:20 PM

PROJECT TASKS:



BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

IN ASSOCIATION WITH

TURNKEY ENVIRONMENTAL RESTORATION, LLC

2558 HAMBURG TURNPIKE, SUITE 300, BUFFALO, NY 14218 (716) 856-0599

PROJECT NO.: 0105-017-010

DATE: SEPTEMBER 2020

DRAFTED BY: CMS

PRELIMINARY PROJECT SCHEDULE

REMEDIAL INVESTIGATION WORK PLAN

3077 UNION ROAD SITE
ORCHARD PARK, NEW YORK

PREPARED FOR
570 DAB 4, LLC

FIGURE 5

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APPENDIX A

RESUMES

THOMAS H. FORBES, P.E.
PRINCIPAL ENGINEER

EDUCATION

BS (Chemical Engineering) 1988; State University of New York at Buffalo
Graduate of State University of New York at Buffalo School of Management Center for Entrepreneurial Leadership; 2002
Graduate-level courses in Biological Principles of Engineering and Hazardous Waste Management through the State University of New York at Buffalo Department of Environmental Engineering

REGISTRATION AND AFFILIATIONS

Professional Engineer, New York
Professional Engineer, Ohio
ISO 14000 Certified Lead Auditor - April 1998
Member - American Institute of Chemical Engineers
Member – New York Water Environment Association, Inc.

SUMMARY OF EXPERIENCE

Mr. Forbes has over 26 years of environmental engineering experience, with a particular focus on brownfield and hazardous waste site investigation and remediation; petroleum-impacted site remediation; due diligence for environmentally-impaired properties; groundwater and industrial wastewater treatment; and environmental regulatory compliance. Investigations and cleanups Mr. Forbes has directed have included well over 100 sites contaminated with a wide range of materials, including chlorinated solvents, PCBs, dioxins, heavy metals, cyanide, radioactive isotopes, and petroleum contamination. He has evaluated and successfully implemented on a conventional and design-build basis cost-saving and innovative treatment technologies (e.g. in-situ and ex-situ physical-chemical, thermal, and biological treatment) as well as removal and containment methods for remediation.

REPRESENTATIVE PROJECT EXPERIENCE

June 1998 to Present: **Benchmark Environmental Engineering & Science, PLLC**

- Served as project manager for the investigation and hydrogeological assessment of the 2001 Webster Block site on behalf of the City of Buffalo. Work included a Phase II Site investigation, underground storage tank removal, groundwater pump test, and utility capacity evaluation performed under USEPA Pilot grant.

- Currently serving as Project Officer for NYSDEC Brownfield Cleanup Program (BCP) investigation and remediation of the former Millard Fillmore Gates Circle hospital complex in Buffalo, NY.

- Project officer for NYSDEC BCP investigation and cleanup of 154 South Ogden Street in concert with construction of the South Buffalo Charter School.

- Serving as project manager for remedial investigation, alternatives analysis, and remedial construction to facilitate redevelopment of over 450-acres of former steel manufacturing site property encompassing 33 separate BCP sub-parcel sites in Lackawanna, New York. Contaminants of concern primarily include petroleum organics/solvents and heavy metals.

- Project manager for RI/FS, remedial design and remedial construction at the Sycamore Village Site, a 4-acre NY State Environmental Restoration Program (ERP) site in Buffalo, NY. Responsible for all technical and administrative aspects of the project, involving removal of over 18,000 cubic yards of soil from an impacted residential neighborhood and site restoration.

- Assisted western NY client's legal counsel prepare legal defense related to a multi-PRP suit by Orange County Water District, Fullerton, CA for primary drinking water aquifer contamination by chlorinated solvents and emergent organic contaminants. Served as technical consultant during mediation and settlement discussions; prepared expert report and lead technical arguments on behalf of defendant to support bankruptcy claim dismissal.

- Served as project manager and supervising contractor for design-build remedial activities at the Markhams National Priority List (NPL) site in Dayton, NY. Successfully implemented remedial measures leading to USEPA-designated Preliminary Site Closeout status in October 2008 and delisting in 2009.

- Served as project manager representing multiple potential responsible party (PRP)-led remedial construction activities to address heavy metal and chlorinated solvent impacts at the Peter Cooper Landfill NPL site. Responsible for oversight and coordination of RI/FS planning and implementation activities, lead technical contact with USEPA, and remedial measures design and construction. Achieved site closeout in 2011.

- Served as project manager for design-build cleanup of the Urbana Landfill Site, a Class 2 Hazardous Waste Landfill Site. Designed and successfully implemented a Soil Vapor Extraction system to address source area chlorinated organics in soils, achieving soil cleanup goals with 12 months, Also responsible for design, startup and continued operation of a downgradient perimeter groundwater extraction well system and groundwater remediation utilizing advanced oxidation treatment.

- Assisted in the development of a voluntary cleanup plan for remediation of a 120-acre former steel manufacturing site in Buffalo, NY which was contaminated with volatile organic compounds, heavy metals, poly-nuclear aromatic hydrocarbons. Specific assistance involved design of a soil vapor extraction (SVE) system to address VOC and SVOC source area impacts proximate to a residential neighborhood and development and implementation of a Community Air Monitoring Plan involving quantitative monitoring (Summa Canister and respirable particulate analysis) and qualitative monitoring (field instruments).

- Served as Project Manager for RI/FS and cleanup activities related to solvent releases from a former paint and specialty coatings manufacturing facility in Buffalo, NY. The work, carried out under NY State Superfund program, included insitu treatment of soils and groundwater impacted by chlorinated and non-chlorinated volatile organics and heavy metals.

- Assisted confidential client's legal counsel negotiate a consent decree with New Mexico Environment Department related to cleanup of chlorinated solvent releases to the fractured bedrock aquifer from a former manufacturing operation in Albuquerque, NM. Presently managing insitu groundwater cleanup and monitoring work.

- Currently serving as Project Manager for NY State Voluntary Cleanup efforts for chlorinated solvent cleanup at a former degreasing and electroplating facility in Rochester, NY. Designed and implemented interim remedial measures involving low-profile air stripping and insitu hydrogen infusion.

- Served as Project Manager for multiple EPA Pilot-Grant funded investigations for City of Buffalo Department of Strategic Planning.

- Project manager for remedial investigation, alternatives analysis, and remedial construction to facilitate redevelopment of over 450-acres of former steel manufacturing site property in Lackawanna, New York. Contaminants of concern primarily include petroleum organics and heavy metals.

- Managed design-build cleanup of former New 7th Street Brownfield Cleanup Program Site in Buffalo, New York. The project involved design-build removal of several hundred tons of petroleum-impacted soil and fill material and preparation of related engineering reports resulting in Certificate of Completion issuance.

- Led remedial efforts for petroleum releases at a Western New York refinery and major oil storage facility, achieving site inactivation within 3 months of the release.

- Managed spill site investigation and cleanup work including underground storage tank removal work at numerous petroleum and chemical spill sites in Western New York.

- Led design-build construction of a 5 MGD capacity cooling water pH adjustment system for PVS Chemical Corporation. The project included design of feed forward pH control system, adjustment tank and mixer construction, process and chemical feed piping modifications to neutralize sulfuric acid discharges. Successfully implemented startup and demonstration testing.

- Designed a 75 gpm groundwater treatment system and served as quality assurance officer for remedial efforts at the Steelfields site (former LTV Steel/Hanna Furnace Site), Buffalo, NY. The treatment system removes petroleum-based volatile organic and semi-volatile organic compounds prior to discharge to the Buffalo Sewer Authority.

June 1988 to June 1998 **Malcolm Pirnie, Inc.**

- Assisted the City of Buffalo Department of Community Development in implementing an emergency PCB-contaminated soil removal effort from a residential neighborhood in Buffalo, NY. Responsibilities included coordination of hazmat excavation contractor and secure landfill, preparation of an emergency excavation and confirmatory sampling plan, and oversight of community air monitoring during the removal work.

- Designed and successfully implemented an innovative groundwater treatment system for the Mercury Aircraft, Inc. Class 2 hazardous waste site in Dresden, New York. Responsibilities included preparation of design plans and specifications for an advanced oxidation process and low profile air stripper, construction oversight and treatment system start-up.

- Performed a Feasibility Study and prepared an Engineering Design Report for remediation of PCB-contaminated soils and sediments at the Columbus McKinnon Corporation, Tonawanda, New York. Responsibilities included detailed evaluation of several remedial processes, completion of design calculations and remedial cost estimates, and preparation of a final report for submission to NYSDEC.

- Assisted in performance of a Feasibility Study for the West Valley Nuclear Demonstration Site. The Feasibility Study evaluated alternatives for remediation of groundwater contaminated with radioactive isotopes from a former containment area release.

- Assisted in the design and performed start-up of a groundwater remediation system for Moog, Inc., an aerospace parts manufacturer. The project, performed on a design-build basis, involved preparation of design plans, securing contractor bids for construction, and start-up of the remediation system, which incorporates filtration and air stripping to remove chlorinated volatile organic contaminants from groundwater.

- Designed and implemented groundwater monitoring well decommissioning procedures for the Love Canal site, Niagara Falls NY. The project was performed on behalf of NYSDEC and included abandoning of monitoring wells no longer used in the Love Canal landfill or in adjoining neighborhoods.

- Prepared an environmental monitoring plan for remediation of PCB-contaminated sediments in the St. Lawrence River along the General Motors, Inc. Powertrain Division facility in Massena, New York.

- Assisted in the performance of a Feasibility Study for remediation of volatile organic, PCB and heavy metal-contaminated soils and ground water at the Rochester Fire Academy, Rochester, New York.

PUBLICATIONS/PRESENTATIONS

Forbes, Thomas H. and Frappa, Richard H. "Innovative Remedial Measures for the Mercury Aircraft Site" Proceedings of the Purdue University 50th Annual Industrial Waste Conference, May 1995.

Frappa, Richard H., Forbes, Thomas H. and McManus, Anne Marie "A Blast to Remediate" Industrial Wastewater, July/August 1996.

Forbes, Thomas H. and McManus, Anne Marie "Advanced Oxidation Technology and Application" Proceedings of the University at Buffalo 28th Mid-Atlantic Industrial and Hazardous Waste Conference, July 1996.

Forbes, Thomas H. et al - "Pay to Throw in Buffalo" Proceedings of 1997 Solid Waste Association of North America annual conference.

Forbes, T.H. & Werthman, P.H. "Development of Site-Specific Cleanup Levels for Commercial Redevelopment of a Large Former Steel Works," presented at the Brownfields 2000 Conference, Atlantic City NJ, October 2000.

Forbes, Thomas H. and Frappa, Richard H. "Innovative Remedial Measures Almost 10 Years Later at the Former Mercury Aircraft Site" Proceedings of the National Groundwater Association Northeast Conference, October 2002.

Forbes, Thomas H. "Ins and Outs of the New York State Brownfield Cleanup Program" Air & Waste Management Association, Niagara Frontier Section, Annual Environmental Seminar (presentation), April 2006.

Forbes, Thomas H. "Brownfield Redevelopment" Proceedings of Half Moon Seminar's "New York Environmental Compliance for Design Professionals" conference, September 2008.

Forbes, Thomas H. "New York State Brownfield Cleanup Program Update" Air & Waste Management Association Annual Environmental Seminar (presentation), April 2009.

MICHAEL LESAKOWSKI
SR. PROJECT MANAGER

EDUCATION

Master of Science (Environmental Engineering Science), University of Buffalo, 2008
Bachelor of Science (Biology), State University of New York at Fredonia, 1994

REGISTRATION

40-Hour OSHA Health and Safety Training
Annual 8 Hour OSHA Refreshers
ASTM Training for Commercial Property Transaction Due Diligence

SUMMARY OF EXPERIENCE

Mr. Lesakowski has over 15 years experience in the environmental consulting field at numerous industrial, commercial and hazardous waste sites throughout the northeast United States. A summary of projects Mr. Lesakowski has been involved with include all aspects of New York Brownfield Cleanup Program projects, New York State Superfund Program projects, New York Petroleum Spills Department projects, over 1,000 Phase I Environmental Site Assessments and more than 200 Phase II Site Investigations associated with property acquisition and divestiture and numerous remediation projects ranging from simple underground storage tank (UST) removals to complex groundwater remediation programs. Mr. Lesakowski is proficient in vapor intrusion modeling of chlorinated solvent and petroleum volatile organic compound (VOC) impacted sites. Mr. Lesakowski also has project management and technical consulting experience on several multi-site portfolio environmental due diligence assignments, working with purchasers and lenders to facilitate multi-million dollar real estate transactions. Prior to joining Benchmark, Mr. Lesakowski was a principal in an environmental consulting firm with offices in New York, Pennsylvania, Ohio and Maryland. Mr. Lesakowski is currently managing ten New York Brownfield Cleanup Program sites and several New York Spill Sites. He has managed assessments, investigations and remediation projects on properties with a multitude of historic uses (e.g., petroleum storage terminals, gas stations, automobile dealerships, rail yards, foundries, drycleaners, steel manufacturing, metallurgical plants, metal plating operations, junk yards), media types (surface and subsurface soil, groundwater, sediments, soil vapor, indoor air, building materials) and contaminants (e.g, VOCs, semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), heavy metals).

NEW YORK BROWNFIELD CLEANUP PROGRAM EXPERIENCE

348 Langner Road Site, West Seneca, New York

- Recently completed a Remedial Investigation and Interim Remedial Measures (IRM) for a property that was formerly developed as a retail gasoline station since the 1940s. Contaminants of concern include petroleum VOCs in soil and groundwater. The IRM included removal of over 8,000-tons of petroleum-impacted soil and removal of eight underground storage tanks (USTs) and related infrastructure and piping. During the remedial work, certain soil that was not impacted was field-screened on-Site, characterized via analytical testing to show that it was not impacted with contaminants of concern, and transported off-Site to an approved destination site with permission from NYSDEC. This screening of on-site materials saved our client over 4,000 cubic yards of material that would have otherwise been sent to a landfill at significant additional cost.

285-295 Niagara Street Site, Buffalo, New York

- Recently completed a Remedial Work for a property that was formerly developed as a bicycle factory from the 1800s, and a car wash and gasoline station since the 1950s. Contaminants of concern include petroleum VOCs in soil and groundwater. The remedial work included removal of approximately 4,500-tons of petroleum-impacted soil and removal of two underground storage tanks (USTs) that were encountered during excavation. During the remedial work, certain soil that was not impacted was field-screened on-Site, characterized via analytical testing to show that it was not impacted with contaminants of concern, and re-used on-Site with permission from NYSDEC. This screening of on-site materials saved our client from disposing of clean material that would have otherwise been sent to a landfill at significant additional cost.

125 Main Street Site, Buffalo, New York

- Recently completed a Remedial Investigation for a property known as the Former Donovan building, located in the City of Buffalo, NY, which was formerly industrial and commercial site, which as filled with miscellaneous historic fill materials. Contaminants of concern include petroleum VOCs, SVOCs and metals in soil. The remedial work was started in 2012 and is expected to be completed in 2013.

301 Franklin Street Site, Olean, New York

- Recently received a certificate of completion (COC) for a NY Brownfield Program Site. As part of the project, Mr. Lesakowski managed a Remedial Investigation and Interim Remedial Measures for a property located within the ExxonMobil Legacy Site (EMSL) area, which was formerly developed as a petroleum refinery. Contaminants of concern include petroleum VOCs, SVOCs and metals in soil and VOCs and SVOCs and non-aqueous phase liquid (NAPL) in groundwater. The IRM included removal of approximately 3,000-tons of metals- and petroleum-impacted soil and removal of 5,800 linear feet of abandoned subsurface piping. Remedial work included soil excavation and disposal; removal of abandoned subsurface piping and infrastructure; installation of a soil vapor extraction system; installation of an active subslab depressurization (ASD) system in the building; and, construction of a soil cover system.

Homer Street Redevelopment Site, Olean, New York

- Recently completed Interim Remedial Measures that included removal of approximately 11,000 linear feet of abandoned subsurface piping and 48 drums of residual piping contents. A Remedial Investigation was previously completed for this property, which is located within the ExxonMobil Legacy Site (EMSL) Works #3 area, which was formerly developed as a petroleum refinery. Contaminants of concern include grossly contaminated soils impacted with tar-like material, petroleum VOCs, SVOCs and metals in soil and VOCs, SVOCS and light non-aqueous phase liquid (LNAPL) in groundwater. Remedial Investigation work completed 2011-2012 included test pit excavations, soil borings/monitoring wells, surface soil, subsurface soil, sediment, surface water and groundwater sampling and delineation of surficial petroleum contamination.

NOCO S-41 Site, Buffalo, NY and Niagara Street and Pennsylvania Avenue Site, Buffalo, NY

- Recently completed a Remedial Investigation (RI), Interim Remedial Measures (IRM) and Remedial Alternatives Analysis under the NYSDEC Brownfield Cleanup Program for two former gasoline station and automotive repair facilities with significant soil and groundwater petroleum VOC impact. The remediation approach for both sites involves removal of abandoned underground storage tanks, product dispensers and piping, removal of in-ground hydraulic lifts,

soil excavation, and extraction and treatment of impacted groundwater. Final Engineering Reports and Site Management Plans were approved by the NYSDEC in December 2009 and Certificates of Completion were also issued in December 2009.

3807 Highland Avenue Site, Niagara Falls, New York

- Completed a Remedial Investigation (RI), Interim Remedial Measures (IRM) and Remedial Alternatives Analysis under the NYSDEC Brownfield Cleanup Program sites at a historic metallurgical facility and steel factory in Niagara Falls, NY. The Remedial Investigation involved collecting over 100 surface and subsurface soil and sediment samples and installing and sampling groundwater monitoring wells on an approximate 25-acre parcel slated for future mixed used commercial and industrial development. IRMs include excavation of chromium-impacted, arsenic-impacted and SVOC-impacted soil in several areas of the Site, drum and tank removal, catch basin and sump cleaning, smoke stack deposits remediation, and chemical waste removal. A Certificate of Completion was issued in June 2010.

1501 College Avenue Site, Niagara Falls, New York

- A Certificate of Completion was issued in December 2012 for this BCP site. Mr. Lesakowski managed a Remedial Investigation (RI), Interim Remedial Measures (IRM) and Remedial Alternatives Analysis under the NYSDEC Brownfield Cleanup Program sites at a historic heavy industrial facility in Niagara Falls, NY. The Remedial Investigation involved collecting surface and subsurface soil and sediment samples and installing and sampling groundwater monitoring wells on an approximate 15-acre parcel. IRMs include excavation of petroleum-impacted, PCB-impacted and SVOC-impacted soil in several areas of the Site, removal of galbestos PCB-impacted building materials, abandoned/damaged drum removal, chemical waste removal and a soil cover system.

275 Franklin Street Site

- Currently managing a NYSDEC Brownfield Cleanup Program site formerly used as drycleaner in western New York with significant soil and groundwater chlorinated VOC impact. Soil was successfully remediated using soil vapor extraction (SVE) to unrestricted soil cleanup objectives (SCOs) and groundwater remediation involves in-situ treatment of impacted groundwater. An active sub-slab depressurization system design and installation is planned in the new building during construction.

330 Maple Road Site, Amherst, New York

- Managed a Remedial Investigation (RI) and Remedial Alternatives Analysis under the NYSDEC Brownfield Cleanup Program for a small-arms shooting range with significant lead and semi-volatile organic compound (SVOC) impact. The RI involved collecting over 1,000 soil samples on 26-acre parcel slated for future mixed-use commercial and residential development. Bench-scale testing was completed to select a substrate to treat the characteristic hazardous soil to below toxicity characteristic leaching procedure (TCLP) thresholds. A Remedial Action Work Plan, which called for in-situ stabilization of characteristic hazardous soil and off-site disposal was prepared and approved by the NYSDEC. The remediation, which achieved a Residential Cleanup, was completed from the summer of 2011 through winter 2012. A certificate of completion was issued in spring 2012.

Seneca Market I, LLC Site, Watkins Glen, New York

- Managed Site Remediation at a former drycleaner, bus garage and asphalt plant under the NYSDEC Brownfield Cleanup Program with significant chlorinated volatile organic compound (cVOC) impact. The remediation approach involved underground tank removal, in-ground hydraulic lift removal, hazardous soil excavation and enhanced biodegradation of groundwater. The Site received its certificate of completion in December 2008. The Property is currently developed with an up-scale hotel. The project is highlighted on NYSDEC website as a Brownfield Success Story.

GLR Holdings Site, Niagara Falls, New York

- Managed a Remedial Investigation (RI), Interim Remedial Measure (IRM) and Remedial Alternatives Analysis under the NYSDEC Brownfield Cleanup Program for a former automotive repair facility with significant soil and groundwater chlorinated VOC impact. The remediation approach involved negotiated soil and groundwater cleanup objectives, limited soil excavation and enhanced biodegradation of groundwater. The Site received its certificate of completion in February 2008.

2250 Factory Outlet Boulevard Site, Niagara Falls, New York

- Managed Remedial Investigation (RI), Interim Remedial Measure (IRM) and Remedial Alternatives Analysis under the NYSDEC Brownfield Cleanup Program at a former lumber yard with chromium impact in Niagara Falls, NY. The remediation approach involved excavation and off-Site disposal of hazardous and non-hazardous soil. The Site received its certificate of completion in December 2007.

New Seventh Street Site, Buffalo, New York

- Managed the investigation of a former gasoline station and adjacent manufactured gas plant (MGP) as part of one of the largest Brownfield redevelopment projects in western New York. The project involves site redevelopment from a historic MGP site and adjacent gasoline station to a multi-million dollar commercial office complex. Acting on behalf of the developer (Duke Realty) and future tenant (HealthNow New York); preliminary investigations were completed to evaluate the nature and location of contaminants. Subsequent site investigation and remediation was completed via a Remedial Investigation (RI) and Interim Remedial Measures (IRM) under the New York State Brownfield Cleanup Program, saving months and significant cost. As a concurrent assignment, acted as a technical consultant to the developer and future tenant on negotiations and advisement on development of an environmental liability transfer arrangement between the purchaser/tenant (client), seller and a national remediation contractor.

OTHER PERTINENT EXPERIENCE

- Managed a site assessment and site investigations for a portfolio of retail gasoline stations in western New York. Project tasks include a historical review to determine sites' histories, review of previous technical reports, soil and groundwater investigations and remediation cost estimating for site cleanups. This project also involves forensic analyses of soil and groundwater samples to estimate the relative time of historic spills to determine the liability and responsibility for remediation of historic petroleum spills on-site.

- Managed a Phase I/Phase II site investigations for the Buffalo Urban Development Corporation for two parcels in the City of Buffalo encompassing approximately 100-acres. The project

involved Phase I ESAs to assess potential historic concerns in a historic heavy industrial area and subsequent soil and groundwater investigations to investigate subsurface environmental conditions. A portion of the property was subsequently developed with an industrial facility.

- Managed environmental due diligence, including Phase I/Phase II investigations of five active service stations in central and eastern upstate New York for a potential purchaser. Phase I ESAs indicated a history of gasoline stations on-site. In conjunction with the purchaser and seller, it was negotiated that a baseline assessment of soil and groundwater impact would be completed to establish responsibility for addressing contamination going forward. The purchaser was able to purchase the sites with no liability for historic petroleum spills on-site.

- Managed investigation and remediation of a former automobile dealership in Rochester, New York. Site investigations, competed with oversight of NYSDEC Spills division, indicated soil impact as a result of leaking gasoline, diesel and waste oil USTs and floor drain discharges. Remedial tasks included a removal of four USTs and associated pump dispensers, closing/sealing interior floor drains and excavation and off-site disposal of 1,500 cubic yards of impacted soil.

- Performed fieldwork at a 50-acre industrial park in western New York. Task included a soil boring and monitoring well installation program, development and sampling of monitoring wells and a hydraulic conductivity assessment. Subsequent remedial tasks included removal of six underground storage tanks and petroleum-impacted soil and a long-term groundwater monitoring plan.

- Performed fieldwork and reporting for RI/FS of NYSDEC superfund site in Long Island, NY. Investigation activities at this former metal plating facility included soil investigation, monitoring well installation and groundwater sampling, hydraulic conductivity testing, and floor drain/cess pool investigation. IRM activities included closure of interior floor drains and removal of heavy metals impacted soil.

ENVIRONMENTAL LIABILITY TRANSFER EXPERIENCE

- Starting in 2010 through present, took the lead role in developing a liability transfer arrangement of a former refinery in New York State. Major tasks included technical review of historic Remedial Investigation data, remedial alternative selection and cost estimating, preparation of technical and liability transfer program proposal and negotiation with Fortune 100 company technical and business representatives. The deal involves a multi-million dollar remedial cleanup that is planned to be completed under the New York Brownfield Cleanup Program.

- Managed environmental consulting and due diligence activities for a purchaser of 182 gasoline service stations in Maryland, Virginia and Washington, DC. Tasks included Phase I ESAs, remediation cost estimating for sites with known impacts and/or on-going remediation and interfacing with the client's lenders to facilitate a $110 million dollar real estate transaction. An Environmental Liability Transfer arrangement funded by the seller facilitated the additional environmental investigation and remediation of impacted sites.

- Played a key role in developing a liability transfer agreement for the transfer of a 48-site portfolio of gasoline stations with known petroleum impacts. Tasks included Phase I/Phase scoping, technical report review, oversight of remediation cost estimates and interfacing with the attorneys, insurance brokers, client and property sellers to develop and present the liability transfer arrangement.

- Provided technical consulting on behalf of HealthNow New York and Duke Realty for developing a liability transfer agreement for the transfer of a former manufactured gas plant site and gasoline station with significant soil, groundwater and soil vapor petroleum impacts. Tasks included technical report review, remediation cost estimating and interfacing with the attorneys, insurance brokers, client and property sellers to develop the liability transfer arrangement. Benchmark/TurnKey completed the remediation of the former gasoline station portion of the Site.

BRYAN W. MAYBACK
SENIOR PROJECT SCIENTIST

EDUCATION

Bachelors of Science (Earth Sciences, Environmental Concentration) 2002; State University of New York, College at Buffalo
Associates in Applied Science (graduated with high distinction), Environmental Technology (1999) Trocaire College, Buffalo, New York

REGISTRATION AND AFFILIATIONS

Hazardous Material Handling 40 hour (OSHA)
Hazardous Material Handling 8 hour Supervisor Training (OSHA)
Environmental Site Assessments for Property Transfer (ASTM Conference)
New York State and EPA Certified Asbestos Air and Project Monitoring Technician
Construction Safety Training 10 hour (OSHA)

SUMMARY OF EXPERIENCE

Since 2002, Bryan Mayback has been involved in various aspects of the environmental field. While with one of the largest due diligence firms in the northeast, Mr. Mayback was involved with hundreds of lenderbased environmental studies. These studies included Phase I and Phase II environmental site assessments in Western New York and throughout the U.S. Mr. Mayback provided project management as well as the completion of the field work, written reports, and final report reviews. He has also provided consulting services for major petroleum companies such as ExxonMobil. Mr. Mayback was involved with large scale excavation projects (removal of up to 15,000 tons of impacted soil and treatment of over 200,000 gallons of groundwater), sensitive receptor surveys, hydrogeologic studies, impact delineation studies, and pilot testing relative to alternative remedial measures (other than soil excavation). He has performed groundwater monitoring activities, including well gauging, purging (bailers and low-flow) and sampling. Through the years, Mr. Mayback has been responsible for the closure/reclassification of many NYSDEC listed spills based on results of remedial activities that he was involved with and proposed.

REPRESENTATIVE PROJECT EXPERIENCE

June 2009 to July 2014: **RJS Environmental, Inc.**
Vice President (2009), President

- **Environmental Due Diligence Projects.** Project Officer and Manager for all Environmental Site Assessment projects including Phase I and intrusive (Phase II) studies, for banks, developers, lawyers, owners, etc. Responsible for client communications, report reviews, and project management ensuring projects are completed on time and within budget.

September 2007 – June 2009 **Groundwater and Environmental Services, Inc**

- **Major Petroleum Companies, NY**. Provided consulting services for ExxonMobil and other major petroleum companies that facilitated active New York State DEC listed spills towards closure. These sites were environmentally challenged properties in differing stages of remediation located mostly in Western New York. As Case Manager/Environmental Scientist provided oversight for various environmental activities, including soil excavation, dewatering/groundwater treatment and discharge, soil

boring and monitoring well installation, remedial pilot testing, test pits and product recovery. Also responsible for completion and review of Remedial Action Work Plans, Excavation Reports, Quarterly Site Monitoring Reports, and pilot test reports for submittal to the NYSDEC and ExxonMobil.

November 2002 – September 2007 **Lender Consulting Services**

- As Senior Environmental Analyst, involved in developing hundreds of lender-based Phase I and Phase II environmental site assessments (including site inspections, municipal record reviews, soil/groundwater sampling, and UST removals) in Western New York as well as throughout the U.S. Responsible for review of Environmental Site Assessment Reports, and training and supervising staff involved in site assessments. Communicated property related potential environmental issues and solutions to clients.

Summer 2000 **AFI Environmental**

- As Environmental Specialist, supervised the removal of impacted soil via excavation at a site in Buffalo, New York. Groundwater was treated with activated carbon and discharged to the storm sewer. Also Constructed a remediation field for impacted soil and groundwater; collected soil and groundwater samples for laboratory analysis; and reviewed analytical data and report preparation.

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

LORI E. RIKER, P.E.
PROJECT MANAGER

EDUCATION

BASc (Civil Engineering) 1992; University of Waterloo, Ontario, Canada
MASc (Environmental Engineering) 1994; University of Guelph, Ontario, Canada

REGISTRATION AND AFFILIATIONS

Professional Engineer, New York
Certified OSHA 40-Hour Hazardous Waste Site Training
Air and Waste Management Association, Member

SUMMARY OF EXPERIENCE

Ms. Riker has 20 years of environmental and civil engineering experience that has focused on industrial regulatory compliance assistance; Phase I environmental site assessments; hazardous waste site investigations and remedial evaluations; detailed design; and construction administration. Ms. Riker's regulatory compliance experience includes: petroleum bulk storage (PBS) and chemical bulk storage (CBS) auditing and the associated spill prevention reporting; Emergency Planning and Community Right-to-Know Act (EPCRA) Tier II and Toxic Release Inventory (Form R) reporting; Title V air permitting (Title V, State facility, minor facility registrations), compliance reporting, and emission statement preparation; Resource Conservation and Recovery Act (RCRA) hazardous waste reporting; storm water permitting and preparing discharge monitoring reports (DMRs), storm water pollution prevention plans (SWPPPs), and Best Management Practices (BMP) Plans; and hazardous waste annual reporting and reduction plans. Ms. Riker's site investigation and remediation experience has been under various New York State Department of Environmental Conservation (NYSDEC) remedial programs including the: Brownfield Cleanup Program (BCP); RCRA Corrective Action Program; and Voluntary Cleanup Program (VCP).

REPRESENTATIVE PROJECT EXPERIENCE

May 2003 to Present — **Benchmark Environmental Engineering & Science, PLLC**
Nov 1997 to May 2002 — **Malcolm Pirnie, Inc.**
Feb 1995 to Oct 1997 — **ENVIRON Corporation**

- Assisted in the RCRA Corrective Measures Study (CMS) for the Former Bethlehem Steel Coke Oven Division Site located in Lackawanna, NY. Duties included preparing work plans for Interim Corrective Measures (ICMs); reviewing analytical data obtained for the solid waste management units (SWMUs) and water courses; reviewing reports/assessments prepared by other consultants retained by NYSDEC and other agencies; and evaluating numerous slag/fill and groundwater remedial alternatives and recommending a final remedial approach in the CMS Report.
- Assisted former steel manufacturing facility with regulatory compliance during shutdown of operations in Lackawanna, NY. Current activities for former steel manufacturing company in Lackawanna, NY include: SPDES permitting; Industrial Water System compliance, including successfully obtaining a Water Withdrawal Permit for 50 MGD and implementing required upgrades to the water metering system; and preparing annual RCRA Hazardous Waste Reports.

- Assisted with environmental regulatory compliance audits at Gibraltar Steel's NY facilities, and coordinated audits at Gibraltar Steel's other facilities nationwide. The audits covered major existing environmental regulatory programs, as well as applicable local or state regulations and potential upcoming regulatory requirements.
- Assisted in preparing numerous successful NYSDEC BCP applications for former steel plant sites and industrial/commercial properties in western NY. Prepared Remedial Investigation (RI) Work Plans, RI Reports, Remedial Action Work Plans, Final Engineering Reports, and Site Management Plans. Contaminants of concern primarily include petroleum organics/solvents and heavy metals.
- Providing/managing on-going environmental compliance assistance to scrap metal recycling facilities in NY and PA including: permitting, sampling, inspection, and reporting requirements under the Multi-Sector General Permit (MSGP) for Storm Water Associated with Industrial Activity and NYSDEC State Pollutant Discharge Elimination System (SPDES) Permits; PBS inspections and preparing SPCC Plans; EPCRA Tier II reporting; preparing landfill disposal application; preparing Water Treatment Chemical notifications; hazardous waste annual reporting; and air permitting modifications, compliance reporting, and annual emission statement preparation.
- Providing/managing on-going environmental compliance assistance to industrial facilities including: air permit applications and modifications; storm water permitting, BMP Plan/SWPPP preparation, compliance monitoring, and DMR preparation; water withdrawal and sewer metering reports; PBS registration, SPCC Plan preparation, and tank inspection; and annual hazardous waste reporting.
- Providing environmental compliance assistance to NOCO Energy Corp. for its major petroleum distribution terminal and warehouse in Tonawanda, NY and multiple retail gasoline stations in NY and VT. Specific projects include: storm water permitting and preparation of a SWPPP; preparation of Spill Response, Control & Countermeasure (SPCC) Plans and a Spill Prevention Report (SPR); Title V air permitting assistance and emission statement preparation; EPCRA Form R reporting; review of and recommendations for updating the USCG Facility Response Plan; and permitting and conceptual design for upgrades to a PBS warehouse facility.
- Served as the environmental compliance manager for a porcelain insulator manufacturing facility and completed regulatory reporting requirements including TP550 forms, Form R reports, Tier II reports, hazardous waste reports, storm water permitting, and DMRs.
- Performed environmental compliance audits of multiple retail gasoline station and lube oil shops in western NY, focusing on the NYSDEC PBS regulations, and preparing SPCC Plans and an overall BMP Plan.
- Assisted in performing environmental regulatory compliance audits for numerous active industrial facilities. Responsibilities included researching and interpreting applicable environmental regulations, and preparing reports to summarize the findings and prioritize corrective measures.
- Prepared PBS and CBS applications for tank registration under NYSDEC's bulk storage programs and prepared the associated SPCC Plans and SPRs for industrial facilities.
- Assisted in preparing an SPCC Plan for General Electric Company's Tonawanda facility. Work included review of numerous federal and state regulations pertaining to PCB-contaminated oil and waste.

PUBLICATIONS/PRESENTATIONS

- Riker, L. E., McManus, A. C., "Energize Your Business," presented at the Fall Seminar of the New York Water Environment Association, Genesee Valley Chapter, Industrial Issues Committee, Webster NY, November 1, 2001.
- Riker, L. E., McManus, A. C., Sanders, L. A., "Life After Registration: Integrating Environmental Management Systems into Business and Operating Cultures," Proceedings, 94th Annual Conference and Exhibition of the Air & Waste Management Association, Orlando FL, June 26, 2001.
- Riker, L. E., McManus, K. R., Kreuz, D. E., Mistretta, M. V., "Trash to Treasure: Revitalization of Buffalo's Waterfront," presented at a Conference of the New York State Society of Professional Engineers, Erie/Niagara Chapter, Environmental Affairs Committee, Buffalo NY, January 10, 2001.
- Secker, L. E., Talley, J. W., "Bioremediating a Buffalo Brownfield: A Comparison of Bench-Scale Soil Biotreatability Results to Full-Scale Remediation," Proceedings, Thirtieth Mid-Atlantic Industrial & Hazardous Waste Conference, Villanova University, Philadelphia PA, July 12, 1998.

APPENDIX B

PREVIOUS INVESTIGATIONS

(PROVIDED ON CD)

Phase I Environmental Site Assessment (ESA)

3077-3097 UNION ROAD, 20-26 HAROLD SQUARE AND ASSOCIATED PARCELS
ORCHARD PARK, NEW YORK

January 2018 T0105-017-010

Prepared For:

BENDERSON DEVELOPMENT



Prepared By:

TurnKey Environmental Restoration, LLC

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PHASE I ENVIRONMENTAL SITE ASSESSMENT
ASTM E1527-13

FOR
3077-3097 UNION ROAD, 20-26 HAROLD SQUARE
AND ASSOCIATED PARCELS
ORCHARD PARK, NEW YORK

January 2018 T0105-017-010

Prepared for:

Benderson Development Company, LLC
570 Delaware Avenue
Buffalo, New York 14202

Prepared by:

TurnKey Environmental Restoration, LLC
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PHASE I ENVIRONMENTAL SITE ASSESSMENT
3077-3097 UNION ROAD, 20-26 HAROLD SQUARE AND ASSOCIATED PARCELS
ORCHARD PARK, NEW YORK

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List of Acronyms

ACMs - Asbestos Containing Materials

AIRS- Aromatic Information Retrieval System

AST - Aboveground Storage Tank

ASTM - American Society for Testing and Materials

BCA- Brownfield Cleanup Agreement

BCP- Brownfield Cleanup Program

Benchmark - Benchmark Environmental Engineering & Science, PLLC

BTEX - Benzene, toluene, ethylbenzene, and xylenes

CAA – Clean Air Act

CAMP- Community Air Monitoring Plan

CBS - Chemical Bulk Storage

C/D- Construction and Demolition

CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act

CERCLIS - Comprehensive Environmental Response, Compensation, and Liability Information System

CESQG - Conditionally Exempt Small Quantity Generator

CFR- Code of Federal Regulation

COC- Certificate of Completion

CO2- Carbon Dioxide

CP- Commissioner Policy

CSCOs – Commercial Soil Cleanup Objectives

CVOC- Chlorinated Volatile Organic Compound

CORRACTS - Corrective Action

CPG - Certified Professional Geologist

CREC - Controlled Recognized Environmental Condition

DER- Division of Environmental Remediation

DNAPL- Dense Non-Aqueous Phase Liquid

EC- Engineering Control

ECL- Environmental Conservation Law

ECHO- Enforcement and Compliance History Information

ELAP- Environmental Laboratory Approval Program

EDR - Environmental Data Resources, Inc.

ERNS - Emergency Response & Notification System

ESA – Environmental Site Assessment

ETPH - Extractable Total Petroleum Hydrocarbons

FBGS - Feet below ground surface

FIFRA - Federal Insecticide, Fungicide, & Rodenticide Act

FINDS - Facility Index System/Facility Registry System

FOIA - Freedom of Information Act

FOIL - Freedom of Information Letter

FOP- Field Operating Procedure

NYSDOH - New York State Department of Health

NYSDOL - New York State Department of Labor

O&M- Operations and Maintenance

OM&M- Operation, Maintenance, and Monitoring

OPRA - Open Public Records Act

OSHA - Occupational Safety and Health Administration

PAH - Polycyclic aromatic hydrocarbons

PBS - Petroleum Bulk Storage

PCBs - Polychlorinated Biphenyls

pCi/L - picoCuries per Liter

PERC - Tetrachloroethylene (perchloroethylene)

PID - Photo-Ionization Detector

PPB - Parts Per Billion

PPM - Parts Per Million

PRP - Potentially Responsible Party

PRR- Periodic Review Report

PVEC - Potential Vapor Encroachment Condition

QA/QC- Quality Assurance/Quality Control

QAPP- Quality Assurance Project Plan

RAO- Remedial Action Objective

RAWP- Remedial Action Work Plan

RCRA - Resource Conservation and Recovery Act

RCRIS - Resource Conservation and Recovery Information System

REC - Recognized Environmental Condition

RI- Remedial Investigation

RI/FS- Remedial Investigation/Feasibility Study

ROD- Record of Decision

RP- Remedial Party

RRSCOs – Restricted Residential Soil Cleanup Objectives

RSCOs – Residential Soil Cleanup Objectives

RSO- Remedial System Optimization

SAC- State Assistance Contract

SACM - Suspect Asbestos Containing Material

SCG- Standards, Criteria, and Guidelines

SCO- Soil Cleanup Objective

SEMS - Superfund Enterprise Management System (FKA CERCLIS)

SHPO - State Historic Preservation Office/Officer

SHWS - State Hazardous Waste Site

SMP- Soil Management Plan

SOP- Standard Operating Procedures

SOW- Statement of Work

FTTS- FIFRA/TSCA Tracking System	**SPCC** - Spill Prevention Control and Countermeasure
FWS - Fish and Wildlife Service	**SPDES** - State Pollution Discharge Elimination System
GIS - Geographic Information Systems	**SQG** - Small Quantity Generator
HASP- Health and Safety Plan	**SSD**- Sub-slab Depressurization
HREC – Historic Recognized Environmental Condition	**SVE** - Soil Vapor Extraction
HSWDS - Hazardous Waste Disposal Site	**SVI**- Soil Vapor Intrusion
HVAC - Heating Ventilation and Air Conditioning	**SVOC** - Semi volatile Organic Compound
IC- Institutional Control	**SWF/LF** - Solid Waste Facility/Landfill
ICIS - Integrated Compliance Information System	**SWRCY** - Registered Recycling Facility List
IRM - Interim Remedial Measure	**TAL**- Target Analyte List
ISCOs – Industrial Soil Cleanup Objectives	**TCL**- Target Compound List
LBP - Lead-Based Paint	**TCE** - Trichloroethylene
LNAPL- Light Non-Aqueous Phase Liquid	**TCLP** - Toxicity Characteristic Leachate Procedure
LQG - Large Quantity Generator	**TRIS** - Toxic Chemical Release Inventory System
LTANK - Leaking Tank	**TSCA** - Toxic Substance Control Act
LUST - Leaking Underground Storage Tank	**TSDF** - Treatment, Storage and Disposal Facility
MOSF - Major Oil Storage Facility	**TurnKey** - TurnKey Environmental Restoration, LLC
MSDS - Material Safety Data Sheets	**USCOs** – Unrestricted Soil Cleanup Objectives
MTBE - Methyl Tertiary Butyl Ether	**USDA** - United States Department of Agriculture
NA - Not Available/Applicable	**USEPA** - United States Environmental Protection Agency
NPDES - National Pollutant Discharge Elimination System	**USGS** - United States Geological Survey
NPL - National Priorities List	**UST** - Underground Storage Tank
NRCS - Natural Resource Conservation Service	**VCP** - Voluntary Cleanup Program
NYCRR- New York Codes, Rules, and Regulations	**VEC** - Vapor Encroachment Condition
NYSDEC - New York State Department of Environmental Conservation	**VOC** - Volatile Organic Compound

1.0 EXECUTIVE SUMMARY

The following details the findings of TurnKey relative to identifying RECs for 3077-3097 Union Road, 20-26 Harold Square and associated parcels, Orchard Park, Erie County, New York (Site).

1.1 General Information

TurnKey has performed a Phase I ESA of the Site in conformance with the scope and limitations of ASTM Practice E 1527-13 and the protocols required by the Client. This section summarizes the findings of the environmental professional relative to the Site. The reader is encouraged to read the entire report.

1.2 Site Description

The Site is located in a moderately developed commercial and residential area of the Town of Orchard Park (see Figure 1). As shown on Figures 2 and 3, two structures are present on the Site. Building 1 is a plaza with vacant tenant spaces and two current occupants, Adam's Barber Shop (barber shop) and Gold N Ham (pawnshop and butcher shop). Building 2 reportedly has a history of being used for storage and use by a contractor/masonry company. A portion of the building is presumed by TurnKey to have been used for equipment repair/maintenance.

The Site consists of four parcels totaling 39.64-acres and is supplied with and has access to municipal sanitary sewer, electric, natural-gas and public water. Information relative to the specific parcels subject to this assessment, as provided by the Town of Orchard Park municipal offices, is provided below:

Parcel Address	Parcel ID**	Size (acres)	Tax ID No.	Current Owner	Current Use
3077 Union Road*	Parcel 1	17.91	152.12-4-6.1	Harold L. Gantzer (Estate)	Commercial with vacant land. Developed with Buildings 1 and 2.
0 Union Road	Parcel 2	3.85	152.12-4-5		Vacant land.
0 Union Road	Parcel 3	16.39	153.09-2-1		Vacant land.
0 Union Road	Parcel 4	1.49	152.12-4-2		Vacant land.

*3077 Union Road is the parcel address; however, Building 1 is addressed as 3077-3097 Union Road and Building 2 is addressed as 20-26 Harold Square.
**A specific Parcel ID was assigned to each parcel by TurnKey in order to differentiate between the parcels within the report.

1.3 Data Gaps

The following data gaps[1] were identified in completion of this inquiry.

Type of Data Gap	Details of Data Gap	Sources Consulted	Significance
Historical Information	Historical information for the Site was not available at five-year intervals.	City directories, aerial photographs, topographic maps and municipal information.	This data gap did not significantly limit TurnKey's ability to provide an opinion on RECs related to the Site.
Abstract of Title	The abstract of title was not available for review at the time of report preparation.	Current property owner (i.e., user of this report).	This data gap did not significantly limit TurnKey's ability to provide an opinion on RECs related to the Site.
Site Reconnaissance	Parked vehicles, stored materials/equipment, snow cover and dense vegetation hindered observations at the time of the Site reconnaissance. In addition, certain interior portions of Buildings 1 and 2 were inaccessible to TurnKey at the time of the site visit. TurnKey was unaccompanied at the time of the Site visit thus property boundaries were approximated.	Site reconnaissance	This data gap did not significantly limit TurnKey's ability to provide an opinion on RECs related to the Site.

[1] A data gap is defined by 40 CFR 312.10 as "a lack of or inability to obtain information required by the standards and practices" of preparation of this document "despite good faith efforts by the environmental professional" or others to gather such information.

1.4 Environmental Report Summary

1.4.1 Summary of Site Reconnaissance Potential Concerns

The following potential environmental concerns were identified at the time of the Site reconnaissance:

- The southeastern portion of Building 1 was historically used for automotive repair. The eastern portion of Building 2 was used for equipment repair/maintenance for a masonry business.
- Automotive-related fluids including oils, brake fluid, automatic transmission fluid and antifreeze were noted in containers of five-gallons or less in the historic automotive repair portion of Building 1. Miscellaneous hazardous/regulated materials such as hydraulic oil, muriatic acid, clean strip, insulite, latex bending mixture, roof cement, etc. were noted in containers of five-gallons or less in the eastern portion of Building 2. One 55-gallon drum labeled "oil" was noted in Building 2.
- Hazardous/regulated wastes appear to have been generated in connection with automotive repair operations at Building 1 as containers of apparent waste oil and waste antifreeze were observed. One vehicle battery was noted within Building 1. Operations at Building 2 may have also generated hazardous/regulated wastes with one 55-gallon drum observed along the south interior wall of Building 2 that may contain waste oil; however, this could not be confirmed. One 55-gallon drum labeled "sonic drying agent" was located along the east exterior wall of Building 2; the drum was apparently empty.
- Four used automobile engines were noted within the historic automotive repair portion of Building 1 (southeastern portion of the building). One apparently inactive vehicle was noted within the historic automotive repair portion of Building 1. Three parked and apparently inactive vehicles were noted exterior of the historic automotive repair portion of Building 1.
- Black staining was observed to concrete ground surfaces within the historic automotive repair portion of Building 1.
- Miscellaneous materials (i.e., a used television, a plastic container, and general garbage) were noted on exterior portions of the Site in the vicinity of Buildings 1 and 2.
- Two trench drains and one floor drain were observed in a vacant tenant space at Building 1 (3081 Union Road). According to the site contact, this tenant space was historically used for installation of vehicle accessories (automatic car starters, stereo equipment, etc.) No floor drains were observed in the historic automotive repair portion of Building 1.

- A floor drain was noted in the eastern bay area of Building 2. No liquid was observed within the drain.
- One storm drain was observed south of Building 1. An additional storm drain was observed in parking the lot proximate to the southwest corner of Building 1. On-Site storm drains are believed by TurnKey to discharge into the storm sewer system.
- Turnkey observed four large soil mounds in vacant land portions of Parcel 1 in areas east and southeast of the existing buildings. According to the site contact, the soil mounds consist of reworked soil from the south adjacent Lake Shore Savings Bank. No visual or olfactory concerns were noted in the soil mounds at the time of the site inspection.
- Musty odors were noted throughout Building 1.
- An automotive repair operation is located adjacent to the Site. No concerns (staining, odors, etc.) were noted at the Site as a result of this adjacent operation.

1.4.2 Summary of Historic Uses

Approximate Years	Reported or Suspected Use	Owner/Occupant
1894 to 1965	Vacant/agricultural land.	Unknown individual owners.
1965 to current	Commercial and vacant/wooded land. Of note, a dry cleaner operated at the Site in at least 1967 (see below for additional information). In addition, historic operations included automotive repair.	Current owner is Harold L. Gantzer (Estate). No past owners were identified.

A survey map of the Site dated December 17, 1967 obtained in Town of Orchard Park municipal files indicates the presence of a dry cleaner located in Building 1, presumed to be the tenant space currently occupied by Gold N Ham. The survey map also indicates the presence of a septic system east of Building 1.

1.4.3 Regulatory Information

Site Listings

Site Database Listings	Address/Name	Summary
EDR Historical Auto Station	3093 Union Road/BDR Torque Converters	BDR Torque Converters is listed as an automotive transmission repair shop in at least 1993.

Note that Spill No. 9803132, dated June 10, 1998, involved an unknown blue colored substance in a tributary to Cazenovia Creek, which may have included the portion of the intermittent creek that bisects the Site. The cause was identified as a sewer backup and the NYSDEC identified the responsible party as Delta Sonic. The NYSDEC reclassified the spill as "closed" on July 30, 1998.

Adjacent Property Listings

Adjacent Database Listings	Address/Name	Summary
RCRA NonGen/NLR, FINDS, ECHO, NY Manifest	3084 Southwestern Boulevard/7-Eleven	7-Eleven is listed as a RCRA non-generator of hazardous waste with no reported violations. Benzene is the reported waste. 7-Eleven is also included in the FINDS, ECHO, and NY Manifest databases. NY Manifest reports non-listed ignitable wastes which are liquids associated with metal drums, barrels, cargo tanks, and tank trucks.
NY Spills		Spill No. 9806778, dated September 2, 1998, involved discovery of contaminated soil during removal of a UST. The spill was reclassified as "inactive" on November 24, 1998.
PA Manifest	3050 Union Road/Rite Aid	Rite Aid is listed in the PA Manifest database with waste materials shipped off-site in fiber/plastic boxes, cartons, or cases.
RCRA-CESQG, NY Manifest		Rite Aid is also listed as a RCRA conditionally exempt small quantity generator of hazardous waste with no reported violations. Ignitable and/or corrosive wastes including chromium, selenium, silver, 2H-1Benzopyran-2-One, 4-Hydroxy-3-(3-Oxo-1-Phenylbutyl)-, nicotine, and salts were listed as being generated.
EDR Historic Auto Station	3065 Southwestern Boulevard/BP SIRC	The east adjacent property is listed as a gasoline service station from 2010 through at least 2012.
NY AST	3050 Union Road/Austin Pontiac, Inc./Town Lincoln Mercury	Five ASTs ranging from 250-1,000 gallons containing gasoline, lube oil, used oil, and waste oil are listed at Austin Pontiac, Inc. All tanks are reported as removed/closed in 1998.
NY Spills and LTANK		Spill No. 8808151, identified as Austin Pontiac, dated January 1, 1989 involved removal of a 1,000-gallon UST containing waste oil. NYSDEC notes under the spill incident details indicate the tank was removed and odor and sheen were found to be acceptable and no further action was needed. The spill was "closed" by the NYSDEC on August 22, 1991.

		Spill No. 0651390, identified as Town Lincoln Mercury, dated October 1, 2006, involved impacts encountered while removing hydraulic lifts. The spill was reclassified as "inactive" on January 3, 2007. An additional spill, No. 9705746, for Town Lincoln Mercury, dated August 12, 1997, involved impacts encountered while removing a 550-gallon waste oil UST. The spill was reclassified by the NYSDEC as "inactive" on June 15, 1998.

Numerous additional regulatory listings were identified for nearby properties located within the search radii. None of the listings associated with nearby properties suggested a specific environmental concern at the Site.

1.4.4 Other Findings

Historic dry cleaning operations at the Site are considered a potential VEC. Further testing would be required to determine whether a VEC is present within the buildings.

1.4.5 Interviews/Questionnaires

Mr. Dennis Mill of the Estate of Harold L. Gantzer indicated the following during an interview with TurnKey on January 4, 2018.

- Floor and trench drains within existing buildings discharge into the municipal sanitary sewer system. Storm drains on exterior portions of the Site discharge into the storm sewer system.
- Minor tune ups and ignition work were completed at the historic automotive repair portion of Building 1. [An apparent previous automotive repair operation, BDR Torque Converters, was identified by EDR as an automotive transmission repair shop in at least 1993, apparently in the same tenant space as the more current operation within Building 1.]
- Building 2 included minor maintenance of equipment, if needed. An exterior aboveground lift was previously removed.
- The soil piles observed during the site visit are non-impacted soil from development on the adjacent Lake Shore Savings Bank property.
- No natural-gas wells are located on-Site.

TurnKey's Environmental Questionnaire was completed by the current property owner. No specific environmental concerns were identified for the Site; however, several questions were answered with "unknown" responses.

An interview with the Town of Orchard Park Building Inspector and Assessor did not reveal any environmental concerns for the Site.

1.5 Report Findings

Where applicable for the Site, the following is a list of RECs, CRECs, HRECs, and de minimis conditions. Non-scope considerations are also provided.

RECs

Per ASTM E1527, an REC is the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment.

TurnKey's investigation revealed the following RECs in connection with the Site:

- The dry cleaner identified within Building 1 on a 1967 survey of the Site is considered a REC due to the anticipated use of solvents and the potential for subsurface soil and/or groundwater impacts. The septic system identified on the Site at the time of dry cleaning is also considered a REC due to the potential for subsurface impacts.
- Historic automotive repair at Building 1 and equipment repair/maintenance with a floor drain at Building 2 are considered RECs as subsurface conditions are unknown. As floor drains reportedly discharge into the municipal sanitary sewer system, the integrity of the sanitary sewer system is unknown.
- The remaining hazardous/regulated materials and vehicle components (engines, etc.) remaining at the Site are considered RECs as such will require proper off-site disposal if not intended for future use.

Controlled RECs

Per ASTM E1527, a CREC is a REC resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority (for example, as evidenced by the issuance of a no further action letter or equivalent, or meeting risk-based criteria established by regulatory authority), with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls).

TurnKey's ESA did not reveal CRECs for the Site.

Historic RECs

Per ASTM E1527, a HREC is a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls). For example, a spill that has been remediated to the satisfaction of the appropriate regulators would be considered a HREC.

TurnKey's investigation revealed the following RECs in connection with the Site:

- The "closed" and "inactive" spill incidents identified for adjacent/nearby properties are considered HRECs as such have been addressed to the satisfaction of the NYSDEC.

De-minimis Conditions

In accordance with ASTM E-1527, de-minimis conditions are conditions that generally do not present a threat to human health or the environment and generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. Conditions determined to be de-minimis conditions are neither RECs nor CRECs.

TurnKey's investigation revealed the following de-minimis conditions for the Site:

- The soil piles noted at the Site are considered de-minimis as the property owner indicated that such consist of non-impacted soil originating from the south adjacent property that is currently developed with Lake Shore Savings Bank. Further, no visual or olfactory concerns were identified during the site visit and no regulatory listings identified for the south adjacent property.

- The miscellaneous materials (televisions, miscellaneous debris, etc.) noted at the Site are considered de-minimis conditions as no obvious concerns (staining, odors, etc.) were noted proximate to the materials.
- Current/historic adjacent operations are considered de-minimis as there is no regulatory information suggesting an environmental concern at the Site from adjacent operations.

Non-Scope Considerations

Per ASTM E1527-13, non-scope considerations are described as ancillary observations during performance of the on-site investigation. Non-scope considerations are not considered RECs under ASTM E1527, but may represent health or environmental issues impacting the Site and/or property value.

TurnKey's investigation identified the following non-scope considerations:

- Based on the ages of the existing buildings, the potential for suspect ACMs and lead exists. TurnKey understands that an asbestos survey is being completed by others as part of the Client's due diligence. Asbestos and/or lead, if present, should be properly handled as part of future renovation/demolition activities.
- Visual evidence of mold was noted within Building 1 at the time of the Site reconnaissance. This concern is reduced as demolition of the building is planned.
- No wetland or flood zone areas were identified on-site or adjacent to the Site; however, an intermittent creek bisects the Site.
- Research in the area of the Site completed by the New York State Department of Health - Bureau of Environmental Radiation Protection (Radon) suggests an average basement radon concentration of 4.70 pCi/L in the area of the Site, which is above the USEPA action level of 4.0 pCi/L. Elevated radon in the area of the Site should be considered as part of the future redevelopment project.

1.6 Opinion

Due to the RECs identified above, a Phase II Environmental Investigation is warranted on-Site to assess subsurface soil and groundwater conditions.

Regardless of the results of the subsurface investigation, if completed, the following should be noted:

- Any materials remaining on-site that are not intended for future use, especially remaining hazardous/regulated materials, vehicles and vehicle components, should be removed and properly disposed off-site.
- The staining noted at the Site should be cleaned and any impacted materials disposed of properly.
- If impacted soil, groundwater or other materials are encountered during future Site work/ excavation, such should be properly handled in accordance with applicable local, state and federal regulations.

2.0 INTRODUCTION

2.1 Purpose

The primary purpose of this assessment was to provide Benderson Development Company, LLC with sufficient information about the potential environmental risks associated with the Site.

A secondary purpose of this study was to document the inquiry of the environmental professional for all appropriate inquiries for the Site. Specifically, this document is intended to provide the "all appropriate inquiries" for the purposes of CERCLA Section 101(35)(B). Such is applicable to persons seeking to qualify for: (i) the innocent landowner defense pursuant to CERCLA Sections 101(35) and 107(b)(3); (ii) the bona fide prospective purchaser liability protection pursuant to CERCLA Sections 101(40) and 107(r); and (iii) the contiguous property owner liability protection pursuant to CERCLA Section 107(q). This report was not intended as part of the Site characterization and assessment with use of a grant awarded under CERCLA Section 104(k)(2)(B). More specifically, the scope is intended to identify conditions indicative of releases or threatened releases of hazardous substances in, on, or at the Site.

2.2 Scope of Work

The scope of work is intended to identify RECs at the Site, including the following tasks:

A) Review of information provided by the User of this Report regarding commonly known or reasonably available information about the Site.
B) Interviews with past and present owners, operators and occupants (if available).
C) Review of historical sources of information documenting the Site's use.
D) Review of Federal, State, tribal and local government records.
E) A visual inspection of the Site and adjoining properties (to the extent possible).
F) Preparation of this written report.

2.3 Significant Assumptions

No significant assumptions were made during completion of this study other than as identified Section 2.4.

2.4 Limitations and Exceptions

2.4.1 Limitations

To the extent of our knowledge, the information contained in this Report is true and accurate. TurnKey personnel have exercised due diligence in the compilation of the information contained herein appropriate to environmental professionals engaged in investigations of this nature. TurnKey makes no guarantees regarding the accuracy of information gained from other sources.

This Phase I ESA is based on current and historical information reviewed by TurnKey and their Site inspection. This Report is not to be considered an environmental audit of the Site or a complete environmental investigation of the Site. Further, the purpose of this assessment is not to proclaim a property is devoid of environmental impact but rather to identify RECs, as defined above.

This Phase I ESA makes no warranties nor implies any liability regarding:

1. Site specific practices and/or disposal methods of the past or future owners.
2. Adjacent property owners, their environmental practices and/or impact of such properties and practices on the subject property other than observed from the subject property.
3. Unreported spills.
4. Practices, waste disposal, environmental concerns and/or modifications to waste site indexes after the date on this Report.
5. Site groundwater or soil conditions.
6. Accuracy or completeness of information supplied to TurnKey by others.
7. Environmental conditions in areas not practically or safely accessible.
8. Accuracy of previous studies (if any) provided to TurnKey.

This Report is also subject to any and all limitations defined within ASTM E1527-13. This includes, but is not limited to, the limitation that this Report is intended to identify environmental conditions at a specific time and is only valid for a period of six months from the date of issuance.

The principles defined within ASTM E1527-13, and followed within this study, include the following.

- This practice is intended to reduce, but not eliminate, uncertainty regarding the potential for RECs in connection with a property.
- All appropriate inquiry does not mean an exhaustive assessment of a clean property. One of the purposes of this practice is to identify a balance between limiting costs/time and the reduction of uncertainty about unknown conditions.
- The level of inquiry is variable and depends on the type of property, risk level of the user and information developed in the course of the inquiry.
- Subsequent environmental assessments should not be used as standards to evaluate the appropriateness of prior inquiries based on hindsight, new information or new techniques.

2.4.2 User Responsibilities

The following information is the responsibility of the user and not of the environmental professional. This information may be provided by the user to the environmental professional for use in the final opinion of the all appropriate inquiry. If the information is not provided by the user, the environmental professional's ability to render such an opinion may be hindered and identified as a data gap.

- Searches for environmental cleanup liens against the subject property that are filed or recorded under any Federal, State, tribal, or local law, as required by 40 CFR Section 312.25.
- Assessments of any specialized knowledge or experience on the part of the landowner, as required by 40 CFR Section 312.28.
- An assessment of the relationship of the purchase price to the fair market value of the subject property, if the property was not contaminated, as required by 40 CFR Section 312.29.
- An assessment of commonly known or reasonably ascertainable information about the subject property, as required by 40 CFR Section 312.30.

2.4.3 User Protections

Persons claiming the liability protections under CERCLA must meet the statutory requirements of one of the following landowner liability protections. [It should be noted that the user must also satisfy certain continuing obligations outside the scope of this Phase I Environmental Assessment, as required by CERCLA].

- The innocent landowner defense pursuant to CERCLA Sections 101(35) and 107(b)(3).
- The bona fide prospective purchaser liability protection pursuant to CERCLA Sections 101(40) and 107(r).
- The contiguous property owner liability protection pursuant to CERCLA Section 107(q).

2.5 Deviations

There were no deviations from the ASTM 1527-13 standard during the completion of this study except that a regulatory file review was not completed. The ASTM 1527-13 standard indicates that completion of a regulatory file review for Site and adjacent property regulatory listings is at the discretion of the Environmental Professional. In this case, completion of a regulatory file review was not completed by TurnKey as: regulatory listings were not identified; completion of the file review was not anticipated to provide new or significant information; or records were not considered reasonably ascertainable in the timeframe of the report deliverable.

2.6 Special Terms and Conditions

The work was completed in accordance with the executed Master Professional Services Agreement between Benderson Development Company, LLC and TurnKey.

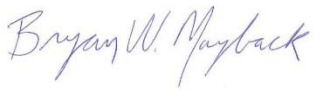
2.7 Reliance, Certification, and Declaration

This report was prepared for the exclusive use of Benderson Development Company, LLC their respective affiliates and subsidiaries, and all successors and assigns thereof. Any other use, or using this Report in a fashion in which it was not intended, is at the sole risk of the user. No other party may rely on this Report unless expressly authorized in writing by TurnKey. Reliance may only be granted upon written consent and is subject to those same

terms and conditions as expressed in the Master Professional Service Agreement between Benderson Development Company, LLC and TurnKey.

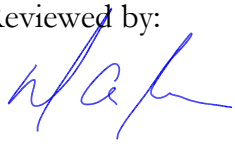
We declare that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in 40 CFR 312.10. We have the specific qualifications based on education, training, and experience to assess a property of the nature, history and setting of the Site. We have developed and performed the all-appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

Prepared by:



Bryan Mayback
Senior Project Scientist

Reviewed by:



Michael A. Lesakowski
Principal

3.0 SITE/VICINITY DESCRIPTION

3.1 Location and Legal Description

The Site is located in the Town of Orchard Park and consists of four individual tax parcels legally described as Parcel Nos. 152.12-4-6.1 (Parcel 1), 152.12-4-5 (Parcel 2), 153.09-2-1 (Parcel 3), and 152.12-4-2 (Parcel 4).

3.2 Activity/Use Limitations

TurnKey is not aware of any institutional controls or activity/use limitations imposed against the referenced Site.

3.3 Site and Vicinity Description

The Site is located in a moderately developed commercial and residential area of the Town of Orchard Park (see Figure 1). As shown on Figures 2 and 3, two structures are present on the Site. Building 1 is a plaza with vacant tenant spaces and two current occupants, Adam's Barber Shop (barber shop) and Gold N Ham (pawnshop and butcher shop). Building 2 reportedly has a history of being used for storage and use by a contractor/masonry company. A portion of the building is presumed by TurnKey to have been used for equipment repair/maintenance.

The Site consists of four parcels totaling 39.64-acres and is supplied with and has access to municipal sanitary sewer, electric, natural-gas and public water. The Site is further described in the table below:

General Site Information	
Site Addresses	3077-3097 Union Road (Building 1) and 20-26 Harold Square (Building 2) and associated parcels.
Municipality, County, State	Orchard Park, Erie, New York
Current Site Use	Commercial and vacant land.
Fronting Streets	Union Road, Harold Square and Southwestern Boulevard
Site Size	39.64-acres (per municipal information)
Site Topography	Undulating topography throughout vacant portions of the Site. Sloped topography in middle portion of Parcel 3 and eastern portion of Parcel 1 due to the presence of an intermittent creek.
General Site Elevation (feet above mean sea level)	730-780

Nearest Water Body	Portions of an unnamed intermittent creek (off of Cazenovia Creek) located on-Site
Improvements	Asphalt paved areas, green areas

3.4 Current Use of Property

The Site, as further described below, is currently used for commercial purposes and includes vacant/wooded land.

Parcel ID*	Number	Street	Tax ID No.	Current Owner	Current Use
Parcel 1	3077-3097	Union Road	152.12-4-6.1	Harold L. Gantzer (Estate)	Commercial and vacant land. Developed with Buildings 1 and 2.
Parcel 2	0	Union Road	152.12-4-5	Harold L. Gantzer (Estate)	Vacant land.
Parcel 3	0	Union Road	153.09-2-1	Harold L. Gantzer (Estate)	Vacant Land.
Parcel 4	0	Union Road	152.12-4-2	Harold L. Gantzer (Estate)	Vacant land.

*This ID was assigned by TurnKey in order to differentiate between the parcels within the report.

3.5 Description of Structures and Other Improvements

On-Site Building and Improvements Summary	
Building Number	Building 1
Square Footage (approximate)	14,220 (per municipal information)
Building Identification/Use	Plaza building
No. of Stories	1
Basement	None
Roof Type	Flat
Building Envelope	Poured concrete, steel and wood
Building Siding	Brick, painted concrete block
Heating System	Natural-gas ceiling and roof units
Building Construction Date	1965 (per municipal information/Building Department)
Utilities Provided	Natural-gas, public water, municipal sanitary sewer and electric
Building Number	Building 2
Square Footage (approximate)	2,108 (per municipal information)
Building Identification/Use	Commercial building
No. of Stories	1
Basement	None
Roof Type	Flat
Building Envelope	Poured concrete, steel and brick
Building Siding	Brick, block
Heating System	Forced hot air furnace

Building Construction Date	1972 (per municipal information) [TurnKey is aware of a discrepancy relative to the construction date of Building 2 as such is not present on an aerial dated 1983.]
Utilities Provided	Natural-gas, public water, municipal sanitary sewer and electric

3.6 Adjoining Property Information

The adjacent properties were visually inspected from the Site at the time of the Site reconnaissance. The surrounding property uses include the following:

Direction	Current Use	Apparent Past Use	Comments/Concerns
North	Huntington Learning Center, Haxton's Car Care (automotive repair) and Residential	Agricultural	Adjacent operations such as automotive repair could result in impacts to the environment; however, none of the regulatory listings suggest a specific environmental concern at the Site.
South:	Lakeshore Savings, Valu, The Tabernacle, and Residential	Agricultural	
East:	Parkland Professional Park (doctors) and Residential	Agricultural and wooded land	
West:	Bank on Buffalo, Rite Aid, Key Bank	Agricultural, residential	

4.0 USER PROVIDED INFORMATION

The User Questionnaire was not provided to TurnKey for this project.

5.0 RECORDS REVIEW

5.1 Standard Environmental Records Sources

Federal and state environmental regulatory information provided by Environmental EDR was reviewed at the radii defined in 40 CFR 312.26 (see Appendix A). Any sites unplottable by EDR were also reviewed, to the extent practical based on the site name and address, to assess whether they are also present within their appropriate radii. Any relevant listings such as those for the Site or any adjacent sites are included in the following table. Refer to Appendix A for complete acronym definitions.

Site Listings

Site Database Listings	Address/Name	Summary
EDR Historical Auto Station	3093 Union Road/BDR Torque Converters	BDR Torque Converters is listed as an automotive transmission repair shop in at least 1993.

Note that Spill No. 9803132, dated June 10, 1998, involved an unknown blue colored substance in a tributary to Cazenovia Creek, which may have included the portion of the intermittent creek that bisects the Site. The cause was identified as a sewer backup and the NYSDEC identified the responsible party as Delta Sonic. The NYSDEC reclassified the spill as "closed" on July 30, 1998.

Adjacent Property Listings

Adjacent Database Listings	Address/Name	Summary
RCRA NonGen/NLR, FINDS, ECHO, NY Manifest	3084 Southwestern Boulevard/7-Eleven	7-Eleven is listed as a RCRA non-generator of hazardous waste with no reported violations. Benzene is the reported waste. 7-Eleven is also included in the FINDS, ECHO, and NY Manifest databases. NY Manifest reports non-listed ignitable wastes which are liquids associated with metal drums, barrels, cargo tanks, and tank trucks.
NY Spills		Spill No. 9806778, dated September 2, 1998, involved discovery of contaminated soil during removal of a UST. The spill was reclassified as "inactive" on November 24, 1998.
PA Manifest	3050 Union Road/Rite Aid	Rite Aid is listed in the PA Manifest database with waste materials shipped off-site in fiber/plastic boxes, cartons, or cases.

RCRA-CESQG, NY Manifest		Rite Aid is also listed as a RCRA conditionally exempt small quantity generator of hazardous waste with no reported violations. Ignitable and/or corrosive wastes including chromium, selenium, silver, 2H-1Benzopyran-2-One, 4-Hydroxy-3-(3-Oxo-1-Phenylbutyl)-, nicotine, and salts were listed as being generated.
EDR Historic Auto Station	3065 Southwestern Boulevard/BP SIRC	The east adjacent property is listed as a gasoline service station from at 2010 through at least 2012.
NY AST	3050 Union Road/Austin Pontiac, Inc./Town Lincoln Mercury	Five ASTs ranging from 250-1,000 gallons containing gasoline, lube oil, used oil, and waste oil are listed at Austin Pontiac, Inc. All tanks are reported as removed/closed in 1998.
NY Spills and LTANK		Spill No. 8808151, identified as Austin Pontiac, dated January 1, 1989 involved removal of a 1,000-gallon UST containing waste oil. NYSDEC notes under the spill incident details indicate the tank was removed and odor and sheen were found to be acceptable and no further action was needed. The spill was "closed" by the NYSDEC on August 22, 1991. Spill No. 0651390, identified as Town Lincoln Mercury, dated October 1, 2006, involved impacts encountered while removing hydraulic lifts. The spill was reclassified as "inactive" on January 3, 2007. An additional spill, No. 9705746, for Town Lincoln Mercury, dated August 12, 1997, involved impacts encountered while removing a 550-gallon waste oil UST. The spill was reclassified by the NYSDEC as "inactive" on June 15, 1998.

Nearby Properties

Additional regulatory listings were identified for nearby properties. Brief summaries of the relevant listings are provided in the table below.

Nearby Database Listings	Address/Name	Summary
NY Eng Controls, NY Inst Controls, NY Brownfields	3021 Orchard Park Road	The 3021 Orchard Park Road Site is registered in the Brownfield Cleanup Program as Site Number C915289. NYSDEC notes under the listing indicate that the property has been remediated successfully. Prior to remediation, the primary concern at the property was the presence of VOCs. Engineering

		and institutional controls were implemented including a soil management plan, environmental easements, IC/EC Plan, site management plan, groundwater use restrictions, monitoring plan, and land use restrictions. Any future buildings will be evaluated for soil vapor intrusion.

In addition to the nearby properties listed above, several additional sites located proximate to the Site are listed on one or more environmental databases. However based on TurnKey's review, each of these additional sites falls in one or more of the following categories:

- It is listed on databases that indicate a potential for, but not an actual documented current or historical release (e.g., RCRA small quantity generator or large quantity generator; registered chemical bulk storage or petroleum bulk storage sites). As such, these sites are not considered to pose an REC at the Site due to absence of a documented release.
- It is located greater than one-eighth mile from the Site, and is not considered an REC based on the distance from the Site.
- It is present at a location that is not expected to pose potential for impact on the Site due to topography and likely groundwater flow direction, and is not considered an REC based on unlikelihood for impacts associated with migration of contaminants onto the Site.

The discussion included above regarding adjacent and surrounding properties is based on information supplied to TurnKey as well as observations of nearby properties at the time of the Site reconnaissance. Further study would be required to positively confirm whether the Site has been impacted by nearby properties. It is also important to note that the environmental history and status of nearby properties, real or perceived, can affect the valuation of the target property.

5.2 Additional Environmental Record Sources

To augment the information provided by EDR, a FOIA request was forwarded to the NYSDEC on December 19, 2017 for information concerning the Site (see Appendix B). All responses have yet to be received from the NYSDEC. Should the NYSDEC provide additional information for the Site which identifies a currently unknown REC, an addendum to this report will be issued.

TurnKey also completed a search on the NYSDEC website of readily available records for the Site, including an Environmental Site Database Search for spills, remedial sites and bulk storage facilities. A search of the USEPA Envirofacts website was also completed. No records involving the Site were identified.

5.3 Physical Setting Sources

Figure 1 shows the Site on an undated USGS Topographic Map, Buffalo SE and Orchard Park Quadrangle. The Site is located in a moderately developed commercial and residential area. The Site appears to be vacant land. The Site is located approximately 730-780 feet above mean sea level.

Portions of an unnamed intermittent creek off Cazenovia Creek bisect the Site; therefore, groundwater flow is likely towards this waterbody or in a northerly direction consistent with topography in the area of the Site. Local groundwater flow, however, may be influenced by subsurface features, such as excavations, utilities, and localized fill-conditions.

5.4 Historical Use

The historical use of the Site has been researched through review of previous studies, historic Sanborn maps, historic aerial photographs, municipal records, historic topographic maps, and/or other reasonably obtainable documents. The following sections summarize TurnKey's research.

5.4.1 Historic Aerial Photographs

Historical aerial photographs serve to reveal former topography, buildings, structures and man-made works such as canals, lagoons and railroads that may have been altered or may no longer be in existence. Historical aerial photographs were obtained for additional historical information relative to the Site and surrounding area. Appendix C includes copies of the aerial photographs provided by EDR. Visual observations were limited on some aerial photographs due to poor quality.

YEAR	OBSERVATIONS
1938	
Site	The Site appears to be predominantly agricultural land with a wooded area located in the eastern portion.
North	Agricultural
South	Agricultural
East	Agricultural and wooded
West	Agricultural
1951, 1958	
Site	The Site appears generally consistent with above.
North	Agricultural and residential.
South	Agricultural and residential.
East	Agricultural, wooded and residential
West	Commercial and agricultural
1966, 1970	
Site	Parcel 1 appears to be developed with the presumed original portion of Building 1. Remaining portions of the Site appear to be fallow/wooded land.
North	Residential and vacant land. Includes commercial in 1970.
South	Residential and vacant. Includes commercial in 1970.
East	Vacant and wooded land
West	Commercial
1978, 1983	
Site	An addition was added to the southeastern portion of Building 1. Remaining portions of the Site appear to be vacant/wooded land. An apparent asphalt parking lot with presumed parked vehicles appears on the western portion of Parcel 2.
North	Residential
South	Residential, commercial, and vacant land with some wooded areas.
East	Vacant and wooded land. A possible commercial structure appears in 1983.
West	Commercial
1995, 2011	
Site	Buildings 1 and 2 appear in their current configuration in 1995. Harold Court and an apparent extension appear on Parcel 1. [TurnKey is aware of a discrepancy relative to the construction date of Building 2 as municipal information suggests a construction date of 1972.]
North	Residential
South	Commercial, residential, small wooded areas
East	Commercial, residential, small wooded areas
West	Commercial

5.4.2 Historical Sanborn Maps

Sanborn maps serve to reveal former buildings, building uses, and man-made works such as canals, lagoons and railroads that may have been altered or may no longer be in existence. EDR indicated that Sanborn Maps covering the target property were not found; the letter is included in Appendix D.

5.4.3 Historical City Directories

Historic city directories, dated between 1938 and 2014, were reviewed (generally in five-year intervals) through an EDR database search for additional information regarding the Site. Note that neither the Site nor adjacent properties were listed in city directories dated between 1938 and 1976. Appendix E includes a copy of the abstract report.

Year	Address	Site Listing(s)
1985	3077 Union Road	Fantastic Sam's
	3081 Union Road	Country Cupboard
	3083 Union Road	CP Schenk Fish Inc.
	3085 Union Road	Country Ham Store
	3087 Union Road	J Pickhardt Dance
	3089 Union Road	Park Sher Optical
	3091 Union Road	Town Edge Liquor Store
	3095 Union Road	Century House, Computer Task Group, Parker Wellington, Shoppers Choice, TV Factory Service
1992	3083 Union Road	CP Schenk Fish and Seafood
	3085 Union Road	Country Ham Store Inc.
	3087 Union Road	Buffalo Clinical Services
	3089 Union Road	George Jacobs Shoe and Repair
1995	3077 Union Road	Fantastic Sam's Hare Care Center, Scinta Ltd
	3081 Union Road	Individual tenant
	3083 Union Road	CP Schenk Fish and Seafood
	3085 Union Road	Country Ham Store Inc.
	3087 Union Road	State Farm Insurance
	3089 Union Road	George Jacobs Shoe and Repair
2000	3077 Union Road	Nails by Cathy Le, Time Zone Gift
	3083 Union Road	CP Schenk Fish and Seafood
	3085 Union Road	Country Ham Store Inc.
	3087 Union Road	Francis X Loughlin Insurance Agency
	3089 Union Road	Jacobs Shoe Repair
	3093 Union Road	Amy Lynn's Dance Studio
2005	3081 Union Road	Individual tenant
	3083 Union Road	Libby's Fish and Seafood Inc.
	3089 Union Road	Jacobs Shoe Repair
	3091 Union Road	Roz's Pizzeria
	3093 Union Road	Amy Lynn's Dance Studio
	3097 Union Road	West Seneca Masonry Inc.

2010	3077 Union Road	LJ Damico Home Improvement
	3081 Union Road	Individual tenant, Custom Radio
	3085 Union Road	Country Ham Store Inc.
	3087 Union Road	Russ's Barber Shop
	3089 Union Road	Jacobs Shoe Repair
	3091 Union Road	Roz's Pizzeria
	3097 Union Road	West Seneca Masonry Inc.
2014	3077 Union Road	Individual tenant
	3081 Union Road	Custom Radio
	3089 Union Road	Jacobs Shoe Repair
	3097 Union Road	West Seneca Masonry Inc.

5.4.4 Historical Topographic Maps

Historical topographic maps were reviewed for additional information regarding the Site. Appendix F includes copies of the maps.

YEAR	OBSERVATIONS
1894-1905	
Site	The Site appears to be vacant land. Union Road and Southwestern Boulevard are not shown.
1948-1950	
Site	The Site continues to appear vacant with a small number of structures adjacent. A natural-gas well is depicted south of the Site. The well is a natural-gas development well designated as API Well Number 31029081550000 and is currently operated by PPP Future Development, Inc. [TurnKey completed additional research and confirmed that the natural-gas well is off-site.]
1965	
Site	The Site is consistent with the above description. Residential neighborhoods are shown developing in the surrounding area.
2013	
Site	The Site is shown in its current configuration. Due to extensive development in the area structures are not shown.

5.4.5 Municipal Records

Records readily available at the Town of Orchard municipal offices (Assessor, Building and Fire Departments) as well as records available online from the Erie County GIS were reviewed for additional information relative to the Site. Note that a FOIL was submitted to the Town of Orchard Park as required to access their records. However, as of the date of this report, all responses have yet to be received. An addendum to this report will be issued should a response be obtained indicating an unknown environmental issue in connection with the

Site. The following summarizes municipal records provided to TurnKey at the time of this assessment; copies of the pertinent records are included in Appendix G.

- The Site, Tax ID Nos. 152.12-4-6.1 (Parcel 1), 152.12-4-5 (Parcel 2), 153.09-2-1 (Parcel 3), and 152.12-4-2 (Parcel 4), totals 39.4-acres and is currently owned by Harold L. Gantzer (Estate).
- No past owners were identified.
- Building 1, constructed in 1965, measures 14,220 square feet. Building 2, constructed in 1972, measures 2,108 square feet. [TurnKey is aware of a discrepancy relative to the construction date of Building 2 as such does not appear on an aerial photograph dated 1983.]
- The Site is supplied with and has access to natural-gas, municipal sanitary sewer, public water and electric.
- A survey map of the Site, dated December 17, 1967, indicates the presence of a dry cleaner located in Building 1, presumed to be the tenant space currently occupied by Gold N Ham, as well as a septic system connected to Building 1.
- Additional historic operations include a dairy store, a fish store, shoe repair, barber shops, pizzerias, an optician, a liquor store and other miscellaneous tenants.
- A letter from the Town of Orchard Park Building Inspector's Office to Harold Gantzer (property owner), dated May 4, 2006, indicates complaints/violations related to debris, dumped brick/materials, tall grass and general property maintenance.

TurnKey interviewed the Town of Orchard Park Building Inspector relative to the Site; additional information is provided below in Section 7.2.

5.4.6 Site History Provided by Site Contact

According to the site contact, the Site is currently and has historically been used commercially with operations including storage, a dance studio, a pizzeria, a barber, a vehicle accessory/stereo shop, etc. The site contact is unaware of environmental concerns such as dry cleaning in connection with the Site.

Section 7.1 includes additional information provided by the Site contact.

5.4.7 Abstract of Title

Abstract of Title information was not provided to TurnKey.

5.4.8 Previous Assessments

No previous studies involving the Site were provided to TurnKey.

5.4.9 Summary of Historic Uses

Approximate Years	Reported or Suspected Use	Owner/Occupant
1894 to 1965	Vacant/agricultural land.	Unknown individual owners.
1965 to current	Commercial and vacant/wooded land. Of note, a dry cleaner operated at the Site in at least 1967. In addition, historic operations included automotive repair.	Current owner is Harold L. Gantzer (Estate). No past owners were identified.

5.5 Environmental Liens

TurnKey is not aware of any formal environmental liens, enforcement action, civil, judicial or administrative enforcement cases in connection with the Site.

6.0 SITE RECONNAISSANCE

6.1 Methodology and Limiting Conditions

A visual review of the Site was completed to document Site conditions and identify potential RECs. The presence of parked vehicles, stored materials/equipment, dense vegetation and snow cover hindered observations of ground surfaces at the time of the Site reconnaissance. In addition, certain interior portions of Buildings 1 and 2 were inaccessible to TurnKey at the time of the site visit. TurnKey was unaccompanied at the time of the site visit thus property boundaries were approximated.

6.2 General Site Setting

Mr. Bryan W. Mayback and Mr. Chad M. Schuster of TurnKey performed the Site reconnaissance on December 27, 2017.

Appendix H includes photographs taken during the Site reconnaissance.

6.3 Site Visit Findings

6.3.1 Current On-Site Operations

Two structures are present on the Site. Building 1 is occupied by Gold N Ham and Adam's Barber Shop, a pawnshop/butcher shop and barber shop operation, respectively. The remainder of Building 1 is vacant and includes a historic automotive repair operation in the southeastern portion of the building. Building 2 is vacant.

6.3.2 Storage Tanks

No evidence indicative of an AST or UST was observed at the time of the Site reconnaissance.

6.3.3 Hazardous or Regulated Materials

Automotive-related fluids including oils, brake fluid, automatic transmission fluid and antifreeze were noted in containers of five-gallons or less were observed in the historic automotive repair portion of Building 1. Vehicle engines were also noted. . Miscellaneous

hazardous/regulated materials such as hydraulic oil, muriatic acid, clean strip, insulite, latex bending mixture, roof cement, etc. were noted in containers of five-gallons or less in the eastern portion of Building 2. One 55-gallon drum labeled "oil" was noted in Building 2.

6.3.4 Solid, Hazardous or Regulated Wastes

Hazardous/regulated wastes appear to have been generated in connection with automotive repair operations at Building 1 as containers of apparent oil and antifreeze were observed. One vehicle battery was noted within Building 1.

Operations at Building 2 may have also generated hazardous/regulated wastes.

One 55-gallon drum observed along the south interior wall of Building 2 may contain waste oil; however, this could not be confirmed.

One 55-gallon drum labeled "sonic drying agent" was located along the east exterior wall of Building 2; the drum was apparently empty.

One apparently inactive vehicle was noted within the historic automotive repair portion of Building 1. Three parked and apparently inactive vehicles were noted exterior of the historic automotive repair portion of Building 1.

Solid waste generated from commercial uses are stored in a dumpster that is collected by Republic Services.

6.3.5 Miscellaneous Debris/Stored Materials

Four used automobile engines were noted within the historic automotive repair portion of Building 1 (southeastern portion of the building).

Miscellaneous materials (i.e., a used television, a plastic container, and general garbage) were noted on exterior portions of the Site in the vicinity of Buildings 1 and 2.

6.3.6 Fill

Turnkey observed four large soil mounds in vacant land portions of Parcel 1 in areas east and southeast of the existing buildings. According to the site contact, the soil mounds consist of reworked soil from the south adjacent Lake Shore Savings Bank. No visual or olfactory concerns were noted in the soil mounds at the time of the site inspection.

6.3.7 Staining/Spillage and Pools of Liquid

Black staining was observed to concrete ground surfaces within the historic automotive repair portion of Building 1.

6.3.8 Stressed and/or Dead Vegetation

None observed.

6.3.9 Odors

Musty odors were noted throughout Building 1.

6.3.10 Unidentified Substance Containers

None observed.

6.3.11 Heating/Cooling

Natural-gas ceiling and roof units are used in Building 1 and a forced hot air furnace is used in Building 2.

6.3.12 Wastewaters

The Site is currently connected to the municipal sanitary sewer system.

6.3.13 Potable Water Supply/Wells

The Site is serviced by the municipal water supply.

6.3.14 Drains and Sumps

Two trench drains and one floor drain were observed in a vacant tenant space at Building 1 (3081 Union Road). According to the site contact, this tenant space was historically used for installation of vehicle accessories (automatic car starters, stereo equipment, etc.) No floor drains were observed in the historic automotive repair portion of Building 1.

A floor drain was noted in the eastern bay area of Building 2. No liquid was observed within the drain.

One storm drain was observed south of Building 1. An additional storm drain was observed in the parking lot proximate to the southwest corner of Building 1. On-Site storm drains are believed by TurnKey to discharge into the storm sewer system.

6.3.15 Air Emissions

An Ansul hood system was noted in the kitchen area of R-Jay's within the southern portion of Building 1. No other process exhaust systems were noted on-Site at the time of the site inspection.

6.3.16 Pits, Ponds and Lagoons

None observed.

6.3.17 Septic System

None observed.

6.3.18 PCBs

Utility-owned pole-mounted transformers were noted along property borders.

6.3.19 Previous Intrusive Work

No evidence of previous intrusive work was observed at the time of the Site reconnaissance.

6.3.20 Adjacent Property Use

Adjacent properties are currently utilized for commercial and residential purposes. Commercial operations include an automotive repair operation. No concerns (staining, odors, obvious spills, etc.) were noted on-Site in connection with current adjacent operations.

6.4 Summary of Site Reconnaissance Potential Concerns

The following potential environmental concerns were identified at the time of the Site reconnaissance:

- The southeastern portion of Building 1 was historically used for automotive repair. The eastern portion of Building 2 was used for equipment repair/maintenance for a masonry business.
- Automotive-related fluids including oils, brake fluid, automatic transmission fluid and antifreeze were noted in containers of five-gallons or less in the historic automotive repair portion of Building 1. Miscellaneous hazardous/regulated materials such as hydraulic oil, muriatic acid, clean strip, insulite, latex bending mixture, roof cement, etc. were noted in containers of five-gallons or less in the eastern portion of Building 2. One 55-gallon drum labeled "oil" was noted in Building 2.
- Hazardous/regulated wastes appear to have been generated in connection with automotive repair operations at Building 1 as containers of apparent waste oil and waste antifreeze were observed. One vehicle battery was noted within Building 1. Operations at Building 2 may have also generated hazardous/regulated wastes with one 55-gallon drum observed along the south interior wall of Building 2 that may contain waste oil; however, this could not be confirmed. One 55-gallon drum labeled "sonic drying agent" was located along the east exterior wall of Building 2; the drum was apparently empty.
- Four used automobile engines were noted within the historic automotive repair portion of Building 1 (southeastern portion of the building). One apparently inactive vehicle was noted within the historic automotive repair portion of Building 1. Three parked and apparently inactive vehicles were noted exterior of the historic automotive repair portion of Building 1.
- Black staining was observed to concrete ground surfaces within the historic automotive repair portion of Building 1.
- Miscellaneous materials (i.e., a used television, a plastic container, and general garbage) were noted on exterior portions of the Site in the vicinity of Buildings 1 and 2.
- Two trench drains and one floor drain were observed in a vacant tenant space at Building 1 (3081 Union Road). According to the site contact, this tenant space was historically used for installation of vehicle accessories (automatic car starters, stereo equipment, etc.) No floor drains were observed in the historic automotive repair portion of Building 1.
- A floor drain was noted in the eastern bay area of Building 2. No liquid was observed within the drain.

- One storm drain was observed south of Building 1. An additional storm drain was observed in the parking lot proximate to the southwest corner of Building 1. On-Site storm drains are believed by TurnKey to discharge into the storm sewer system.
- Turnkey observed four large soil mounds in vacant land portions of Parcel 1 in areas east and southeast of the existing buildings. According to the site contact, the soil mounds consist of reworked soil from the south adjacent Lake Shore Savings Bank. No visual or olfactory concerns were noted in the soil mounds at the time of the site inspection.
- Musty odors were noted throughout Building 1.
- An automotive repair operation is located adjacent to the Site. No concerns (staining, odors, etc.) were noted at the Site as a result of this adjacent operation.

7.0 INTERVIEWS

7.1 Site Owner

Mr. Dennis Mill of the Estate of Harold L. Gantzer indicated the following during an interview with TurnKey on January 4, 2018.

- Floor and trench drains within existing buildings discharge into the municipal sanitary sewer system. Storm drains on exterior portions of the Site discharge into the storm sewer system.
- Minor tune ups and ignition work were completed at the historic automotive repair portion of Building 1.
- Building 2 included minor maintenance of equipment, if needed. An exterior aboveground lift was previously removed.
- The soil piles observed during the site visit are non-impacted soil from development on the adjacent Lake Shore Savings Bank property.
- No natural-gas wells are located on-Site.

An Environmental Questionnaire requesting information on any known environmental hazards or impacts at the Site was completed by the current property owner, Ms. Dorothy Mill, Executor of the Estate of Harold L. Gantzer. Appendix I includes the completed questionnaire. The following summarizes the information provided by Ms. Gantzer:

- The Site is currently and has historically been used commercially.
- After Hours Auto Repair (occupant of southeastern portion of Building 1) has been an occupant since at least 2013.
- Several of the questions were answered with "unknown" responses.

7.2 Municipal Interview

The Town of Orchard Park Building Inspector and Assessor are unaware of any environmental concerns in connection with the Site.

7.3 Former Site Owner/Operator

TurnKey interviewed Mr. Gerald Aroneseno of Stereo Chamber (historic tenant) who was a previous occupant of the Site for 42 years. Mr. Aroneseno is unaware of environmental concerns in connection with the Site. He indicated that Stereo Chamber historically fixed electronics such as stereo equipment and no hazardous/regulated materials were used in connection with the operation.

8.0 OTHER ENVIRONMENTAL CONSIDERATIONS

Other environmental considerations are discussed below. Such include non-scope considerations, described under ASTM E1527-13 as ancillary conditions that are typically outside the standard Phase I scope of practice. Non-scope considerations, such as asbestos, lead, radon, wetlands and mold, are not considered RECs under ASTM E1527-13, but may represent health or environmental issues impacting the Site and/or property value.

8.1 Asbestos

Based on the ages of the existing buildings, the potential for asbestos exists. Suspect ACMs including, but not limited to, drywall/plaster, pipe wrap, floor tiles and ceiling tiles were noted at the time of the site visit. Asbestos could also be present in roofing materials. Building 1 was noted to be in poor condition with damaged suspect ACMs noted throughout. TurnKey understands that an asbestos survey is being completed by others as part of the client's due diligence.

8.2 Lead Paint, Pipes and Soldering

Based on the age of the existing building, the potential for lead-based paint, lead pipes and lead soldering exists. Areas of peeling/chipping paint were noted within Building 1

8.3 Radon

Research in the area of the Site completed by the New York State Department of Health - Bureau of Environmental Radiation Protection (Radon) suggests an average basement radon concentration of 4.70 pCi/L in the area of the Site, which is above the USEPA action level of 4.0 pCi/L.

8.4 Wetlands and Flood Zones

The EDR regulatory database includes general information on wetlands and flood zones. No wetland or flood zone areas were identified on-site or adjacent to the Site. However, as previously indicated, portions of an unnamed intermittent creek bisect the Site.

8.5 Microbial Contamination (Mold)

Suspected black mold was observed on walls and ceilings within portions of Building 1.

8.6 Vapor Encroachment Conditions

This assessment included review of the regulatory database discussed in Section 6.1 in relation to the ASTM E2600-10 Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions.

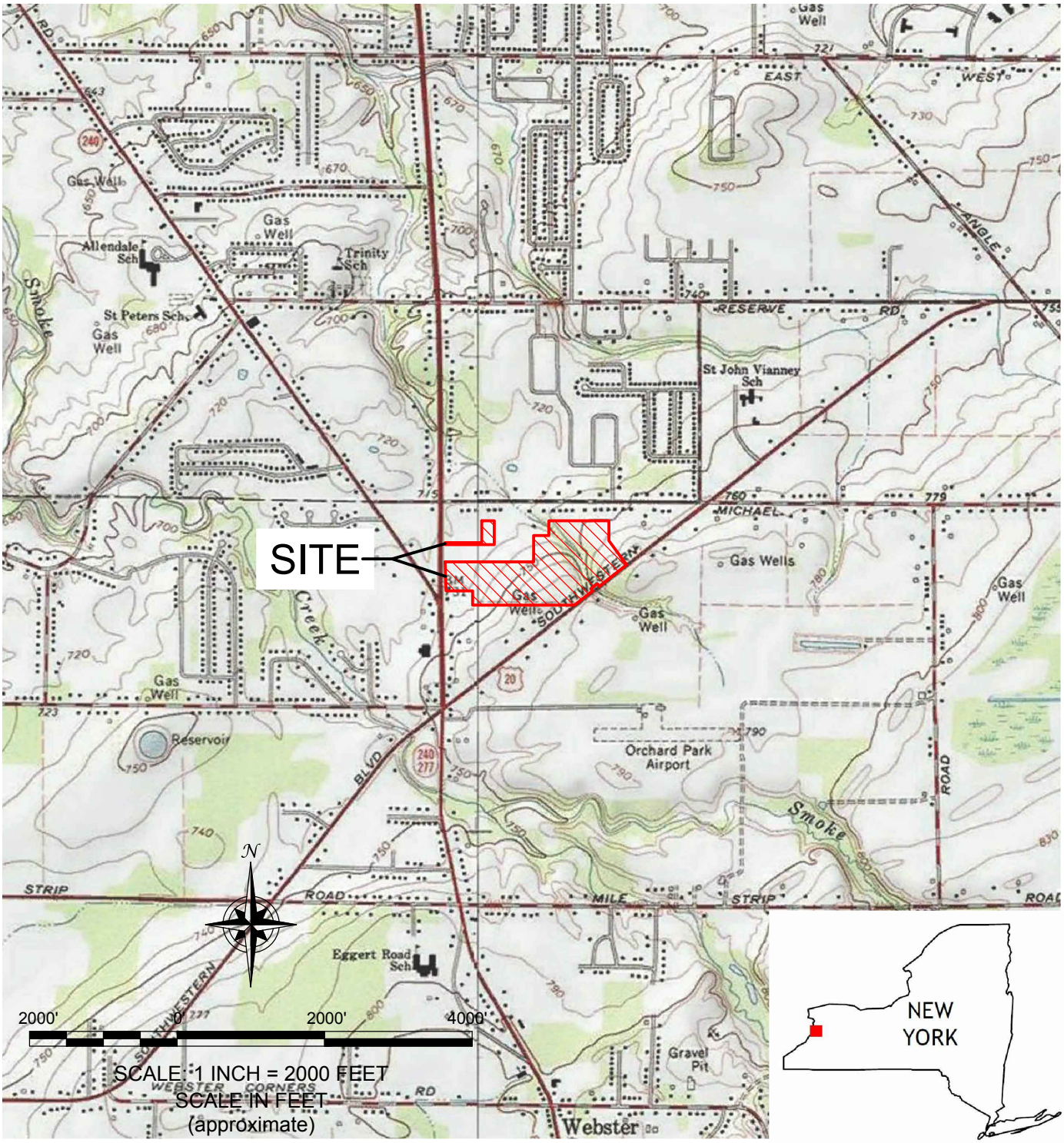
If soil or groundwater is contaminated with a volatile compound such as gasoline or solvents, that contaminant can migrate through the soil pore space and end up in the air inside of buildings, especially within basement areas. Soil vapors do not necessarily migrate along groundwater flow paths; they can also move up hydraulic gradients and can extend beyond a groundwater plume. The ASTM standard named this a VEC, which is a more recent environmental concern and there have been a significant number of sites where vapor intrusion has been discovered. The state and federal environmental regulators have "reopened" numerous spill and waste sites in order to assess whether vapor encroachment is a concern.

Historic dry cleaning operations at the Site are considered a potential VEC. Further testing would be required to determine whether a VEC is present within the buildings.

FIGURES

F:\CAD\TurnKey\Benderson\3077 Union Road and Associated Parcels\Phase I\Figure 1 - Site Location and Vicinity Map.dwg

FIGURE 1



TurnKey Environmental Restoration, LLC

2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635

PROJECT NO.: T0105-017-010

DATE: JANUARY 2018

DRAFTED BY: CMS

SITE LOCATION AND VICINITY MAP

PHASE I ENVIRONMENTAL SITE ASSESSMENT

3077-3097 UNION ROAD, 20-26 HAROLD SQUARE
AND ASSOCIATED PARCELS
ORCHARD PARK, NEW YORK

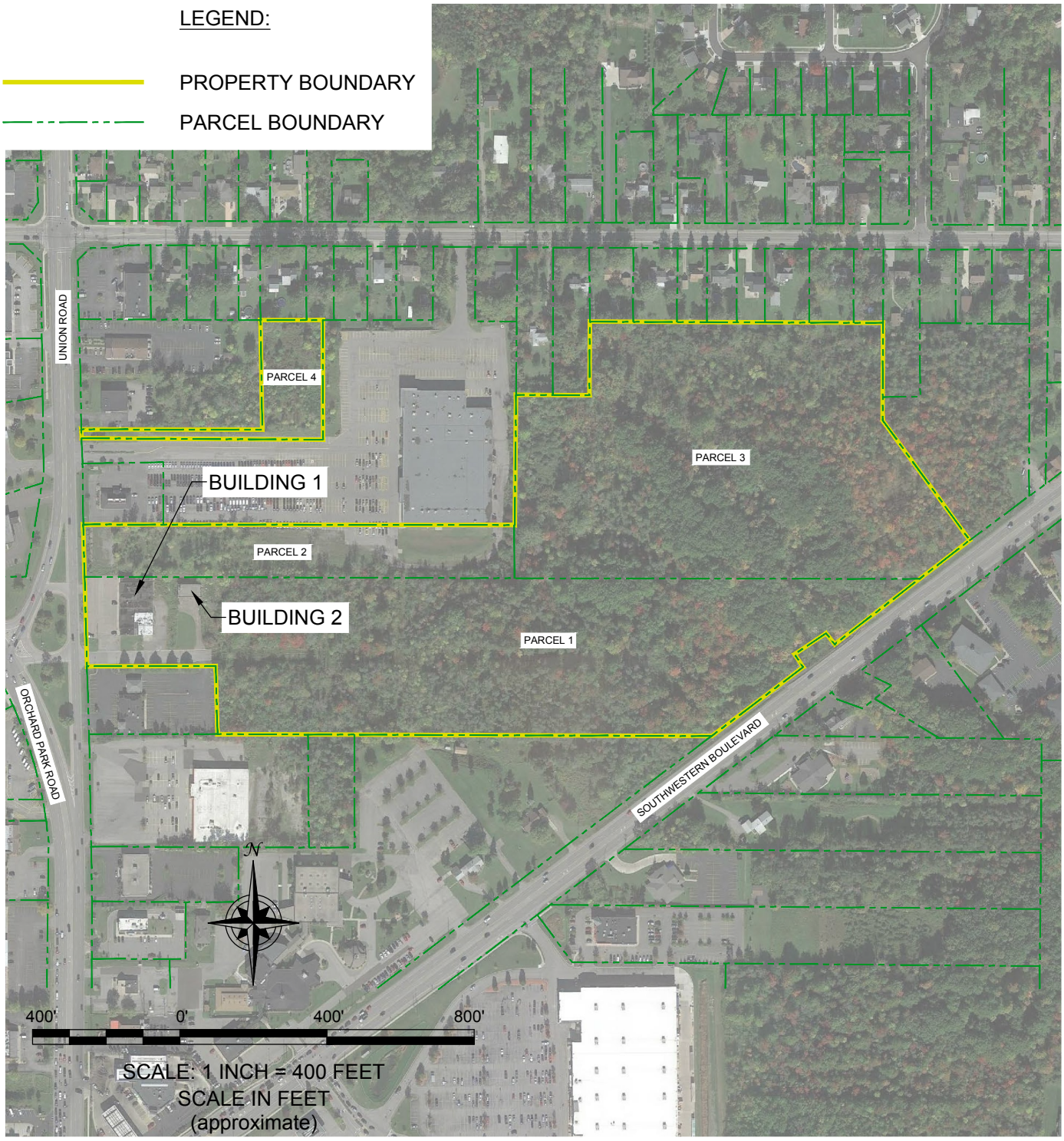
PREPARED FOR

BENDERSON DEVELOPMENT COMPANY

DISCLAIMER:
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F:\CAD\TurnKey\Benderson\3077 Union Road and Associated Parcels\Phase I\Figure 2 - Site Plan (Aerial).dwg

FIGURE 2



TurnKey Environmental Restoration, LLC

2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635

PROJECT NO.: T0105-017-010

DATE: JANUARY 2018

DRAFTED BY: CMS

SITE PLAN (AERIAL)
ALL PARCELS

PHASE I ENVIRONMENTAL SITE ASSESSMENT

3077-3097 UNION ROAD, 20-26 HAROLD SQUARE
AND ASSOCIATED PARCELS
ORCHARD PARK, NEW YORK

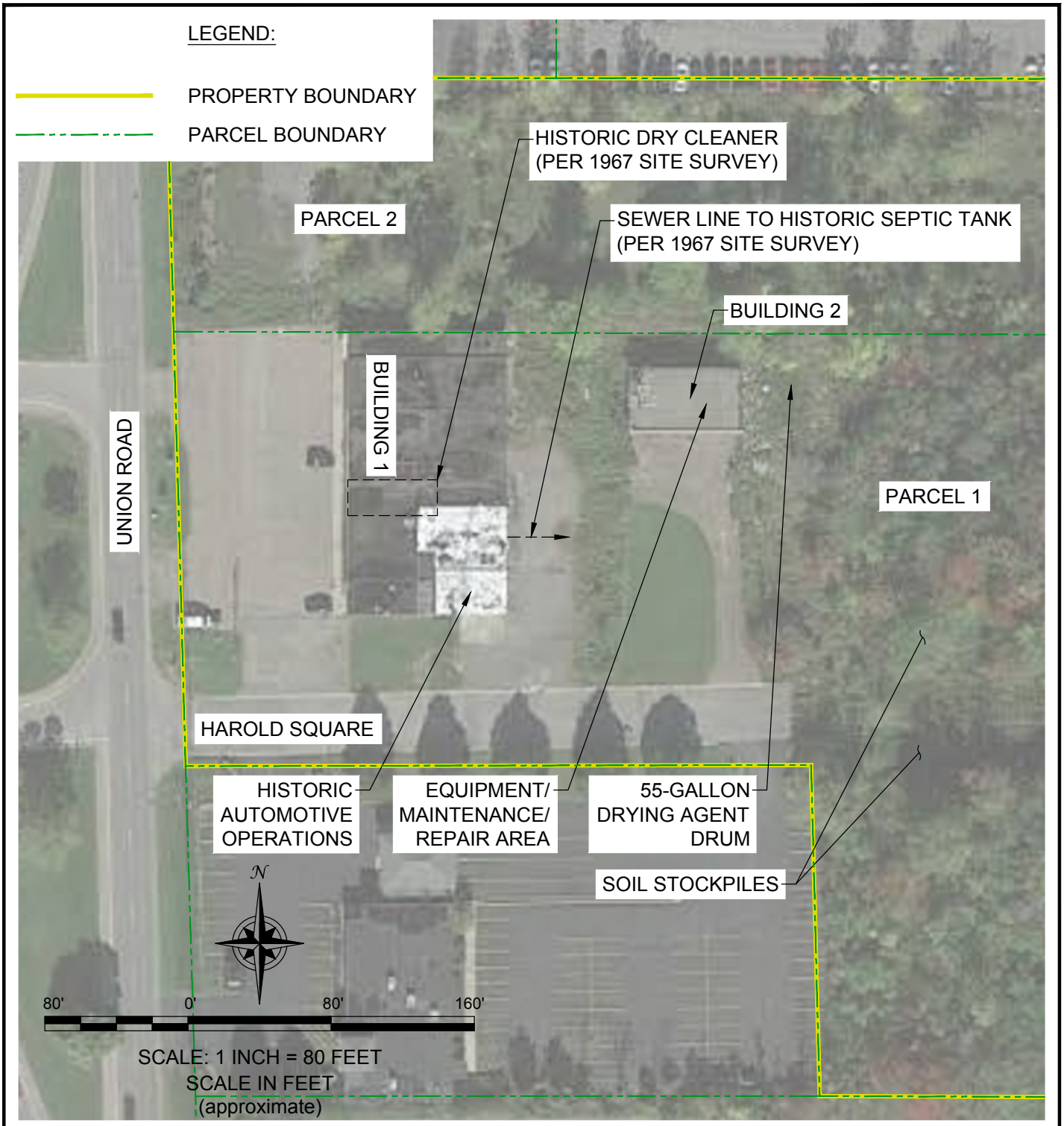
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F:\CAD\TurnKey\Benderson\3077 Union Road and Associated Parcels\Phase I\Figure 2 - Site Plan (Aerial).dwg

FIGURE 3



TurnKey Environmental Restoration, LLC
2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635

PROJECT NO.: T0105-017-010

DATE: JANUARY 2018

DRAFTED BY: CMS

SITE PLAN (AERIAL) BUILDING VICINITY

PHASE I ENVIRONMENTAL SITE ASSESSMENT

3077-3097 UNION ROAD, 20-26 HAROLD SQUARE
AND ASSOCIATED PARCELS
ORCHARD PARK, NEW YORK

PREPARED FOR

BENDERSON DEVELOPMENT COMPANY

DISCLAIMER:
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APPENDIX A

ENVIRONMENTAL DATABASE REPORT

3077-3091 Union Road
3077-3091 Union Road
Orchard Park, NY 14127

Inquiry Number: 5142649.2s
December 20, 2017

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

3077-3091 UNION ROAD
ORCHARD PARK, NY 14127

COORDINATES

Latitude (North):	42.8013670 - 42° 48' 4.92''
Longitude (West):	78.7461290 - 78° 44' 46.06''
Universal Tranverse Mercator:	Zone 17
UTM X (Meters):	684308.9
UTM Y (Meters):	4741006.5
Elevation:	762 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5937979 ORCHARD PARK, NY
Version Date:	2013
West Map:	5937941 BUFFALO SE, NY
Version Date:	2013

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20150529
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
3077-3091 UNION ROAD
ORCHARD PARK, NY 14127

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
A1	B D R TORQUE CONVERT	3093 UNION RD	EDR Hist Auto	Lower	14, 0.003, West
B2	7-ELEVEN 19112	3084 SOUTHWESTERN	RCRA NonGen / NLR, FINDS, ECHO, NY MANIFEST	Higher	84, 0.016, East
B3	7-11 STORE #19112	3084 SOUTHWESTERN BL	NY Spills	Higher	84, 0.016, East
A4	CVS PHARMACY #0533	3098 ORCHARD PARK RD	RCRA-LQG, FINDS, ECHO	Lower	218, 0.041, West
A5	CVS PHARMACY #0533	3098 ORCHARD PARK RD	NY MANIFEST	Lower	218, 0.041, West
A6	SOUTHTOWNS U-HAUL CE	SOUTH 3120 ORCHARD P	NY UST	Lower	256, 0.048, WSW
A7	U-HAUL	3120 ORCHARD PARK RO	NY LTANKS	Lower	260, 0.049, WSW
C8	U HAUL	3120 ORCHARD PARK RO	NY Spills	Lower	282, 0.053, WSW
D9	RITE AID # 4969	3050 UNION RD	PA MANIFEST	Lower	316, 0.060, West
D10	AUSTIN PONTIAC	UNION AND ORCHARD PA	NY LTANKS	Lower	316, 0.060, West
E11	MOLINO'S PIZZA	3020 UNION ROAD	NY Spills	Lower	318, 0.060, WNW
12	BP SIRC	3065 SOUTHWESTERN BL	EDR Hist Auto	Higher	321, 0.061, East
E13	TOWN LINCOLN MERCURY	3050 ORCHARD PARK RO	NY Spills	Lower	360, 0.068, WNW
E14	RITE AID #4969	3050 UNION ROAD	RCRA-CESQG, NY MANIFEST	Lower	360, 0.068, WNW
E15	AUSTIN PONTIAC, INC	3050 UNION RD. @ ORC	NY AST	Lower	360, 0.068, WNW
C16	ROAD RECONSTRUCTION	SR 240 AND SR 277	NY Spills	Lower	369, 0.070, WSW
C17	PILOT FREIGHT	UNION & ORCHARD PARK	NY Spills	Lower	369, 0.070, WSW
18	POOL MART INC.	3066 SOUTHWESTERN BL	NY CBS, NY CBS AST	Higher	374, 0.071, ENE
E19	WALKER SERVICE STATI	3008 UNION ROAD	NY LTANKS, NY LIENS, NY Spills	Lower	442, 0.084, WNW
F20	LOWES OF ORCHARD PAR	3195 SOUTHWESTERN BL	RCRA-SQG, FINDS, ECHO	Higher	468, 0.089, South
F21	LOWES # 1882	3195 SOUTH WESTERN B	NY Spills	Higher	468, 0.089, South
F22	PENSKE AUTO CENTER	S 3195 SOUTHWESTERN	NY LTANKS, RCRA NonGen / NLR, NY MANIFEST	Higher	468, 0.089, South
F23	LOWE'S OF ORCHARD PA	3195 SOUTHWESTERN BO	NY AST	Higher	468, 0.089, South
F24	LOWES STORE # 1882	3195 SOUTH WESTERN B	NY Spills	Higher	468, 0.089, South
D25	D AMATO SALVATORE	3039 ORCHARD PARK RD	EDR Hist Cleaner	Lower	487, 0.092, West
E26	NATIONAL FUEL GAS LI	UNION & MICHAEL STS	NY Spills	Lower	522, 0.099, WNW
E27	D'AMATO'S CLEANERS	6471 MICHAEL ROAD	NY DRYCLEANERS	Lower	533, 0.101, WNW
E28	D AMATOS CLEANERS IN	6471 MICHAEL RD	RCRA-SQG, NY MANIFEST	Lower	533, 0.101, WNW
E29	DAMATO ONE HOUR DRY	6471 MICHAEL RD	EDR Hist Cleaner	Lower	533, 0.101, WNW
E30	BLUE COLOR IN CAZ CR	UNION ROAD & MICHAEL	NY Spills	Lower	540, 0.102, WNW
E31	WALKER'S SERVICE	UNION & MICHAEL RDS	NY UST	Lower	540, 0.102, WNW
D32	DAMATO SALVATORE	3035 ORCHARD PARK RD	EDR Hist Cleaner	Lower	567, 0.107, West
G33	D'AMATO'S DRY CLEANE	S-3035 ORCHARD PARK	NY DRYCLEANERS	Lower	572, 0.108, West
G34	TOWNE LINCOLN-MERCUR	3050 ORCHARD PARK RD	RCRA-CESQG, FINDS, ECHO, NY MANIFEST	Lower	607, 0.115, West
G35	TOWNE LINCOLN-MERCUR	3050 ORCHARD PARK RD	NY AST	Lower	607, 0.115, West
G36	TOWNE LINCOLN-MERCUR	3050 ORCHARD PARK RD	NY UST	Lower	607, 0.115, West
G37	CVS PHARMACY #0533	3031 ORCHARD PARK RD	RCRA-LQG, NY MANIFEST	Lower	648, 0.123, WNW
38	BALLY MATRIX FITNESS	55 WEISS RD	NY CBS, NY CBS AST	Lower	862, 0.163, West
H39	3021 ORCHARD PARK RO	3021 ORCHARD PARK RO	NY ENG CONTROLS, NY INST CONTROL, NY BROWNFIELDS	Lower	898, 0.170, WNW

MAPPED SITES SUMMARY

Target Property Address:
3077-3091 UNION ROAD
ORCHARD PARK, NY 14127

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
H40	FAMILY DOLLAR STORE	3021 ORCHARD PARK RD	RCRA-CESQG	Lower	898, 0.170, WNW
I41	DELTA SONIC - ORCHAR	3205 ORCHARD PARK RD	RCRA NonGen / NLR, FINDS, ECHO, NY MANIFEST	Lower	974, 0.184, SW
I42	DELTA SONIC ORCHARD	3205 ORCHARD PARK RD	NY LTANKS, NY UST, NY Spills	Lower	974, 0.184, SW
43	MOBIL OIL	3225 SOUTHWESTERN BL	NY LTANKS	Higher	997, 0.189, SSW
44	FRED N DARSTEIN JR/F	3020 SOUTH WESTERN B	NY UST	Lower	1071, 0.203, ENE
I45	EXPRESS MART #378	3225 ORCHARD PARK RD	NY UST	Lower	1173, 0.222, SW
I46	MOBIL OIL CORP SS 45	3225 ORCHARD PARK RD	RCRA-CESQG, NY LTANKS, NY Spills, FINDS, ECHO, NY...	Lower	1173, 0.222, SW
47	QUAKERTOWN APARTMENT	220 COUNTRYSIDE LANE	NY LTANKS, RCRA NonGen / NLR, FINDS, ECHO, NY...	Higher	1330, 0.252, ESE
48	ORCHARD PARK AIRPORT	ORCHARD PARK ROAD	NY LTANKS	Higher	1908, 0.361, SSE
49	ORCHARD PARK FLYING	3265 ORCHARD PARK RO	NY LTANKS	Lower	1954, 0.370, SSW
50	JOE DIMARCO	3309 ORCHARD PARK RO	NY LTANKS	Lower	2418, 0.458, SSW

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ---------- National Priority List
Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY ---------- Federal Facility Site Information listing
SEMS ---------- Superfund Enterprise Management System

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE ---------- Superfund Enterprise Management System Archive

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Federal institutional controls / engineering controls registries

LUCIS ---------- Land Use Control Information System
US ENG CONTROLS ---------- Engineering Controls Sites List
US INST CONTROL ---------- Sites with Institutional Controls

Federal ERNS list

ERNS ---------- Emergency Response Notification System

State- and tribal - equivalent CERCLIS

NY SHWS ---------- Inactive Hazardous Waste Disposal Sites in New York State

NY VAPOR REOPENED Vapor Intrusion Legacy Site List

State and tribal landfill and/or solid waste disposal site lists

NY SWF/LF Facility Register

State and tribal leaking storage tank lists

INDIAN LUST Leaking Underground Storage Tanks on Indian Land
NY HIST LTANKS Listing of Leaking Storage Tanks

State and tribal registered storage tank lists

FEMA UST Underground Storage Tank Listing
NY CBS UST Chemical Bulk Storage Database
NY MOSF UST Major Oil Storage Facilities Database
NY MOSF Major Oil Storage Facility Site Listing
NY MOSF AST Major Oil Storage Facilities Database
INDIAN UST Underground Storage Tanks on Indian Land
NY TANKS Storage Tank Faciliy Listing

State and tribal institutional control / engineering control registries

NY RES DECL Restrictive Declarations Listing

State and tribal voluntary cleanup sites

NY VCP Voluntary Cleanup Agreements
INDIAN VCP Voluntary Cleanup Priority Listing

State and tribal Brownfields sites

NY ERP Environmental Restoration Program Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

NY SWTIRE Registered Waste Tire Storage & Facility List
NY SWRCY Registered Recycling Facility List
INDIAN ODI Report on the Status of Open Dumps on Indian Lands
DEBRIS REGION 9 Torres Martinez Reservation Illegal Dump Site Locations
ODI Open Dump Inventory
IHS OPEN DUMPS Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL Delisted National Clandestine Laboratory Register
NY DEL SHWS Delisted Registry Sites
US CDL National Clandestine Laboratory Register

EXECUTIVE SUMMARY

Local Lists of Registered Storage Tanks

NY HIST UST	Historical Petroleum Bulk Storage Database
NY HIST AST	Historical Petroleum Bulk Storage Database

Local Land Records

LIENS 2	CERCLA Lien Information

Records of Emergency Release Reports

HMIRS	Hazardous Materials Information Reporting System
NY Hist Spills	SPILLS Database
NY SPILLS 90	SPILLS 90 data from FirstSearch
NY SPILLS 80	SPILLS 80 data from FirstSearch

Other Ascertainable Records

FUDS	Formerly Used Defense Sites
DOD	Department of Defense Sites
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR	Financial Assurance Information
EPA WATCH LIST	EPA WATCH LIST
2020 COR ACTION	2020 Corrective Action Program List
TSCA	Toxic Substances Control Act
TRIS	Toxic Chemical Release Inventory System
SSTS	Section 7 Tracking Systems
ROD	Records Of Decision
RMP	Risk Management Plans
RAATS	RCRA Administrative Action Tracking System
PRP	Potentially Responsible Parties
PADS	PCB Activity Database System
ICIS	Integrated Compliance Information System
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS	Material Licensing Tracking System
COAL ASH DOE	Steam-Electric Plant Operation Data
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER	PCB Transformer Registration Database
RADINFO	Radiation Information Database
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS	Incident and Accident Data
CONSENT	Superfund (CERCLA) Consent Decrees
INDIAN RESERV	Indian Reservations
FUSRAP	Formerly Utilized Sites Remedial Action Program
UMTRA	Uranium Mill Tailings Sites
LEAD SMELTERS	Lead Smelter Sites
US AIRS	Aerometric Information Retrieval System Facility Subsystem
US MINES	Mines Master Index File
ABANDONED MINES	Abandoned Mines
UXO	Unexploded Ordnance Sites
DOCKET HWC	Hazardous Waste Compliance Docket Listing
FUELS PROGRAM	EPA Fuels Program Registered Listing
NY AIRS	Air Emissions Data

EXECUTIVE SUMMARY

NY COAL ASH ---------- Coal Ash Disposal Site Listing
NY E DESIGNATION ---------- E DESIGNATION SITE LISTING
NY Financial Assurance ---------- Financial Assurance Information Listing
NY HSWDS ---------- Hazardous Substance Waste Disposal Site Inventory
NY SPDES ---------- State Pollutant Discharge Elimination System
NY UIC ---------- Underground Injection Control Wells

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP ---------- EDR Proprietary Manufactured Gas Plants

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

NY RGA HWS ---------- Recovered Government Archive State Hazardous Waste Facilities List
NY RGA LF ---------- Recovered Government Archive Solid Waste Facilities List

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

Federal RCRA generators list

RCRA-LQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

A review of the RCRA-LQG list, as provided by EDR, and dated 09/13/2017 has revealed that there are 2 RCRA-LQG sites within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
CVS PHARMACY #0533	***3098 ORCHARD PARK RD***	***W 0 - 1/8 (0.041 mi.)***	***A4***	***14***
CVS PHARMACY #0533	***3031 ORCHARD PARK RD***	***WNW 0 - 1/8 (0.123 mi.)***	***G37***	***85***

RCRA-SQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

A review of the RCRA-SQG list, as provided by EDR, and dated 09/13/2017 has revealed that there are 2 RCRA-SQG sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
LOWES OF ORCHARD PAR	***3195 SOUTHWESTERN BL***	***S 0 - 1/8 (0.089 mi.)***	***F20***	***50***
Lower Elevation	**Address**	**Direction / Distance**	**Map ID**	**Page**
D AMATOS CLEANERS IN	***6471 MICHAEL RD***	***WNW 0 - 1/8 (0.101 mi.)***	***E28***	***68***

RCRA-CESQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

A review of the RCRA-CESQG list, as provided by EDR, and dated 09/13/2017 has revealed that there are 4 RCRA-CESQG sites within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
RITE AID #4969	***3050 UNION ROAD***	***WNW 0 - 1/8 (0.068 mi.)***	***E14***	***32***
TOWNE LINCOLN-MERCUR	***3050 ORCHARD PARK RD***	***W 0 - 1/8 (0.115 mi.)***	***G34***	***77***
FAMILY DOLLAR STORE	3021 ORCHARD PARK RD	WNW 1/8 - 1/4 (0.170 mi.)	H40	125
MOBIL OIL CORP SS 45	***3225 ORCHARD PARK RD***	***SW 1/8 - 1/4 (0.222 mi.)***	***I46***	***154***

State and tribal leaking storage tank lists

NY LTANKS: Leaking Storage Tank Incident Reports. These records contain an inventory of reported leaking storage tank incidents reported from 4/1/86 through the most recent update. They can be either leaking underground storage tanks or leaking aboveground storage tanks. The causes of the incidents are tank test failures, tank failures or tank overfills

A review of the NY LTANKS list, as provided by EDR, and dated 10/31/2017 has revealed that there are 11 NY LTANKS sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
PENSKE AUTO CENTER Date Closed: 1991-09-06 Site ID: 307367 Program Number: 9008606	***S 3195 SOUTHWESTERN***	***S 0 - 1/8 (0.089 mi.)***	***F22***	***56***
MOBIL OIL Date Closed: 1990-05-31 Site ID: 184285 Program Number: 9002352	3225 SOUTHWESTERN BL	SSW 1/8 - 1/4 (0.189 mi.)	43	143
QUAKERTOWN APARTMENT	***220 COUNTRYSIDE LANE***	***ESE 1/4 - 1/2 (0.252 mi.)***	***47***	***172***

Date Closed: 1994-06-17 Site ID: 167723 Program Number: 9309525				
ORCHARD PARK AIRPORT Date Closed: 1995-10-04 Site ID: 187324 Program Number: 9507154	ORCHARD PARK ROAD	SSE 1/4 - 1/2 (0.361 mi.)	48	176

Lower Elevation	Address	Direction / Distance	Map ID	Page
U-HAUL Date Closed: 1998-04-20 Site ID: 135529 Program Number: 9712602	3120 ORCHARD PARK RO	WSW 0 - 1/8 (0.049 mi.)	A7	23
AUSTIN PONTIAC Date Closed: 1991-08-22 Site ID: 102943 Program Number: 8808151	UNION AND ORCHARD PA	W 0 - 1/8 (0.060 mi.)	D10	25
WALKER SERVICE STATI Date Closed: 1995-06-09 Site ID: 186286 Program Number: 9406100	***3008 UNION ROAD***	***WNW 0 - 1/8 (0.084 mi.)***	***E19***	***46***
DELTA SONIC ORCHARD Date Closed: 2005-05-25 Site ID: 343813 Program Number: 0550112	***3205 ORCHARD PARK RD***	***SW 1/8 - 1/4 (0.184 mi.)***	***I42***	***130***
MOBIL OIL CORP SS 45 Date Closed: 1991-12-23 Date Closed: 1992-05-15 Site ID: 240938 Site ID: 240939 Program Number: 9110060 Program Number: 9201626	***3225 ORCHARD PARK RD***	***SW 1/8 - 1/4 (0.222 mi.)***	***I46***	***154***
ORCHARD PARK FLYING Date Closed: 2001-10-17 Site ID: 140262 Program Number: 0004943	3265 ORCHARD PARK RO	SSW 1/4 - 1/2 (0.370 mi.)	49	178
JOE DIMARCO Date Closed: 1987-12-15 Site ID: 240056 Program Number: 8502156	3309 ORCHARD PARK RO	SSW 1/4 - 1/2 (0.458 mi.)	50	179

State and tribal registered storage tank lists

NY UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the Department of Environmental Conservation's Petroleum Bulk Storage (PBS) Database

A review of the NY UST list, as provided by EDR, has revealed that there are 6 NY UST sites within

approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
SOUTHTOWNS U-HAUL CE Database: UST, Date of Government Version: 11/28/2017	SOUTH 3120 ORCHARD P	WSW 0 - 1/8 (0.048 mi.)	A6	20
WALKER'S SERVICE Database: UST, Date of Government Version: 11/28/2017	UNION & MICHAEL RDS	WNW 0 - 1/8 (0.102 mi.)	E31	73
TOWNE LINCOLN-MERCUR Database: UST, Date of Government Version: 11/28/2017	3050 ORCHARD PARK RD	W 0 - 1/8 (0.115 mi.)	G36	83
DELTA SONIC ORCHARD Database: UST, Date of Government Version: 11/28/2017	***3205 ORCHARD PARK RD***	***SW 1/8 - 1/4 (0.184 mi.)***	***I42***	***130***
FRED N DARSTEIN JR/F Database: UST, Date of Government Version: 11/28/2017	3020 SOUTH WESTERN B	ENE 1/8 - 1/4 (0.203 mi.)	44	144
EXPRESS MART #378 Database: UST, Date of Government Version: 11/28/2017	3225 ORCHARD PARK RD	SW 1/8 - 1/4 (0.222 mi.)	I45	148

NY CBS: These facilities store regulated hazardous substances in aboveground tanks with capacities of 185 gallons or greater, and/or in underground tanks of any size

A review of the NY CBS list, as provided by EDR, and dated 11/28/2017 has revealed that there are 2 NY CBS sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
POOL MART INC. Facility Status: Unregulated/Closed CBS Number: 9-000180	***3066 SOUTHWESTERN BL***	***ENE 0 - 1/8 (0.071 mi.)***	***18***	***45***

Lower Elevation	Address	Direction / Distance	Map ID	Page
BALLY MATRIX FITNESS Facility Status: Unregulated/Closed CBS Number: 9-000352	***55 WEISS RD***	***W 1/8 - 1/4 (0.163 mi.)***	***38***	***90***

NY AST: The Aboveground Storage Tank database contains registered ASTs. The data come from the Department of Environmental Conservation's Petroleum Bulk Storage (PBS) Database.

A review of the NY AST list, as provided by EDR, has revealed that there are 3 NY AST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
LOWE'S OF ORCHARD PA Database: AST, Date of Government Version: 11/28/2017 Facility Id: 9-600966	3195 SOUTHWESTERN BO	S 0 - 1/8 (0.089 mi.)	F23	61

Lower Elevation	Address	Direction / Distance	Map ID	Page
AUSTIN PONTIAC, INC Database: AST, Date of Government Version: 11/28/2017 Facility Id: 9-600217	3050 UNION RD. @ ORC	WNW 0 - 1/8 (0.068 mi.)	E15	38
TOWNE LINCOLN-MERCUR Database: AST, Date of Government Version: 11/28/2017	3050 ORCHARD PARK RD	W 0 - 1/8 (0.115 mi.)	G35	81

EXECUTIVE SUMMARY

Facility Id: 9-600240

NY CBS AST: Chemical Bulk Storage Database. Registration data collected as required by 6 NYCRR Part 596. It includes facilities storing hazardous substances listed in 6 NYCRR Part 597, in aboveground tanks with capacities of 185 gallons or greater, and/or in underground tanks of any size. Includes facilities registered (and closed) since effective date of CBS regulations (July 15, 1988) through the date request is processed.

A review of the NY CBS AST list, as provided by EDR, and dated 01/01/2002 has revealed that there are 2 NY CBS AST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
POOL MART INC.	***3066 SOUTHWESTERN BL***	***ENE 0 - 1/8 (0.071 mi.)***	***18***	***45***
Facility Status: 2				
Facility Status: 1				
CBS Number: 9-000180				

Lower Elevation	Address	Direction / Distance	Map ID	Page
BALLY MATRIX FITNESS	***55 WEISS RD***	***W 1/8 - 1/4 (0.163 mi.)***	***38***	***90***
Facility Status: 2				
Facility Status: 1				
CBS Number: 9-000352				

State and tribal institutional control / engineering control registries

NY ENG CONTROLS: Environmental Remediation sites that have engineering controls in place.

A review of the NY ENG CONTROLS list, as provided by EDR, and dated 08/15/2017 has revealed that there is 1 NY ENG CONTROLS site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
3021 ORCHARD PARK RO	***3021 ORCHARD PARK RO***	***WNW 1/8 - 1/4 (0.170 mi.)***	***H39***	***92***
Site Code: 497747				

Environmental Remediation sites that have institutional controls in place.

A review of the NY INST CONTROL list, as provided by EDR, and dated 08/15/2017 has revealed that there is 1 NY INST CONTROL site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
3021 ORCHARD PARK RO	***3021 ORCHARD PARK RO***	***WNW 1/8 - 1/4 (0.170 mi.)***	***H39***	***92***
Site Code: 497747				

State and tribal Brownfields sites

NY BROWNFIELDS: Brownfields Site List

A review of the NY BROWNFIELDS list, as provided by EDR, and dated 08/15/2017 has revealed that there is 1 NY BROWNFIELDS site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
3021 ORCHARD PARK RO	***3021 ORCHARD PARK RO***	***WNW 1/8 - 1/4 (0.170 mi.)***	***H39***	***92***
Site Code: 497747				

ADDITIONAL ENVIRONMENTAL RECORDS

Records of Emergency Release Reports

NY Spills: Data collected on spills reported to NYSDEC. is required by one or more of the following: Article 12 of the Navigation Law, 6 NYCRR Section 613.8 (from PBS regs), or 6 NYCRR Section 595.2 (from CBS regs). It includes spills active as of April 1, 1986, as well as spills occurring since this date.

A review of the NY Spills list, as provided by EDR, and dated 10/31/2017 has revealed that there are 11 NY Spills sites within approximately 0.125 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
7-11 STORE #19112	3084 SOUTHWESTERN BL	E 0 - 1/8 (0.016 mi.)	B3	12
Date Closed: 1998-11-24				
Spill Number: 9806778				
Site ID: 287453				
LOWES # 1882	3195 SOUTH WESTERN B	S 0 - 1/8 (0.089 mi.)	F21	54
Date Closed: 2009-06-18				
Spill Number: 0900924				
Site ID: 412884				
LOWES STORE # 1882	3195 SOUTH WESTERN B	S 0 - 1/8 (0.089 mi.)	F24	63
Date Closed: 2015-10-09				
Spill Number: 1500002				
Site ID: 506134				

Lower Elevation	Address	Direction / Distance	Map ID	Page
U HAUL	3120 ORCHARD PARK RO	WSW 0 - 1/8 (0.053 mi.)	C8	24
Date Closed: 1988-01-05				
Spill Number: 8708463				
Site ID: 135528				
MOLINO'S PIZZA	3020 UNION ROAD	WNW 0 - 1/8 (0.060 mi.)	E11	27
Date Closed: 2007-07-13				
Date Closed: 1995-08-10				
Spill Number: 0551816				
Spill Number: 9505778				
Site ID: 361779				
Site ID: 66214				
TOWN LINCOLN MERCURY	3050 ORCHARD PARK RO	WNW 0 - 1/8 (0.068 mi.)	E13	29

Date Closed: 2007-01-03 Date Closed: 1998-06-15 Spill Number: 0651390 Spill Number: 9705746 Site ID: 372517 Site ID: 252875				
ROAD RECONSTRUCTION Date Closed: 2006-03-21 Spill Number: 0551775 Site ID: 361339	SR 240 AND SR 277	WSW 0 - 1/8 (0.070 mi.)	C16	43
PILOT FREIGHT Date Closed: 1986-09-05 Spill Number: 8601337 Site ID: 198986	UNION & ORCHARD PARK	WSW 0 - 1/8 (0.070 mi.)	C17	44
WALKER SERVICE STATI Date Closed: 2010-11-10 Spill Number: 1001073 Site ID: 434099	***3008 UNION ROAD***	***WNW 0 - 1/8 (0.084 mi.)***	***E19***	***46***
NATIONAL FUEL GAS LI Date Closed: 2005-01-25 Spill Number: 0075493 Site ID: 198672	UNION & MICHAEL STS	WNW 0 - 1/8 (0.099 mi.)	E26	65
BLUE COLOR IN CAZ CR Date Closed: 1998-07-30 Spill Number: 9803132 Site ID: 275126	UNION ROAD & MICHAEL	WNW 0 - 1/8 (0.102 mi.)	E30	72

Other Ascertainable Records

RCRA NonGen / NLR: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

A review of the RCRA NonGen / NLR list, as provided by EDR, and dated 09/13/2017 has revealed that there are 3 RCRA NonGen / NLR sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
7-ELEVEN 19112	***3084 SOUTHWESTERN***	***E 0 - 1/8 (0.016 mi.)***	***B2***	***8***
PENSKE AUTO CENTER	***S 3195 SOUTHWESTERN***	***S 0 - 1/8 (0.089 mi.)***	***F22***	***56***

Lower Elevation	Address	Direction / Distance	Map ID	Page
DELTA SONIC - ORCHAR	***3205 ORCHARD PARK RD***	***SW 1/8 - 1/4 (0.184 mi.)***	***I41***	***127***

NY DRYCLEANERS: A listing of all registered drycleaning facilities.

A review of the NY DRYCLEANERS list, as provided by EDR, and dated 10/27/2016 has revealed that there are 2 NY DRYCLEANERS sites within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
D'AMATO'S CLEANERS Facility Id: 9-1460-00157	6471 MICHAEL ROAD	WNW 0 - 1/8 (0.101 mi.)	E27	68
D'AMATO'S DRY CLEANE Facility Id: 9-1460-00003	S-3035 ORCHARD PARK	W 0 - 1/8 (0.108 mi.)	G33	77

NY MANIFEST: Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

A review of the NY MANIFEST list, as provided by EDR, and dated 10/01/2017 has revealed that there are 9 NY MANIFEST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
7-ELEVEN 19112 EPA ID: NYD986937621 EPA ID: NYP000859181	***3084 SOUTHWESTERN***	***E 0 - 1/8 (0.016 mi.)***	***B2***	***8***
PENSKE AUTO CENTER EPA ID: NYR000017673 EPA ID: NYD071483093	***S 3195 SOUTHWESTERN***	***S 0 - 1/8 (0.089 mi.)***	***F22***	***56***

Lower Elevation	Address	Direction / Distance	Map ID	Page
CVS PHARMACY #0533 EPA ID: NYR000222372	3098 ORCHARD PARK RD	W 0 - 1/8 (0.041 mi.)	A5	18
RITE AID #4969 EPA ID: NYR000185439	***3050 UNION ROAD***	***WNW 0 - 1/8 (0.068 mi.)***	***E14***	***32***
D AMATOS CLEANERS IN EPA ID: NYR000118109	***6471 MICHAEL RD***	***WNW 0 - 1/8 (0.101 mi.)***	***E28***	***68***
TOWNE LINCOLN-MERCUR EPA ID: NYD048392161	***3050 ORCHARD PARK RD***	***W 0 - 1/8 (0.115 mi.)***	***G34***	***77***
CVS PHARMACY #0533 EPA ID: NYR000188060	***3031 ORCHARD PARK RD***	***WNW 0 - 1/8 (0.123 mi.)***	***G37***	***85***
DELTA SONIC - ORCHAR EPA ID: NYD986907921	***3205 ORCHARD PARK RD***	***SW 1/8 - 1/4 (0.184 mi.)***	***I41***	***127***
MOBIL OIL CORP SS 45 EPA ID: NYD986902021	***3225 ORCHARD PARK RD***	***SW 1/8 - 1/4 (0.222 mi.)***	***I46***	***154***

PA MANIFEST: Hazardous waste manifest information.

A review of the PA MANIFEST list, as provided by EDR, and dated 12/31/2016 has revealed that there is 1 PA MANIFEST site within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
RITE AID # 4969	3050 UNION RD	W 0 - 1/8 (0.060 mi.)	D9	25

Generator EPA Id: NYR000185439

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR Hist Auto: EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

A review of the EDR Hist Auto list, as provided by EDR, has revealed that there are 2 EDR Hist Auto sites within approximately 0.125 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
BP SIRC	3065 SOUTHWESTERN BL	E 0 - 1/8 (0.061 mi.)	12	29
Lower Elevation	**Address**	**Direction / Distance**	**Map ID**	**Page**
B D R TORQUE CONVERT	3093 UNION RD	W 0 - 1/8 (0.003 mi.)	A1	8

EDR Hist Cleaner: EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

A review of the EDR Hist Cleaner list, as provided by EDR, has revealed that there are 3 EDR Hist Cleaner sites within approximately 0.125 miles of the target property.

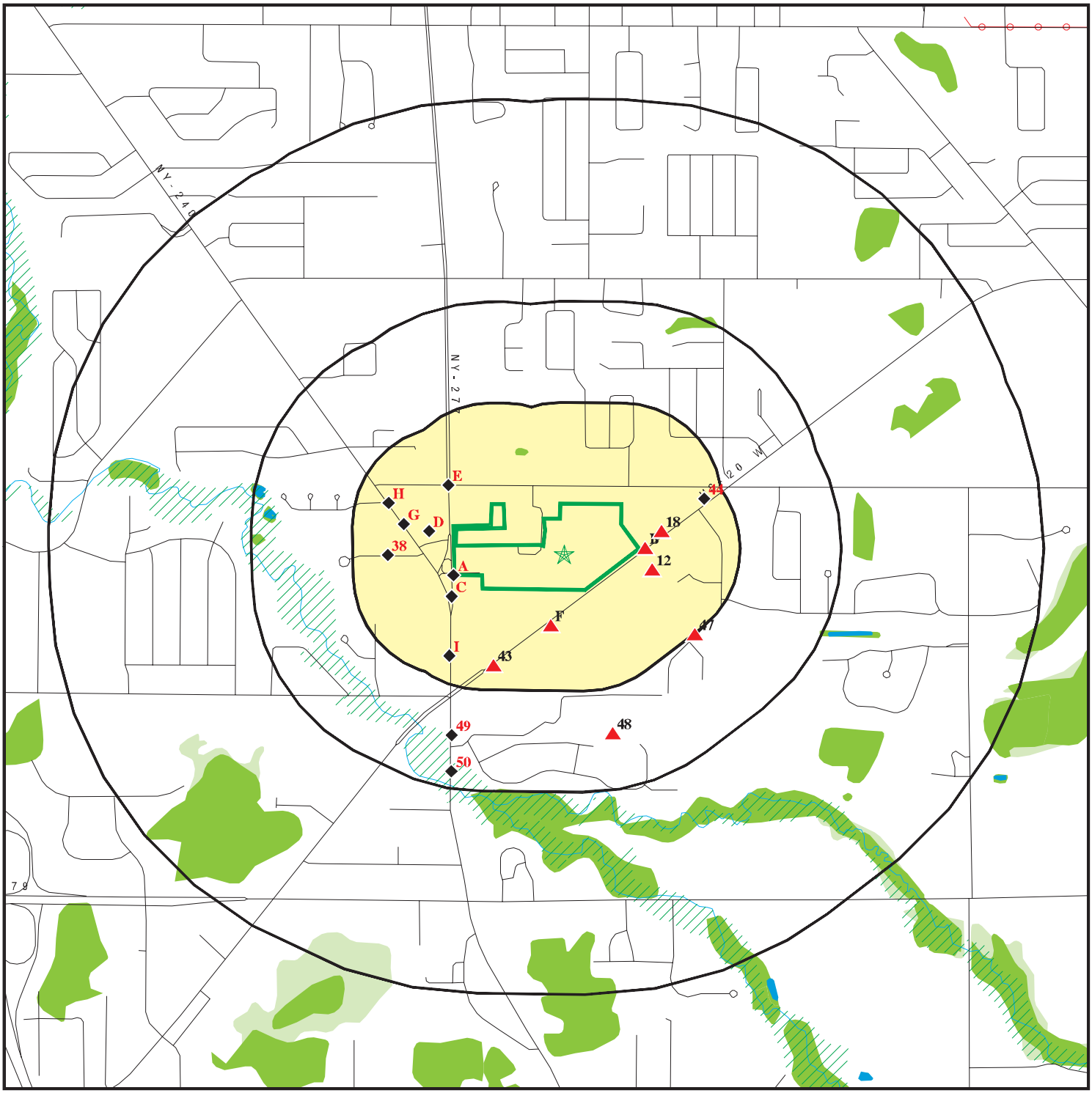
Lower Elevation	Address	Direction / Distance	Map ID	Page
D AMATO SALVATORE	3039 ORCHARD PARK RD	W 0 - 1/8 (0.092 mi.)	D25	64
DAMATO ONE HOUR DRY	6471 MICHAEL RD	WNW 0 - 1/8 (0.101 mi.)	E29	71
DAMATO SALVATORE	3035 ORCHARD PARK RD	W 0 - 1/8 (0.107 mi.)	D32	76

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 1 records.

Site Name	Database(s)
UNION ROAD ACCIDENT	NY Spills

OVERVIEW MAP - 5142649.2S



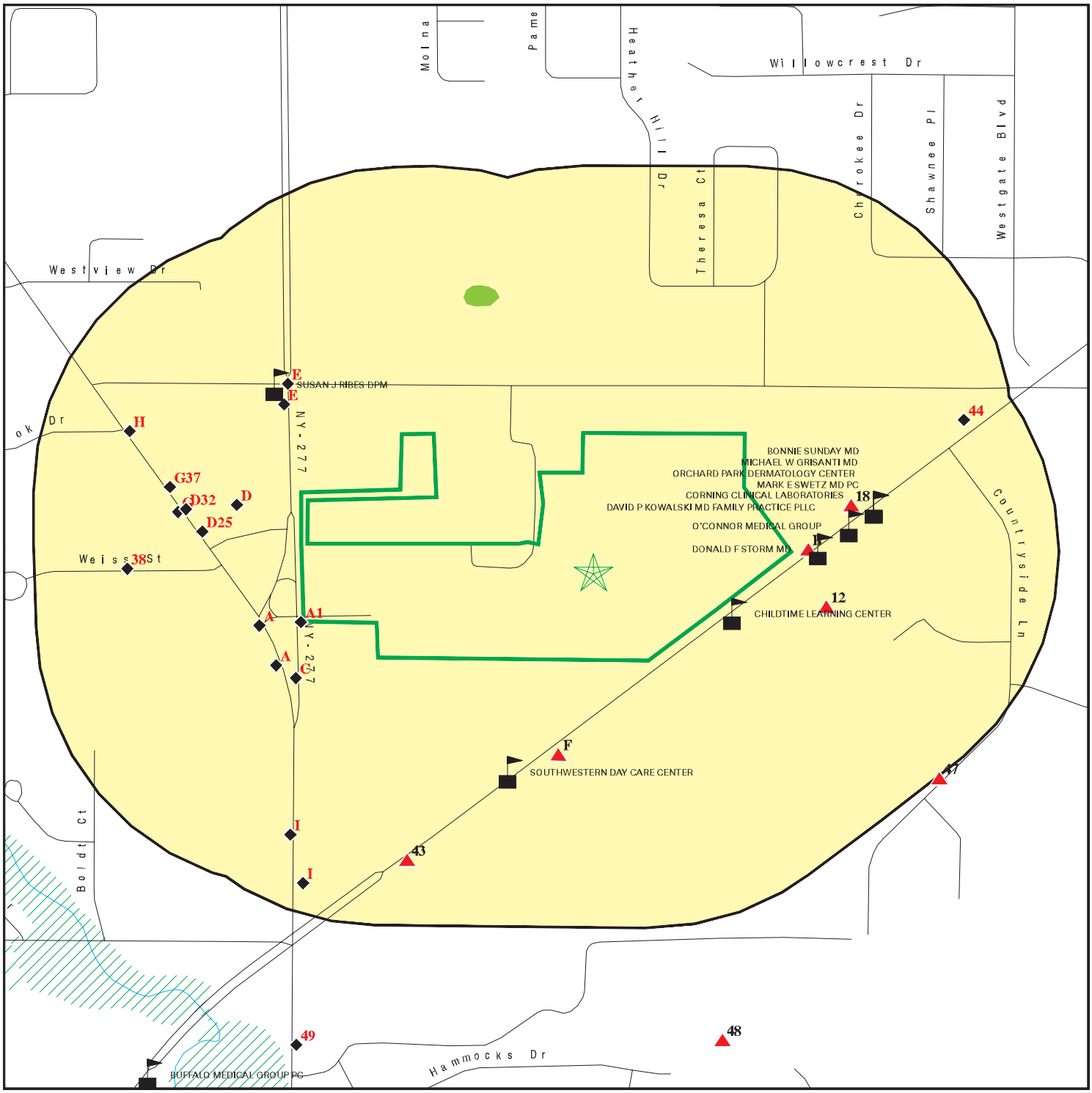
- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands
- Upgradient Area

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	3077-3091 Union Road	CLIENT:	TurnKey Environmental Restoration, LLC.
ADDRESS:	3077-3091 Union Road Orchard Park NY 14127	CONTACT:	Chad Schuster
		INQUIRY #:	5142649.2s
LAT/LONG:	42.801367 / 78.746129	DATE:	December 20, 2017 5:25 pm

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DETAIL MAP - 5142649.2S



Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

Sensitive Receptors

National Priority List Sites

Dept. Defense Sites

Indian Reservations BIA

100-year flood zone

500-year flood zone

National Wetland Inventory

State Wetlands

0 1/8 1/4 1/2 Miles

N

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	3077-3091 Union Road	CLIENT:	TurnKey Environmental Restoration, LLC.
ADDRESS:	3077-3091 Union Road Orchard Park NY 14127	CONTACT:	Chad Schuster
LAT/LONG:	42.801367 / 78.746129	INQUIRY #:	5142649.2s
		DATE:	December 20, 2017 5:26 pm

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	TP		NR	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		2	0	NR	NR	NR	2
RCRA-SQG	0.250		2	0	NR	NR	NR	2
RCRA-CESQG	0.250		2	2	NR	NR	NR	4
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent CERCLIS								
NY SHWS	1.000		0	0	0	0	NR	0
NY VAPOR REOPENED	1.000		0	0	0	0	NR	0
State and tribal landfill and/or solid waste disposal site lists								
NY SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
INDIAN LUST	0.500		0	0	0	NR	NR	0
NY LTANKS	0.500		4	3	4	NR	NR	11
NY HIST LTANKS	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
NY UST	0.250		3	3	NR	NR	NR	6
NY CBS UST	0.250		0	0	NR	NR	NR	0
NY MOSF UST	0.500		0	0	0	NR	NR	0
NY CBS	0.250		1	1	NR	NR	NR	2
NY MOSF	0.500		0	0	0	NR	NR	0
NY AST	0.250		3	0	NR	NR	NR	3
NY CBS AST	0.250		1	1	NR	NR	NR	2
NY MOSF AST	0.500		0	0	0	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
NY TANKS	0.250		0	0	NR	NR	NR	0
State and tribal institutional control / engineering control registries								
NY RES DECL	0.125		0	NR	NR	NR	NR	0
NY ENG CONTROLS	0.500		0	1	0	NR	NR	1
NY INST CONTROL	0.500		0	1	0	NR	NR	1
State and tribal voluntary cleanup sites								
NY VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
NY BROWNFIELDS	0.500		0	1	0	NR	NR	1
NY ERP	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
NY SWTIRE	0.500		0	0	0	NR	NR	0
NY SWRCY	0.500		0	0	0	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	TP		NR	NR	NR	NR	NR	0
NY DEL SHWS	1.000		0	0	0	0	NR	0
US CDL	TP		NR	NR	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
NY HIST UST	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
NY HIST AST	TP		NR	NR	NR	NR	NR	0
Local Land Records								
NY LIENS	TP		NR	NR	NR	NR	NR	0
LIENS 2	TP		NR	NR	NR	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0
NY Spills	0.125		11	NR	NR	NR	NR	11
NY Hist Spills	0.125		0	NR	NR	NR	NR	0
NY SPILLS 90	0.125		0	NR	NR	NR	NR	0
NY SPILLS 80	0.125		0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		2	1	NR	NR	NR	3
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
DOCKET HWC	TP		NR	NR	NR	NR	NR	0
ECHO	TP		NR	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
NY AIRS	TP		NR	NR	NR	NR	NR	0
NY COAL ASH	0.500		0	0	0	NR	NR	0
NY DRYCLEANERS	0.250		2	0	NR	NR	NR	2
NY E DESIGNATION	0.125		0	NR	NR	NR	NR	0
NY Financial Assurance	TP		NR	NR	NR	NR	NR	0
NY HSWDS	0.500		0	0	0	NR	NR	0
NY MANIFEST	0.250		7	2	NR	NR	NR	9
PA MANIFEST	0.250		1	0	NR	NR	NR	1
NY SPDES	TP		NR	NR	NR	NR	NR	0
NY UIC	TP		NR	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		2	NR	NR	NR	NR	2
EDR Hist Cleaner	0.125		3	NR	NR	NR	NR	3
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
NY RGA HWS	TP		NR	NR	NR	NR	NR	0
NY RGA LF	TP		NR	NR	NR	NR	NR	0
- Totals --		0	46	16	4	0	0	66

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

A1
West
< 1/8
0.003 mi.
14 ft.

B D R TORQUE CONVERTERS **EDR Hist Auto** **1021099766**
3093 UNION RD **N/A**
ORCHARD PARK, NY 14127

Site 1 of 5 in cluster A

Site

Relative:
Lower

Actual:
730 ft.

EDR Hist Auto

Year:	Name:	Type:
1993	B D R TORQUE CONVERTERS	Automotive Transmission Repair Shops

---

B2
East
< 1/8
0.016 mi.
84 ft.

7-ELEVEN 19112 **RCRA NonGen / NLR** **1000458371**
3084 SOUTHWESTERN **FINDS** **NYD986937621**
ORCHARD PARK, NY 14127 **ECHO**
NY MANIFEST

Site 1 of 2 in cluster B

Relative:
Higher

Actual:
783 ft.

RCRA NonGen / NLR:

Date form received by agency:	01/01/2007
Facility name:	7-ELEVEN 19112
Facility address:	3084 SOUTHWESTERN ORCHARD PARK, NY 14127-1213
EPA ID:	NYD986937621
Mailing address:	SMITHTOWN BYPASS 3RD FLOOR SMITHTOWN, NY 11788
Contact:	Not reported
Contact address:	SMITHTOWN BYPASS 3RD FLOOR SMITHTOWN, NY 11788
Contact country:	US
Contact telephone:	Not reported
Contact email:	Not reported
EPA Region:	02
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

Adjacent

Owner/Operator Summary:

Owner/operator name:	THE SOUTHLAND CORP
Owner/operator address:	732 SMITHTOWN BYPASS 3RD FLOOR SMITHTOWN, NY 11788
Owner/operator country:	US
Owner/operator telephone:	516-366-1711
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Owner/operator name:	THE SOUTHLAND CORP
Owner/operator address:	732 SMITHTOWN BYPASS 3RD FLOOR SMITHTOWN, NY 11788
Owner/operator country:	US
Owner/operator telephone:	516-366-1711
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Operator

7-ELEVEN 19112 (Continued) **1000458371**

Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:
Date form received by agency: 01/01/2006
Site name: 7-ELEVEN 19112
Classification: Not a generator, verified

Date form received by agency: 11/24/1999
Site name: 7-ELEVEN 19112
Classification: Not a generator, verified

Date form received by agency: 01/23/1991
Site name: 7-ELEVEN 19112
Classification: Small Quantity Generator

. Waste code: D000
. Waste name: Not Defined

. Waste code: D018
. Waste name: BENZENE

Violation Status: No violations found

FINDS:

Registry ID: 110004459327

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

7-ELEVEN 19112 (Continued) **1000458371**

ECHO:
- Envid: 1000458371
- Registry ID: 110004459327
- DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110004459327

NY MANIFEST:
- Country: USA
- EPA ID: NYD986937621
- Facility Status: Not reported
- Location Address 1: 3846 SOUTHWESTERN BLVD
- Code: BP
- Location Address 2: Not reported
- Total Tanks: Not reported
- Location City: ORCHARD PARK
- Location State: NY
- Location Zip: 14127
- Location Zip 4: Not reported

NY MANIFEST:
- EPAID: NYD986937621
- Mailing Name: SOUTHLAND CORPORATION
- Mailing Contact: R B SIEFER
- Mailing Address 1: REFLECTIONS 3 SUITE 400
- Mailing Address 2: Not reported
- Mailing City: VIRGINIA BEACH
- Mailing State: VA
- Mailing Zip: 23452
- Mailing Zip 4: Not reported
- Mailing Country: USA
- Mailing Phone: 7166331522

NY MANIFEST:
- Document ID: PAC5629271
- Manifest Status: C
- seq: Not reported
- Year: 1993
- Trans1 State ID: Not reported
- Trans2 State ID: PAAH0331
- Generator Ship Date: 07/01/1993
- Trans1 Recv Date: 07/01/1993
- Trans2 Recv Date: 07/01/1993
- TSD Site Recv Date: 07/02/1993
- Part A Recv Date: 07/19/1993
- Part B Recv Date: 07/21/1993
- Generator EPA ID: NYD986937621
- Trans1 EPA ID: NYD981876006
- Trans2 EPA ID: NYD982792814
- TSDF ID 1: PAD067098822
- TSDF ID 2: Not reported
- Manifest Tracking Number: Not reported
- Import Indicator: Not reported
- Export Indicator: Not reported
- Discr Quantity Indicator: Not reported
- Discr Type Indicator: Not reported
- Discr Residue Indicator: Not reported
- Discr Partial Reject Indicator: Not reported

7-ELEVEN 19112 (Continued) **1000458371**

Discr Full Reject Indicator:	Not reported
Manifest Ref Number:	Not reported
Alt Facility RCRA ID:	Not reported
Alt Facility Sign Date:	Not reported
MGMT Method Type Code:	Not reported
Waste Code:	D001 - NON-LISTED IGNITABLE WASTES
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Quantity:	00250
Units:	G - Gallons (liquids only)* (8.3 pounds)
Number of Containers:	005
Container Type:	DM - Metal drums, barrels
Handling Method:	B Incineration, heat recovery, burning.
Specific Gravity:	100

Click this hyperlink while viewing on your computer to access additional NY_MANIFEST: detail in the EDR Site Report.

Country:	USA
EPA ID:	NYP000859181
Facility Status:	Not reported
Location Address 1:	3846 SOUTHWESTERN BOULEVARD
Code:	BP
Location Address 2:	Not reported
Total Tanks:	Not reported
Location City:	ORCHARD PARK
Location State:	NY
Location Zip:	14127
Location Zip 4:	Not reported

NY MANIFEST:

EPAID:	NYP000859181
Mailing Name:	CITGO PETROLEUM CORPORATION
Mailing Contact:	CITGO PETROLEUM CORPORATION
Mailing Address 1:	3846 SOUTHWESTERN BOULEVARD
Mailing Address 2:	Not reported
Mailing City:	ORCHARD PARK
Mailing State:	NY
Mailing Zip:	14127
Mailing Zip 4:	Not reported
Mailing Country:	USA
Mailing Phone:	8005273132

NY MANIFEST:

Document ID:	NYA4128377
Manifest Status:	K
seq:	Not reported
Year:	1986
Trans1 State ID:	77519-GS
Trans2 State ID:	Not reported
Generator Ship Date:	06/03/1986
Trans1 Recv Date:	06/03/1986
Trans2 Recv Date:	/ /

7-ELEVEN 19112 (Continued) **1000458371**

TSD Site Recv Date:	06/03/1986
Part A Recv Date:	07/15/1986
Part B Recv Date:	06/16/1986
Generator EPA ID:	NYP000859181
Trans1 EPA ID:	NYD041037441
Trans2 EPA ID:	Not reported
TSDF ID 1:	NYD043815703
TSDF ID 2:	Not reported
Manifest Tracking Number:	Not reported
Import Indicator:	Not reported
Export Indicator:	Not reported
Discr Quantity Indicator:	Not reported
Discr Type Indicator:	Not reported
Discr Residue Indicator:	Not reported
Discr Partial Reject Indicator:	Not reported
Discr Full Reject Indicator:	Not reported
Manifest Ref Number:	Not reported
Alt Facility RCRA ID:	Not reported
Alt Facility Sign Date:	Not reported
MGMT Method Type Code:	Not reported
Waste Code:	D001 - NON-LISTED IGNITABLE WASTES
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Quantity:	00250
Units:	G - Gallons (liquids only)* (8.3 pounds)
Number of Containers:	001
Container Type:	TT - Cargo tank, tank trucks
Handling Method:	B Incineration, heat recovery, burning.
Specific Gravity:	100

Click this hyperlink while viewing on your computer to access additional NY_MANIFEST: detail in the EDR Site Report.

B3 **7-11 STORE #19112** **NY Spills** **S103484204**
East **3084 SOUTHWESTERN BLVD** **N/A**
< 1/8 **ORCHARD PARK, NY**
0.016 mi.
84 ft. **Site 2 of 2 in cluster B**

Relative:
Higher

Actual:
783 ft.

SPILLS:

Facility ID:	9806778
Facility Type:	ER
Spill Number:	9806778
DER Facility ID:	232861
Site ID:	287453
DEC Region:	9
Closed Date:	1998-11-24
Spill Cause:	Housekeeping
Spill Class:	B3
SWIS:	1560
Spill Date:	1998-09-02
Investigator:	FXGALLEG
Referred To:	Not reported
Reported to Dept:	1998-09-02

Adjacent

7-11 STORE #19112 (Continued) **S103484204**

CID:	384
Water Affected:	Not reported
Spill Source:	Gasoline Station or other PBS Facility
Spill Notifier:	Local Agency
Cleanup Ceased:	Not reported
Cleanup Meets Std:	False
Last Inspection:	1998-09-02
Recommended Penalty:	False
UST Trust:	False
Remediation Phase:	0
Date Entered In Computer:	1998-09-02
Spill Record Last Update:	1999-10-08
Spiller Name:	GARRY BLAIR
Spiller Company:	SOUTHLAND CORP
Spiller Address:	814 BAKER ROAD
Spiller Company:	001
Contact Name:	Not reported
DEC Memo:	"Prior to Sept, 2004 data translation this spill Lead_DEC Field was FG 9/2/98 SITE INSPECTION. CONTRACTOR HAD ALREADY REMOVED THE USTS AND THE HOLE WAS BACKFILLED. CONTRACTOR INDICATED THAT HE KNEW OF SPILL YESTERDAY. HE SAID THAT DEC DOES NOT LOOK AT EXCAVATIONS IN REGION 8. I TOLD HIM THAT WE SHOULD HAVE BEEN NOTIFIED WHEN THE SPILL WAS DISCOVERED AND THAT IN REGION 9, WE LOOK AT ALL SPILL EXCAVATIONS. I WAS TOLD THAT THE HOLE WAS DUG TO CLEAN ON ALL SIDES EXCEPT THE WEST SIDE BECAUSE THERE WAS A WATER MAIN RUNNING THROUGH. HE SAID A SEPARATE SAMPLE WAS TAKEN THERE. THE BOTTOM OF THE EXCAVATION WAS ON TOP OF ROCK AND NO WATER WAS IN THE EXCAVATION. NO BOTTOM SAMPLE COULD BE COLLECTED. I TOLD HIM THAT WE MAY REQUIRE A BEDROCK WATER SAMPLE. APPROXIMATELY 6 TRUCKLOADS OF CONTAMINATED SOIL WAS STAGED ON SITE, COVERED WITH PLASTIC. 9/9/98 PER RNL, NO BOTTOM SAMPLE IS NECESSARY. 11/24/98 DISPOSAL RECPTS SUBMITTED. EXCAVATION SAMPLES SUBMITTED WHICH SLIGHTLY EXCEED STARS LEVELS. SITE CAN BE MADE INACTIVE. INACTIVE LTR SENT."
Remarks:	"WHILE REMOVING AN UNDERGROUND STORAGE TANK, SOIL CONTAMINATION WAS DISCOVERED. SOIL IS GOING TO BE STOCKPILED AND REMOVED."

All Materials:

Site ID:	287453
Operable Unit ID:	1064390
Operable Unit:	01
Material ID:	317922
Material Code:	0009
Material Name:	gasoline
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	.00
Units:	G
Recovered:	.00
Oxygenate:	Not reported

A4
West
< 1/8
0.041 mi.
218 ft.

CVS PHARMACY #0533
3098 ORCHARD PARK RD
WEST SENECA, NY 14127

Site 2 of 5 in cluster A

RCRA-LQG
FINDS
ECHO

1018159132
NYR000222372

Relative:
Lower

Actual:
730 ft.

RCRA-LQG:

Date form received by agency:	09/28/2015
Facility name:	CVS PHARMACY #0533
Facility address:	3098 ORCHARD PARK RD WEST SENECA, NY 14127
EPA ID:	NYR000222372
Mailing address:	CVS DR WOONSOCKET, RI 02895
Contact:	PAT WERNEIWSKI
Contact address:	CVS DR MAIL CODE 0000 WOONSOCKET, RI 02895
Contact country:	US
Contact telephone:	401-770-6493
Contact email:	PAT.PERRY@CVSHEALTH.COM
EPA Region:	02
Classification:	Large Quantity Generator
Description:	Handler: generates 1,000 kg or more of hazardous waste during any calendar month; or generates more than 1 kg of acutely hazardous waste during any calendar month; or generates more than 100 kg of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month; or generates 1 kg or less of acutely hazardous waste during any calendar month, and accumulates more than 1 kg of acutely hazardous waste at any time; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates more than 100 kg of that material at any time

Nearby???

Owner/Operator Summary:

Owner/operator name:	BUFFALO OP LZ LLC
Owner/operator address:	COOPER CREEK BLVD UNIVERSITY PARK, FL 34201
Owner/operator country:	US
Owner/operator telephone:	716-886-0211
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	05/27/2012
Owner/Op end date:	Not reported
Owner/operator name:	CVS ALBANY LLC
Owner/operator address:	Not reported Not reported
Owner/operator country:	US
Owner/operator telephone:	Not reported
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Operator

CVS PHARMACY #0533 (Continued) **1018159132**

Owner/Op start date: 04/29/2011
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D004
. Waste name: ARSENIC

. Waste code: D005
. Waste name: BARIUM

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

. Waste code: D010
. Waste name: SELENIUM

. Waste code: D011
. Waste name: SILVER

. Waste code: D016
. Waste name: 2,4-D (2,4-DICHLOROPHENOXYACETIC ACID)

. Waste code: D018
. Waste name: BENZENE

. Waste code: D024

CVS PHARMACY #0533 (Continued) **1018159132**

. Waste name: M-CRESOL

. Waste code: D027
. Waste name: 1,4-DICHLOROBENZENE

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: D039
. Waste name: TETRACHLOROETHYLENE

. Waste code: P001
. Waste name: 2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYLBUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3% (OR) WARFARIN, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3%

. Waste code: P012
. Waste name: ARSENIC OXIDE AS2O3 (OR) ARSENIC TRIOXIDE

. Waste code: P075
. Waste name: NICOTINE, & SALTS (OR) PYRIDINE, 3-(1-METHYL-2-PYRROLIDINYL)-,(S)-, & SALTS

. Waste code: P188
. Waste name: BENZOIC ACID, 2-HYDROXY-, COMPD. WITH (3AS-CIS)-1,2,3,3A,8,8A-HEXAHYDRO-1,3A,8-TRIMETHYLPYRROLO[2,3-B]INDOL-5-YL METHYLCARBAMATE ESTER (1:1) (OR) PHYSOSTIGMINE SALICYLATE

. Waste code: U002
. Waste name: 2-PROPANONE (I) (OR) ACETONE (I)

. Waste code: U010
. Waste name: AZIRINO [2',3':3,4]PYRROLO[1,2-A]INDOLE-4,7-DIONE, 6-AMINO-8-[[(AMINOCARBONYL)OXY]METHYL]-1,1A,2,8,8A,8B-HEXAHYDRO-8A-METHOXY-5-METHYL-, [1AS-(1AALPHA, 8BETA, 8AALPHA, 8BALPHA)]- (OR) MITOMYCIN C

. Waste code: U031
. Waste name: 1-BUTANOL (I) (OR) N-BUTYL ALCOHOL (I)

. Waste code: U034
. Waste name: ACETALDEHYDE, TRICHLORO- (OR) CHLORAL

. Waste code: U035
. Waste name: BENZENEBUTANOIC ACID, 4-[BIS(2-CHLOROETHYL)AMINO]- (OR) CHLORAMBUCIL

. Waste code: U044
. Waste name: CHLOROFORM (OR) METHANE, TRICHLORO-

. Waste code: U058
. Waste name: 2H-1,3,2-OXAZAPHOSPHORIN-2-AMINE, N,N-BIS(2-CHLOROETHYL)TETRAHYDRO-, 2-OXIDE (OR) CYCLOPHOSPHAMIDE

. Waste code: U059
. Waste name: 5,12-NAPHTHACENEDIONE, 8-ACETYL-10-[(3-AMINO-2,3,6-TRIDEOXY)-ALPHA-L-LYXO-HEXOPYRANOSYL)OXY]-7,8,9,10-TETRAHYDRO-6,8,11-TRIHYDROXY-1-METHOXY-, (8S-CIS)- (OR)

CVS PHARMACY #0533 (Continued) **1018159132**

DAUNOMYCIN

. Waste code: U070
. Waste name: BENZENE, 1,2-DICHLORO- (OR) O-DICHLOROBENZENE

. Waste code: U072
. Waste name: BENZENE, 1,4-DICHLORO- (OR) P-DICHLOROBENZENE

. Waste code: U089
. Waste name: DIETHYLSTILBESTEROL (OR) PHENOL, 4,4'-(1,2-DIETHYL-1,2-ETHENEDIYL)BIS, (E)-

. Waste code: U122
. Waste name: FORMALDEHYDE

. Waste code: U129
. Waste name: CYCLOHEXANE, 1,2,3,4,5,6-HEXACHLORO-, (1ALPHA, 2ALPHA, 3BETA, 4ALPHA, 5ALPHA, 6BETA)- (OR) LINDANE

. Waste code: U132
. Waste name: HEXACHLOROPHENE (OR) PHENOL, 2,2'-METHYLENEBIS[3,4,6-TRICHLORO-

. Waste code: U150
. Waste name: L-PHENYLALANINE, 4-[BIS(2-CHLOROETHYL)AMINO]- (OR) MELPHALAN

. Waste code: U151
. Waste name: MERCURY

. Waste code: U154
. Waste name: METHANOL (I) (OR) METHYL ALCOHOL (I)

. Waste code: U165
. Waste name: NAPHTHALENE

. Waste code: U188
. Waste name: PHENOL

. Waste code: U200
. Waste name: RESERPINE (OR) YOHIMBAN-16-CARBOXYLIC ACID, 11,17-DIMETHOXY-18-[(3,4,5-TRIMETHOXYBENZOYL)OXY]-, METHYL ESTER, (3BETA, 16BETA, 17ALPHA, 18BETA, 20ALPHA)-

. Waste code: U201
. Waste name: 1,3-BENZENEDIOL (OR) RESORCINOL

. Waste code: U204
. Waste name: SELENIOUS ACID (OR) SELENIUM DIOXIDE

. Waste code: U205
. Waste name: SELENIUM SULFIDE (OR) SELENIUM SULFIDE SES2 (R,T)

. Waste code: U206
. Waste name: D-GLUCOSE, 2-DEOXY-2-[[(METHYLNITROSOAMINO)-CARBONYL]AMINO]- (OR) GLUCOPYRANOSE, 2-DEOXY-2-(3-METHYL-3-NITROSOUREIDO)-,D- (OR) STREPTOZOTOCIN

. Waste code: U210

CVS PHARMACY #0533 (Continued) **1018159132**

. Waste name: ETHENE, TETRACHLORO- (OR) TETRACHLOROETHYLENE

. Waste code: U279
. Waste name: CARBARYL (OR) 1-NAPHTHALENOL, METHYLCARBAMATE

. Waste code: U411
. Waste name: PHENOL, 2-(1-METHYLETHOXY)-, METHYLCARBAMATE (OR) PROPOXUR

Violation Status: No violations found

FINDS:

Registry ID: 110066950561

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:
Envid: 1018159132
Registry ID: 110066950561
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110066950561

A5 **CVS PHARMACY #0533** **NY MANIFEST** **S118708568**
West **3098 ORCHARD PARK RD** **N/A**
< 1/8 **WEST SENECA, NY 14127**
0.041 mi.
218 ft. **Site 3 of 5 in cluster A**

Relative:
Lower

Actual:
730 ft.

NY MANIFEST:
Country: USA
EPA ID: NYR000222372
Facility Status: Not reported
Location Address 1: 3031 ORCHARD PARK RD
Code: BP
Location Address 2: Not reported
Total Tanks: Not reported
Location City: ORCHARD PARK
Location State: NY
Location Zip: 14127
Location Zip 4: Not reported

NY MANIFEST:
EPAID: NYR000222372
Mailing Name: CVS PHARMACY #0533
Mailing Contact: CVS PHARMACY #0533
Mailing Address 1: 3098 ORCHARD PARK RD
Mailing Address 2: Not reported
Mailing City: WEST SENECA
Mailing State: NY

CVS PHARMACY #0533 (Continued) **S118708568**

Mailing Zip:	14127
Mailing Zip 4:	Not reported
Mailing Country:	USA
Mailing Phone:	7166946622

NY MANIFEST:

Document ID:	Not reported
Manifest Status:	Not reported
seq:	Not reported
Year:	2017
Trans1 State ID:	MNS000110924
Trans2 State ID:	Not reported
Generator Ship Date:	06/28/2017
Trans1 Recv Date:	06/28/2017
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	07/10/2017
Part A Recv Date:	Not reported
Part B Recv Date:	Not reported
Generator EPA ID:	NYR000222372
Trans1 EPA ID:	Not reported
Trans2 EPA ID:	Not reported
TSDF ID 1:	MID980615298
TSDF ID 2:	Not reported
Manifest Tracking Number:	010711615FLE
Import Indicator:	N
Export Indicator:	N
Discr Quantity Indicator:	N
Discr Type Indicator:	N
Discr Residue Indicator:	N
Discr Partial Reject Indicator:	N
Discr Full Reject Indicator:	N
Manifest Ref Number:	Not reported
Alt Facility RCRA ID:	Not reported
Alt Facility Sign Date:	Not reported
MGMT Method Type Code:	H141
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Quantity:	0.04
Units:	P - Pounds
Number of Containers:	1
Container Type:	BA - Burlap, plastic, paper bags
Handling Method:	B Incineration, heat recovery, burning.
Specific Gravity:	1
Waste Code:	Not reported
Waste Code 1_2:	Not reported
Waste Code 1_3:	Not reported
Waste Code 1_4:	P001
Waste Code 1_5:	Not reported
Waste Code 1_6:	Not reported

Click this hyperlink while viewing on your computer to access
34 additional NY_MANIFEST: record(s) in the EDR Site Report.

A6
WSW
< 1/8
0.048 mi.
256 ft.

SOUTHTOWNS U-HAUL CENTER
SOUTH 3120 ORCHARD PARK ROAD
WEST SENECA, NY 14224

Site 4 of 5 in cluster A

NY UST **U003316408**
N/A

Relative:
Lower

Actual:
733 ft.

UST:

Id/Status:	9-022152 / Unregulated/Closed
Program Type:	PBS
Region:	STATE
DEC Region:	9
Expiration Date:	N/A
UTM X:	193176.76103
UTM Y:	4745446.43362
Site Type:	Other

Nearby???

Affiliation Records:

Site Id:	52067
Affiliation Type:	Facility Owner
Company Name:	U-HAUL OF C.N.Y.
Contact Type:	Not reported
Contact Name:	Not reported
Address1:	8045 PITTSFORD-VICTOR ROAD
Address2:	Not reported
City:	VICTOR
State:	NY
Zip Code:	14564
Country Code:	001
Phone:	(716) 425-8730
EMail:	Not reported
Fax Number:	Not reported
Modified By:	TRANSLAT
Date Last Modified:	2004-03-04

Site Id:	52067
Affiliation Type:	Mail Contact
Company Name:	U-HAUL OF C.N.Y.
Contact Type:	Not reported
Contact Name:	RICHARD HARDY
Address1:	Not reported
Address2:	8045 PITTSFORD-VICTOR ROAD
City:	VICTOR
State:	NY
Zip Code:	14564
Country Code:	001
Phone:	(716) 425-8730
EMail:	Not reported
Fax Number:	Not reported
Modified By:	TRANSLAT
Date Last Modified:	2004-03-04

Site Id:	52067
Affiliation Type:	Facility Operator
Company Name:	SOUTHTOWNS U-HAUL CENTER
Contact Type:	Not reported
Contact Name:	U-HAUL CO OF SOUTHTOWN
Address1:	Not reported
Address2:	Not reported
City:	Not reported
State:	NN

SOUTHTOWNS U-HAUL CENTER (Continued) **U003316408**

Zip Code:	Not reported
Country Code:	001
Phone:	(716) 675-9343
EMail:	Not reported
Fax Number:	Not reported
Modified By:	TRANSLAT
Date Last Modified:	2004-03-04

Site Id:	52067
Affiliation Type:	Emergency Contact
Company Name:	U-HAUL OF C.N.Y.
Contact Type:	Not reported
Contact Name:	MICHAEL AIGNER
Address1:	Not reported
Address2:	Not reported
City:	Not reported
State:	NN
Zip Code:	Not reported
Country Code:	001
Phone:	(716) 823-5148
EMail:	Not reported
Fax Number:	Not reported
Modified By:	TRANSLAT
Date Last Modified:	2004-03-04

Tank Info:

Tank Number:	1
Tank ID:	160585
Tank Status:	Closed - Removed
Material Name:	Closed - Removed
Capacity Gallons:	8000
Install Date:	11/01/1982
Date Tank Closed:	02/11/1998
Registered:	True
Tank Location:	Underground
Tank Type:	Equivalent technology
Material Code:	0009
Common Name of Substance:	Gasoline

Tightness Test Method:	NN
Date Test:	Not reported
Next Test Date:	Not reported
Pipe Model:	Not reported
Modified By:	TRANSLAT
Last Modified:	04/14/2017

Equipment Records:

D02 - Pipe Type - Galvanized Steel
F00 - Pipe External Protection - None
C02 - Pipe Location - Underground/On-ground
J01 - Dispenser - Pressurized Dispenser
B04 - Tank External Protection - Fiberglass
G00 - Tank Secondary Containment - None
I00 - Overfill - None
A99 - Tank Internal Protection - Other
H03 - Tank Leak Detection - Vapor Well

SOUTHTOWNS U-HAUL CENTER (Continued) **U003316408**

Tank Number:	2
Tank ID:	160586
Tank Status:	Closed - Removed
Material Name:	Closed - Removed
Capacity Gallons:	6000
Install Date:	11/01/1982
Date Tank Closed:	02/11/1998
Registered:	True
Tank Location:	Underground
Tank Type:	Equivalent technology
Material Code:	0008
Common Name of Substance:	Diesel
Tightness Test Method:	NN
Date Test:	Not reported
Next Test Date:	Not reported
Pipe Model:	Not reported
Modified By:	TRANSLAT
Last Modified:	04/14/2017

Equipment Records:

F99 - Pipe External Protection - Other
I00 - Overfill - None
B04 - Tank External Protection - Fiberglass
A99 - Tank Internal Protection - Other
G00 - Tank Secondary Containment - None
C02 - Pipe Location - Underground/On-ground
J01 - Dispenser - Pressurized Dispenser
D02 - Pipe Type - Galvanized Steel
H03 - Tank Leak Detection - Vapor Well

Tank Number:	3
Tank ID:	160587
Tank Status:	Closed - Removed
Material Name:	Closed - Removed
Capacity Gallons:	2000
Install Date:	11/01/1982
Date Tank Closed:	02/11/1998
Registered:	True
Tank Location:	Underground
Tank Type:	Equivalent technology
Material Code:	0012
Common Name of Substance:	Kerosene [#1 Fuel Oil] (On-Site Consumption)
Tightness Test Method:	NN
Date Test:	Not reported
Next Test Date:	Not reported
Pipe Model:	Not reported
Modified By:	TRANSLAT
Last Modified:	04/14/2017

Equipment Records:

B04 - Tank External Protection - Fiberglass
I00 - Overfill - None
D02 - Pipe Type - Galvanized Steel
F00 - Pipe External Protection - None
C02 - Pipe Location - Underground/On-ground

SOUTHTOWNS U-HAUL CENTER (Continued) **U003316408**

G00 - Tank Secondary Containment - None
J02 - Dispenser - Suction Dispenser
A99 - Tank Internal Protection - Other
H03 - Tank Leak Detection - Vapor Well

A7 **U-HAUL** **NY LTANKS** **S104514672**
WSW **3120 ORCHARD PARK ROAD** **N/A**
< 1/8 **WEST SENECA, NY**
0.049 mi.
260 ft. **Site 5 of 5 in cluster A**

Relative:
Lower

Actual:
733 ft.

LTANKS:

Facility ID:	9712602
Site ID:	135529
Closed Date:	1998-04-20
Spill Number:	9712602
Spill Date:	1998-02-11
Spill Cause:	Tank Failure
Spill Source:	Commercial/Industrial
Spill Class:	B3
Cleanup Ceased:	Not reported
SWIS:	1568
Investigator:	RMCROSSE
Referred To:	Not reported
Reported to Dept:	1998-02-11
CID:	351
Water Affected:	Not reported
Spill Notifier:	Other
Last Inspection:	1998-04-20
Recommended Penalty:	False
Meets Standard:	False
UST Involvement:	True
Remediation Phase:	0
Date Entered In Computer:	1998-02-11
Spill Record Last Update:	1998-05-11
Spiller Name:	REID RINER
Spiller Company:	AMERCO REAL ESTATE
Spiller Address:	2721 NORTH CENTRAL AVENUE
Spiller County:	001
Spiller Contact:	Not reported
Spiller Phone:	Not reported
Spiller Extention:	Not reported
DEC Region:	9
DER Facility ID:	116376
DEC Memo:	"Prior to Sept, 2004 data translation this spill Lead_DEC Field was RMC 02/12/98 RMC/REID RINER/PHONE CONTAMINATED AREA OVEREXCAVATED TO VISUALLY CLEAN, A LOAD OF SOIL OR SO REMOVED, SAMPLES TAKEN, REPORT DUE 4/1/98 04/20/98 RMC/FILE RECEIVED REPORT, MINOR EXCEEDANCES, DISPOSAL FOR SOIL AND WATER DOCUMENTED, NO FURTHER ACTION NECESSARY, CLOSE OUT"
Remarks:	"2 U/GGASOLINE TANKS AND 1 U/G DIESEL TANK BEING REMOVED - APPEARS EITHER AN OVER FILL OR LINE FAILURE OF DIESEL TANK CAUSED SPILL"

Nearby???

All Materials:

Site ID:	135529
Operable Unit ID:	1055467
Operable Unit:	01
Material ID:	327204

U-HAUL (Continued) **S104514672**

Material Code:	0008
Material Name:	diesel
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	.00
Units:	G
Recovered:	.00
Oxygenate:	Not reported

C8 **U HAUL** **NY Spills** **S100155152**
WSW **3120 ORCHARD PARK ROAD** **N/A**
< 1/8 **ORCHARD PARK, NY**
0.053 mi.
282 ft. **Site 1 of 3 in cluster C**

Relative:
Lower

Actual:
735 ft.

SPILLS:

Facility ID:	8708463
Facility Type:	ER
Spill Number:	8708463
DER Facility ID:	277595
Site ID:	135528
DEC Region:	9
Closed Date:	1988-01-05
Spill Cause:	Unknown
Spill Class:	C1
SWIS:	1560
Spill Date:	1988-01-01
Investigator:	MXFRANKS
Referred To:	Not reported
Reported to Dept:	1988-01-04
CID:	Not reported
Water Affected:	Not reported
Spill Source:	Commercial/Industrial
Spill Notifier:	Citizen
Cleanup Ceased:	1988-01-05
Cleanup Meets Std:	True
Last Inspection:	1988-01-05
Recommended Penalty:	False
UST Trust:	False
Remediation Phase:	0
Date Entered In Computer:	1988-01-04
Spill Record Last Update:	2009-08-04
Spiller Name:	Not reported
Spiller Company:	U HAUL
Spiller Address:	3120 ORCHARD PARK ROAD
Spiller Company:	001
Contact Name:	Not reported
DEC Memo:	"Prior to Sept, 2004 data translation this spill Lead_DEC Field was MF / / : MF TO INVESTIGATE. / / : MF 1/5/88 SITE VISIT/TIMOTHY NEEDHAM, NO SIGN OF OIL ON SITE, USED OIL BURNED ON SITE, TANKS INSTALLED IN 1982. NO EARTHWORK NOTICED. "
Remarks:	"POSSIBLE TANK FAILURE, U HAUL DUG DITCH TO DRAIN"

All Materials:

Site ID:	135528
Operable Unit ID:	913124
Operable Unit:	01

U HAUL (Continued) **S100155152**

Material ID:	463851
Material Code:	0022
Material Name:	waste oil/used oil
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	.00
Units:	G
Recovered:	.00
Oxygenate:	Not reported

D9 **RITE AID # 4969** **PA MANIFEST** **S118070449**
West **3050 UNION RD** **N/A**
< 1/8 **ORCHARD PARK, NY 14127**
0.060 mi.
316 ft. **Site 1 of 4 in cluster D**

Relative:
Lower

Actual:
719 ft.

Adjacent

Manifest Details:

Year:	2014
Manifest Number:	007288216FLE
Manifest Type:	TSD Copy
Generator EPA Id:	NYR000185439
Generator Date:	12/24/2014
Mailing Address:	Not reported
Mailing City,St,Zip:	Not reported
Contact Name:	Not reported
Contact Phone:	Not reported
TSD EPA Id:	Not reported
TSD Date:	Not reported
TSD Facility Name:	Republic Environmental Systems (Pennsylvania) LLC
TSD Facility Address:	2869 Sandstone Dr
TSD Facility City:	Hatfield
TSD Facility State:	PA
Facility Telephone:	Not reported
Page Number:	1
Line Number:	1
Waste Number:	P001
Container Number:	1
Container Type:	Fiber or plastic boxes, cartons, cases
Waste Quantity:	1
Unit:	Pounds
Handling Code:	Not reported
TSP EPA Id:	PAD085690592
Date TSP Sig:	Not reported

D10 **AUSTIN PONTIAC** **NY LTANKS** **S100119781**
West **UNION AND ORCHARD PARK** **N/A**
< 1/8 **ORCHARD PARK, NY**
0.060 mi.
316 ft. **Site 2 of 4 in cluster D**

Relative:
Lower

Actual:
719 ft.

Adjacent

LTANKS:

Facility ID:	8808151
Site ID:	102943
Closed Date:	1991-08-22
Spill Number:	8808151

AUSTIN PONTIAC (Continued) **S100119781**

Spill Date:	1989-01-11
Spill Cause:	Tank Failure
Spill Source:	Commercial/Industrial
Spill Class:	Not reported
Cleanup Ceased:	1991-08-22
SWIS:	1560
Investigator:	PRINGLE
Referred To:	Not reported
Reported to Dept:	1989-01-11
CID:	Not reported
Water Affected:	Not reported
Spill Notifier:	Other
Last Inspection:	1990-03-05
Recommended Penalty:	False
Meets Standard:	True
UST Involvement:	False
Remediation Phase:	0
Date Entered In Computer:	1989-01-12
Spill Record Last Update:	1991-08-29
Spiller Name:	Not reported
Spiller Company:	VIRG AUSTIN PONTIAC
Spiller Address:	UNION AND ORCHARD PARK RD
Spiller County:	001
Spiller Contact:	Not reported
Spiller Phone:	Not reported
Spiller Extention:	Not reported
DEC Region:	9
DER Facility ID:	91114
DEC Memo:	"Prior to Sept, 2004 data translation this spill Lead_DEC Field was MNP 01/13/89: CAF SITE VISIT-TOLD BY SERVICE MGR. THAT TANK PULL RESCHEDULED TO WED. 1/18/89 AT 9 AM. 01/18/89: CAF SITE INSPECTION TANK PULL RESCHEDULED TO A LATER DATE. 01/20/89: CAF TANK REMOVAL COMPLETED,SOIL AND GROUND WATER TESTED FOR ODOR AND SHEEN FOUND TO BE ACCEPTABLE.TANK TO BE CUT OPEN,CLEANED AND REMOVEDTANK CONTENTS TO BE TESTED AND RESULTS SENT TO ME. 01/23/89: CAF TELCON WITH S. ROBLEE-SAFETY CLEAN TO PROVIDE RECEIPTS FOR CONT ENTS OF TANK AND OILY MATERIAL SPILLED DURING TANK REMOVAL. 03/05/90: CAF SITE VISIT OILY SPILL MATERIAL STILL IN DRUMS ON SCENE.CLEANUP IN NEAR FUTURE BY CHEMICAL WASTE MANAGEMENT. 08/22/91: 8/22/91 MNP FILE REVIEW DISPOSAL RECEIPTS RECEIVED 7/12/91, NO FURTHER ACTION NEEDED, COMPLETE. "
Remarks:	"TANK WILL BE OUT AT 12:00 1/13/89-TANK SAID TO HAVE WATER IN IT.TANK REPORTED TO BE 1,000 GAL. CAPACITY AND CONTAIN WASTE OIL."

All Materials:

Site ID:	102943
Operable Unit ID:	923785
Operable Unit:	01
Material ID:	452916
Material Code:	0022
Material Name:	waste oil/used oil
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	.00
Units:	G
Recovered:	.00
Oxygenate:	Not reported

E11
WNW
< 1/8
0.060 mi.
318 ft.

MOLINO'S PIZZA
3020 UNION ROAD
ORCHARD PARK, NY

Site 1 of 11 in cluster E

NY Spills **S102135091**
N/A

Relative:
Lower

Actual:
718 ft.

SPILLS:

Facility ID:	0551816
Facility Type:	ER
Spill Number:	0551816
DER Facility ID:	63431
Site ID:	361779
DEC Region:	9
Closed Date:	2007-07-13
Spill Cause:	Deliberate
Spill Class:	C3
SWIS:	1560
Spill Date:	2006-03-01
Investigator:	CGMCKENZ
Referred To:	Not reported
Reported to Dept:	2006-03-29
CID:	Not reported
Water Affected:	Not reported
Spill Source:	Commercial/Industrial
Spill Notifier:	Local Agency
Cleanup Ceased:	Not reported
Cleanup Meets Std:	True
Last Inspection:	Not reported
Recommended Penalty:	False
UST Trust:	False
Remediation Phase:	0
Date Entered In Computer:	2006-03-29
Spill Record Last Update:	2007-07-13
Spiller Name:	Not reported
Spiller Company:	MOLINO'S PIZZA
Spiller Address:	Not reported
Spiller Company:	999
Contact Name:	Not reported
DEC Memo:	"CGM ON SITE. INSPECTED FRONT, SIDES, BACK OF RESTAURANT. NO SIGNS OF SPILLED MATERIAL (VEGETABLE OILS) OBSERVED ON GROUNDS. A LABELED DRUM BY BACK DOOR INDICATES THEY DUMP THE GREASE IN THE DRUM. IN THE VERY BACK NEAR THE FENCE IS A SEWER MANHOLE, COULD NOT OPEN BUT DID NOT SMELL UNUSUAL ODORS EMITTED FROM HOLES IN COVER. PROPERTY FENCE BROKEN IN TWO PLACES TO A PRIVATE DRIVEWAY, PARKING LOT TO NEIGHBORING BUSINESSES. OTHER MANHOLES LOCATED IN PARKINGLOT/ DRIVEWAY DID NOT HAVE ANY INDICATORS OF SUSPECTED SPILL. RESTAURANT STAFF STATES THEY PUT THEIR GREASE IN THE DRUM. 04/03/06 CGM T/C W/DAVE JENSEN. CONFIRMED MANHOLE OF CONCERN ON PROPERTY INSIDE FENCED AREA IN BACK YARD. THE FUNKY SMELL HE OBSERVED NOT NOTED DURING EARLIER DEC INSPECTION. SPILL CLOSED, NO FURTHER ACTION REQUIRED."
Remarks:	"FIRE INSPECTOR NOTED COOKING GREASE BEING DUMPED INTO A 12 INCH STORM SEWER RECEIVER. IN BACK OF BUILDING NEAR DIMOTTOS LOT."

All Materials:

Site ID:	361779
Operable Unit ID:	1119893
Operable Unit:	01
Material ID:	2109359
Material Code:	0046A
Material Name:	cooking grease

MOLINO'S PIZZA (Continued) **S102135091**

Case No.:	Not reported
Material FA:	Other
Quantity:	Not reported
Units:	G
Recovered:	Not reported
Oxygenate:	Not reported
Facility ID:	9505778
Facility Type:	ER
Spill Number:	9505778
DER Facility ID:	63431
Site ID:	66214
DEC Region:	9
Closed Date:	1995-08-10
Spill Cause:	Human Error
Spill Class:	D4
SWIS:	1560
Spill Date:	1995-08-09
Investigator:	RMCROSSE
Referred To:	Not reported
Reported to Dept:	1995-08-10
CID:	Not reported
Water Affected:	Not reported
Spill Source:	Commercial/Industrial
Spill Notifier:	Responsible Party
Cleanup Ceased:	1995-08-10
Cleanup Meets Std:	True
Last Inspection:	Not reported
Recommended Penalty:	False
UST Trust:	False
Remediation Phase:	0
Date Entered In Computer:	1995-08-06
Spill Record Last Update:	1995-08-14
Spiller Name:	Not reported
Spiller Company:	SAFETY KLEEN
Spiller Address:	41 NORTH GATES
Spiller Company:	001
Contact Name:	Not reported
DEC Memo:	"Prior to Sept, 2004 data translation this spill Lead_DEC Field was RMC 08/10/95: RMC/MCDERMOTT/PHONE LIQUID PUT BACK INTO PARTS WASHER, NO DRAINS IMPACTED, SPILL WAS CONFINED TO CEMENT FLOOR, NO ACTION REQUIRED, CLOSE OUT. 09/29/95: This is additional information about material spilled from the translation of the old spill file: PETROLEUM NAPTHA"
Remarks:	"SPILLED PARTS CLEANING FLUID WHILE SERVICING PARTS WASHER AT MIDAS MUFFLER"

12
East
< 1/8
0.061 mi.
321 ft.

BP SIRC
3065 SOUTHWESTERN BLVD
ORCHARD PARK, NY 14127

EDR Hist Auto **1020150963**
N/A

Adjacent

Relative:
Higher

Actual:
792 ft.

EDR Hist Auto

Year:	Name:	Type:
2010	BP SIRC	Gasoline Service Stations, NEC
2011	BP SIRC	Gasoline Service Stations, NEC
2012	BP SIRC	Gasoline Service Stations, NEC

E13
WNW
< 1/8
0.068 mi.
360 ft.

TOWN LINCOLN MERCURY
3050 ORCHARD PARK ROAD
ORCHARD PARK, NY

NY Spills **S102667861**
N/A

Site 2 of 11 in cluster E

Relative:
Lower

Actual:
717 ft.

SPILLS:

Facility ID:	0651390
Facility Type:	ER
Spill Number:	0651390
DER Facility ID:	207143
Site ID:	372517
DEC Region:	9
Closed Date:	2007-01-03
Spill Cause:	Equipment Failure
Spill Class:	B3
SWIS:	1560
Spill Date:	2006-10-01
Investigator:	FXGALLEG
Referred To:	Not reported
Reported to Dept:	2006-10-25
CID:	Not reported
Water Affected:	Not reported
Spill Source:	Commercial/Industrial
Spill Notifier:	Other
Cleanup Ceased:	Not reported
Cleanup Meets Std:	False
Last Inspection:	Not reported
Recommended Penalty:	False
UST Trust:	False
Remediation Phase:	0
Date Entered In Computer:	2006-10-25
Spill Record Last Update:	2007-01-04
Spiller Name:	Not reported
Spiller Company:	Not reported
Spiller Address:	Not reported
Spiller Company:	Not reported
Contact Name:	MICHAEL SMITH, CFO
DEC Memo:	"1/3/07 NATURE'S WAY SUBMITTED THE CLOSURE REPORT FOR THE SITE. ALL EXCAVATION SAMPLES BELOW TAGM'S. DISPOSAL RECEIPTS SUBMITTED. NO FURTHER WORK REQUIRED. THE SITE IS CLOSED."
Remarks:	"FOUND CONTAMINATION WHILE REMOVING HYDRAULIC LIFTS, REMOVING A TOTAL OF 7 LIFTS. PLAN ON REMOVING THE CONTAMINATION."

All Materials:

Site ID:	372517
Operable Unit ID:	1130255

TOWN LINCOLN MERCURY (Continued) **S102667861**

Operable Unit:	01
Material ID:	2119927
Material Code:	0010
Material Name:	hydraulic oil
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	Not reported
Units:	G
Recovered:	Not reported
Oxygenate:	False

Facility ID:	9705746
Facility Type:	ER
Spill Number:	9705746
DER Facility ID:	207143
Site ID:	252875
DEC Region:	9
Closed Date:	1998-06-15
Spill Cause:	Housekeeping
Spill Class:	B3
SWIS:	1560
Spill Date:	1997-08-12
Investigator:	PRINGLE
Referred To:	Not reported
Reported to Dept:	1997-08-12
CID:	266
Water Affected:	Not reported
Spill Source:	Commercial/Industrial
Spill Notifier:	Other
Cleanup Ceased:	Not reported
Cleanup Meets Std:	False
Last Inspection:	1998-06-15
Recommended Penalty:	False
UST Trust:	False
Remediation Phase:	0
Date Entered In Computer:	1997-08-12
Spill Record Last Update:	2002-04-17
Spiller Name:	PAUL ZILLIOX
Spiller Company:	TOWNE LINCOLN-MERCURY
Spiller Address:	3050 ORCHARD PARK ROAD
Spiller Company:	001
Contact Name:	Not reported
DEC Memo:	"Prior to Sept, 2004 data translation this spill Lead_DEC Field was MNP 08/12/97: MNP INSP. MET W/ DOUG REID - NFCS & PAUL ZILLIOX - TOWNE-LINCOLN. 30 YDS. CONTAM. SOIL REMOVED & STAGEDV ON PLASTIC & COVERED. OIL PRODUCT SEEPING OUT FROM UNDER BUILDING INTO OPEN EXCAVATION (SEE PICTURES). REMOTE FILL AREA WAS LOCATED INSIDED BLDG. OIL SPILLAGE ON FLOOR MAY HAVE CONTRIBUTED TO SPILLAGE. SUMP LOCATED NEXT TO FILL AREA. TOWNE-LINCOLN WILL HAVE PLUMBER CHECK TO SEE IF IT LEAKS. ALSO, THERE ARE 4 ABANDONED HYDRAULIC LIFTS WITH UNDERGROUND RESERVOIR TANKS. STICKED 1 RESERVOIR, 41 OF OIL REMAIN, NO WATER. I REQUESTED THEY CHECK OTHER 3 TANKS. ALL HYDRAULIC RESERVOIRS SHOULD BE PUMPED OUT. WE DISCUSSED CLEANUP & INVESTIGATION OPTIONS. THEY WILL LEAVE EXCAVATION OPEN FOR A FEW DAYS TO MONITOR OIL SEEPAGE. ADDITIONAL HOLES MAY BE DRILLED INTO WALL & FLOOR TO ENHANCE OIL RECOVERY. SITE ASSESSMENT INSIDE BLDG NEEDED TO DETERMINE EXTENT OF

TOWN LINCOLN MERCURY (Continued) **S102667861**

CONTAMINATION. IF LIMITED TO AREA ALONG WALL FLUSHING OF OIL CAN BE USED. 08/13/97: MNP INSP. MET W/ PAM HOEDING - NFCS. OIL PRODUCT ON WATER IN EXCAVATION, NO PRODUCT FLOWING FROM WALL. OIL STAIN & FROM SEEPAGE NOTED. OIL / WATER TO BE PUMPED OUT OF EXCAVATION. 08/14/97: MNP TELECON W/ DOUG REID - NFCS. WE DISCUSSED PUTTING IN A SUMP OUTSIDE BUIDING & THEN BACKFILLING EXCAVATION. HE PLANS TO DO WORK EARLY NEXT WEEK. A WRITTEN PLAN FOR INTERIIOR INVESTIGATION TO BE SENT. 08/14/97: MNP TELECON W/ TOM HERRMANN - NFADA. I ADVISED HIM OF SPILL HISTORY & PROPOSED CLEANUP BY NFCS. HE WAS SATISFIED W/ INFO. 08/18/97: MNP TELECON W/ PAUL ZILLIOX - TOWNE-LINCOLN. HE WANTS TO BACKFILL EXCAVATION SO HE CAN SETUP ABOVEGROUND WASTE OIL TANK. I TOLD HIM THAT ONCE EXCAVATION IS EXCAVATED IT CAN BE SAMPLED, THEN BACKFILLED. HIS CONTRACTOR NCFS PROPOSED INSTALLING SUMP TO COLLECT OIL OUTSIDE WALL, I CONCUR. ALSO, SMALL BORINGS TO BE DONE INSIDE BUILDING BETWEEN OUTSIDE WALL & FIRST SERVICE BAY RECOMMENDED. THEY WILL CALL FOR INSP. PROIR TO BACKFILLING EXCAVATION. MR. ZILLOX SAID PLUMBER HAS CHECKED FLOOR DRAIN SUMP, IT IS NOT LEAKING. 08/19/97: MNP & RNL INSP. & MEETING W/ PAUL ZILLIOX - TOWNE & TOM HERRMANN NFADA. OIL PRODUCT & WATER IN BOTTOM OF EXCAVATION. OIL STAINED AREAS ON CONCRETE WALL WHERE OIL CAME OUT. UPON EXCAVATION OF OIL CONTAMINATED SOIL FROM TANK PIT, A SUMP WILL BE INSTALLED TO COLLECT OIL & WATER. THE HYDRAULIC LIFT RESERVOIRS MUST BE PUMPED OUT ASAP. ALSO, AT LEAST 2 SOIL BORINGS (GEOPROBE) WILL BE DONE INSIDE BUILDING IN FIRST CAR BAY TO DETERMINE EXTENT OF CONTAMINATION. 08/25/97: MNP INSP. MET W/ DOUG REID & MARK LAPUMA - NFCS. ELMWOOD TANK ON SITE EXCAVATING ADDITIONAL OIL CONTAMINATED SOIL FROM EXCAVATION & ALONG FOUNDATION WALL. WATER & OIL COMING FROM BLOCK WALL UNDER OVERHEAD DOOOR, AREA BLACKENED W/ OIL. ABOUT 150-200 TONS TOTAL REMOVED SO FAR. BOTTOM OF EXCAVATION SLOPED TO SUMP IN ORIGINAL EXCAVATION. PEA GRAVEL TO BE PLACED ON POLY LINER. TO COLLECT 1 BOTTOM & 1 SIDE SAMPLE FOR STARS #1. 06/03/98: RNL NOTE, REPORT RECEIVED FROM NFCS, INCLUDED DISPOSAL RECEIPTS, SAMPLE RESULTS, ETC. 6/15/98 FG SITE VISIT. SOIL REMOVED FROM SITE. EXCAVATION RESULTS SUBMITTED. EXCEED AT THE SIDEWALL VERY SLIGHTLY FOR 8021. DISPOSAL RECEIPTS SUBMITTED. SITE CAN BE MADE INACTIVE. LETTER SENT 6/15/98."

Remarks: "CONTAMINATED SOIL ENCOUNTERED DURING REMOVAL OF A 550 GALLON WASTE OIL TANK."

All Materials:

Site ID:	252875
Operable Unit ID:	1051913
Operable Unit:	01
Material ID:	331370
Material Code:	0022
Material Name:	waste oil/used oil
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	.00
Units:	G
Recovered:	.00
Oxygenate:	Not reported

E14
WNW
< 1/8
0.068 mi.
360 ft.

RITE AID #4969
3050 UNION ROAD
ORCHARD PARK, NY 14127

Site 3 of 11 in cluster E

RCRA-CESQG 1014919755
NY MANIFEST NYR000185439

Relative:
Lower

Actual:
717 ft.

RCRA-CESQG:

Date form received by agency:	02/12/2016
Facility name:	RITE AID #4969
Facility address:	3050 UNION ROAD ORCHARD PARK, NY 14127
EPA ID:	NYR000185439
Mailing address:	HUNTER LANE CAMP HILL, PA 17011
Contact:	DAVID W CROZIER
Contact address:	HUNTER LANE CAMP HILL, PA 17011
Contact country:	US
Contact telephone:	717-975-8643
Contact email:	EHS@RITEAID.COM
EPA Region:	02
Classification:	Conditionally Exempt Small Quantity Generator
Description:	Handler: generates 100 kg or less of hazardous waste per calendar month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste

Adjacent

Owner/Operator Summary:

Owner/operator name:	RITE AID CORP
Owner/operator address:	HUNTER LANE CAMP HILL, PA 17011
Owner/operator country:	US
Owner/operator telephone:	717-761-2633
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	07/27/1998
Owner/Op end date:	Not reported

Owner/operator name:	RITE AID CORP
Owner/operator address:	Not reported Not reported
Owner/operator country:	US
Owner/operator telephone:	Not reported
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported

RITE AID #4969 (Continued) **1014919755**

Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: 07/27/1998
Owner/Op end date: Not reported

Owner/operator name: RITE AID OF NEW YORK, INC.
Owner/operator address: HUNTER LANE
CAMP HILL, PA 17011
Owner/operator country: US
Owner/operator telephone: Not reported
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: 07/27/1998
Owner/Op end date: Not reported

Owner/operator name: 9274 GROUP, INC.
Owner/operator address: ELLICOTT SQUARE BUILDING
BUFFALO, NY 14203
Owner/operator country: US
Owner/operator telephone: 716-854-0060
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: 07/22/1998
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D007
. Waste name: CHROMIUM

RITE AID #4969 (Continued) **1014919755**

. Waste code: D010
. Waste name: SELENIUM

. Waste code: D011
. Waste name: SILVER

. Waste code: P001
. Waste name: 2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYLBUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3% (OR) WARFARIN, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3%

. Waste code: P075
. Waste name: NICOTINE, & SALTS (OR) PYRIDINE, 3-(1-METHYL-2-PYRROLIDINYL)-,(S)-, & SALTS

Historical Generators:
Date form received by agency: 11/25/2015
Site name: RITE AID #4969
Classification: Conditionally Exempt Small Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D009
. Waste name: MERCURY

. Waste code: D010
. Waste name: SELENIUM

. Waste code: D011
. Waste name: SILVER

. Waste code: D022
. Waste name: CHLOROFORM

. Waste code: D024
. Waste name: M-CRESOL

. Waste code: D026
. Waste name: CRESOL

. Waste code: P001
. Waste name: 2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYLBUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3% (OR) WARFARIN, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3%

. Waste code: P075
. Waste name: NICOTINE, & SALTS (OR) PYRIDINE, 3-(1-METHYL-2-PYRROLIDINYL)-,(S)-, & SALTS

. Waste code: U044

RITE AID #4969 (Continued) **1014919755**

. Waste name: CHLOROFORM (OR) METHANE, TRICHLORO-

. Waste code: U122
. Waste name: FORMALDEHYDE

. Waste code: U188
. Waste name: PHENOL

. Waste code: U201
. Waste name: 1,3-BENZENEDIOL (OR) RESORCINOL

. Waste code: U279
. Waste name: CARBARYL (OR) 1-NAPHTHALENOL, METHYLCARBAMATE

Date form received by agency: 10/27/2014
Site name: RITE AID #4969
Classification: Large Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D009
. Waste name: MERCURY

. Waste code: D010
. Waste name: SELENIUM

. Waste code: D011
. Waste name: SILVER

. Waste code: D024
. Waste name: M-CRESOL

. Waste code: D026
. Waste name: CRESOL

. Waste code: P001
. Waste name: 2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYLBUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3% (OR) WARFARIN, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3%

. Waste code: P075
. Waste name: NICOTINE, & SALTS (OR) PYRIDINE, 3-(1-METHYL-2-PYRROLIDINYL)-,(S)-, & SALTS

Date form received by agency: 09/29/2011
Site name: RITE AID #4969
Classification: Conditionally Exempt Small Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

RITE AID #4969 (Continued) **1014919755**

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D009
. Waste name: MERCURY

. Waste code: D010
. Waste name: SELENIUM

. Waste code: D024
. Waste name: M-CRESOL

. Waste code: P001
. Waste name: 2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYLBUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3% (OR) WARFARIN, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3%

. Waste code: P075
. Waste name: NICOTINE, & SALTS (OR) PYRIDINE, 3-(1-METHYL-2-PYRROLIDINYL)-,(S)-, & SALTS

Biennial Reports:

Last Biennial Reporting Year: 2017

Annual Waste Handled:

Waste code: D001
Waste name: IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKY-MARTENS CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE.
Amount (Lbs): 6.9

Waste code: D002
Waste name: A WASTE WHICH HAS A PH OF LESS THAN 2 OR GREATER THAN 12.5 IS CONSIDERED TO BE A CORROSIVE HAZARDOUS WASTE. SODIUM HYDROXIDE, A CAUSTIC SOLUTION WITH A HIGH PH, IS OFTEN USED BY INDUSTRIES TO CLEAN OR DEGREASE PARTS. HYDROCHLORIC ACID, A SOLUTION WITH A LOW PH, IS USED BY MANY INDUSTRIES TO CLEAN METAL PARTS PRIOR TO PAINTING. WHEN THESE CAUSTIC OR ACID SOLUTIONS BECOME CONTAMINATED AND MUST BE DISPOSED, THE WASTE WOULD BE A CORROSIVE HAZARDOUS WASTE.
Amount (Lbs): 12.9

Waste code: D007
Waste name: CHROMIUM
Amount (Lbs): 50.2

Waste code: D010
Waste name: SELENIUM
Amount (Lbs): 50.2

Waste code: D011

RITE AID #4969 (Continued) **1014919755**

Waste name: SILVER
Amount (Lbs): 42.6

Waste code: P001
Waste name: 2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYLBUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3%
Amount (Lbs): .1

Waste code: P075
Waste name: NICOTINE, & SALTS
Amount (Lbs): 9.3

Violation Status: No violations found

NY MANIFEST:
Country: USA
EPA ID: NYR000185439
Facility Status: Not reported
Location Address 1: 3050 UNION ROAD
Code: BP
Location Address 2: Not reported
Total Tanks: Not reported
Location City: ORCHARD PARK
Location State: NY
Location Zip: 14127
Location Zip 4: Not reported

NY MANIFEST:
EPAID: NYR000185439
Mailing Name: RITE AID #4969
Mailing Contact: RITE AID #4969
Mailing Address 1: 3050 UNION RD
Mailing Address 2: Not reported
Mailing City: ORCHARD PARK
Mailing State: NY
Mailing Zip: 14127
Mailing Zip 4: Not reported
Mailing Country: USA
Mailing Phone: Not reported

NY MANIFEST:
Document ID: Not reported
Manifest Status: Not reported
seq: Not reported
Year: 2017
Trans1 State ID: MIK435642742
Trans2 State ID: NED986382133
Generator Ship Date: 07/17/2017
Trans1 Recv Date: 07/17/2017
Trans2 Recv Date: 07/23/2017
TSD Site Recv Date: 07/24/2017
Part A Recv Date: Not reported
Part B Recv Date: Not reported
Generator EPA ID: NYR000185439
Trans1 EPA ID: Not reported
Trans2 EPA ID: Not reported
TSDF ID 1: MID980991566

RITE AID #4969 (Continued) **1014919755**

TSDF ID 2:	Not reported
Manifest Tracking Number:	017218292JJK
Import Indicator:	N
Export Indicator:	N
Discr Quantity Indicator:	N
Discr Type Indicator:	N
Discr Residue Indicator:	N
Discr Partial Reject Indicator:	N
Discr Full Reject Indicator:	N
Manifest Ref Number:	Not reported
Alt Facility RCRA ID:	Not reported
Alt Facility Sign Date:	Not reported
MGMT Method Type Code:	H141
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Quantity:	0.02
Units:	P - Pounds
Number of Containers:	1
Container Type:	DF - Fiberboard or plastic drums (glass)
Handling Method:	L Landfill.
Specific Gravity:	1
Waste Code:	P001
Waste Code 1_2:	Not reported
Waste Code 1_3:	Not reported
Waste Code 1_4:	Not reported
Waste Code 1_5:	Not reported
Waste Code 1_6:	Not reported

Click this hyperlink while viewing on your computer to access
77 additional NY_MANIFEST: record(s) in the EDR Site Report.

E15
WNW
< 1/8
0.068 mi.
360 ft.

AUSTIN PONTIAC, INC **NY AST** **U004046052**
3050 UNION RD. @ ORCHARD PARK RD **N/A**
ORCHARD PARK, NY 14127

Site 4 of 11 in cluster E

Relative:
Lower

Actual:
717 ft.

Adjacent

AST:

Region:	STATE
DEC Region:	9
Site Status:	Unregulated/Closed
Facility Id:	9-600217
Program Type:	PBS
UTM X:	193134.32655
UTM Y:	4745705.90689
Expiration Date:	N/A
Site Type:	Other Wholesale/Retail Sales

Affiliation Records:

Site Id:	55080
Affiliation Type:	Facility Owner
Company Name:	JAMES P. BALL
Contact Type:	Not reported

AUSTIN PONTIAC, INC (Continued) **U004046052**

Contact Name:	Not reported
Address1:	12 FOX CHAPEL
Address2:	Not reported
City:	ORCHARD PARK
State:	NY
Zip Code:	14127
Country Code:	001
Phone:	(716) 662-9248
EMail:	Not reported
Fax Number:	Not reported
Modified By:	TRANSLAT
Date Last Modified:	2004-03-04

Site Id:	55080
Affiliation Type:	Mail Contact
Company Name:	AUSTIN PONTIAC
Contact Type:	Not reported
Contact Name:	STEPHEN J. CASTILONE
Address1:	P.O. BOX 407
Address2:	Not reported
City:	WEST SENECA
State:	NY
Zip Code:	14224
Country Code:	001
Phone:	(716) 675-2200
EMail:	Not reported
Fax Number:	Not reported
Modified By:	TRANSLAT
Date Last Modified:	2004-03-04

Site Id:	55080
Affiliation Type:	Facility Operator
Company Name:	AUSTIN PONTIAC, INC
Contact Type:	Not reported
Contact Name:	JAMES P. BALL
Address1:	Not reported
Address2:	Not reported
City:	Not reported
State:	NN
Zip Code:	Not reported
Country Code:	001
Phone:	(716) 675-2200
EMail:	Not reported
Fax Number:	Not reported
Modified By:	TRANSLAT
Date Last Modified:	2004-03-04

Site Id:	55080
Affiliation Type:	Emergency Contact
Company Name:	JAMES P. BALL
Contact Type:	Not reported
Contact Name:	STEPHEN J. CASTILONE
Address1:	Not reported
Address2:	Not reported
City:	Not reported
State:	NN
Zip Code:	Not reported

AUSTIN PONTIAC, INC (Continued) **U004046052**

Country Code:	001
Phone:	(716) 685-1403
EMail:	Not reported
Fax Number:	Not reported
Modified By:	TRANSLAT
Date Last Modified:	2004-03-04

Tank Info:

Tank Number:	001
Tank Id:	171620
Material Code:	0009
Common Name of Substance:	Gasoline

Equipment Records:

C01 - Pipe Location - Aboveground
A00 - Tank Internal Protection - None
B01 - Tank External Protection - Painted/Asphalt Coating
F01 - Pipe External Protection - Painted/Asphalt Coating
D00 - Pipe Type - No Piping
H00 - Tank Leak Detection - None
I00 - Overfill - None
G00 - Tank Secondary Containment - None
J02 - Dispenser - Suction Dispenser

Tank Location:	3
Tank Type:	Steel/Carbon Steel/Iron
Tank Status:	Closed - Removed
Pipe Model:	Not reported
Install Date:	07/01/1986
Capacity Gallons:	500
Tightness Test Method:	NN
Date Test:	Not reported
Next Test Date:	Not reported
Date Tank Closed:	02/01/1998
Register:	True
Modified By:	TRANSLAT
Last Modified:	04/14/2017
Material Name:	gasoline

Tank Number:	002
Tank Id:	171621
Material Code:	0013
Common Name of Substance:	Lube Oil

Equipment Records:

D00 - Pipe Type - No Piping
I00 - Overfill - None
H00 - Tank Leak Detection - None
B01 - Tank External Protection - Painted/Asphalt Coating
F01 - Pipe External Protection - Painted/Asphalt Coating
A00 - Tank Internal Protection - None
C01 - Pipe Location - Aboveground
J02 - Dispenser - Suction Dispenser
G00 - Tank Secondary Containment - None

Tank Location:	3

AUSTIN PONTIAC, INC (Continued) **U004046052**

Tank Type:	Steel/Carbon Steel/Iron
Tank Status:	Closed - Removed
Pipe Model:	Not reported
Install Date:	05/01/1995
Capacity Gallons:	1000
Tightness Test Method:	NN
Date Test:	Not reported
Next Test Date:	Not reported
Date Tank Closed:	02/01/1998
Register:	True
Modified By:	TRANSLAT
Last Modified:	04/14/2017
Material Name:	lube oil

Tank Number:	003
Tank Id:	171622
Material Code:	2642
Common Name of Substance:	Used Oil (Heating, On-Site Consumption)

Equipment Records:

C01 - Pipe Location - Aboveground
D08 - Pipe Type - Equivalent Technology
H00 - Tank Leak Detection - None
I00 - Overfill - None
G00 - Tank Secondary Containment - None
J02 - Dispenser - Suction Dispenser
F00 - Pipe External Protection - None
A00 - Tank Internal Protection - None
B01 - Tank External Protection - Painted/Asphalt Coating

Tank Location:	1
Tank Type:	Steel/Carbon Steel/Iron
Tank Status:	Closed - Removed
Pipe Model:	Not reported
Install Date:	01/01/1993
Capacity Gallons:	250
Tightness Test Method:	NN
Date Test:	Not reported
Next Test Date:	Not reported
Date Tank Closed:	02/01/1998
Register:	True
Modified By:	TRANSLAT
Last Modified:	04/14/2017
Material Name:	used oil (heating, on-site consumption)

Tank Number:	004
Tank Id:	171623
Material Code:	0022
Common Name of Substance:	Waste Oil/Used Oil

Equipment Records:

C01 - Pipe Location - Aboveground
A00 - Tank Internal Protection - None
B01 - Tank External Protection - Painted/Asphalt Coating
I03 - Overfill - Automatic Shut-Off

AUSTIN PONTIAC, INC (Continued) **U004046052**

D08 - Pipe Type - Equivalent Technology
H00 - Tank Leak Detection - None
F00 - Pipe External Protection - None
G00 - Tank Secondary Containment - None
J02 - Dispenser - Suction Dispenser

Tank Location:	3
Tank Type:	Steel/Carbon Steel/Iron
Tank Status:	Closed - Removed
Pipe Model:	Not reported
Install Date:	11/01/1988
Capacity Gallons:	500
Tightness Test Method:	NN
Date Test:	Not reported
Next Test Date:	Not reported
Date Tank Closed:	02/01/1998
Register:	True
Modified By:	TRANSLAT
Last Modified:	04/14/2017
Material Name:	waste oil/used oil

Tank Number:	005
Tank Id:	171624
Material Code:	0022
Common Name of Substance:	Waste Oil/Used Oil

Equipment Records:

D08 - Pipe Type - Equivalent Technology
H00 - Tank Leak Detection - None
I00 - Overfill - None
A00 - Tank Internal Protection - None
B01 - Tank External Protection - Painted/Asphalt Coating
C01 - Pipe Location - Aboveground
F00 - Pipe External Protection - None
J02 - Dispenser - Suction Dispenser
G00 - Tank Secondary Containment - None

Tank Location:	3
Tank Type:	Steel/Carbon Steel/Iron
Tank Status:	Closed - Removed
Pipe Model:	Not reported
Install Date:	01/01/1993
Capacity Gallons:	275
Tightness Test Method:	NN
Date Test:	Not reported
Next Test Date:	Not reported
Date Tank Closed:	02/01/1998
Register:	True
Modified By:	TRANSLAT
Last Modified:	04/14/2017
Material Name:	waste oil/used oil

C16
WSW
< 1/8
0.070 mi.
369 ft.

ROAD RECONSTRUCTION
SR 240 AND SR 277
ORCHARD PARK, NY

Site 2 of 3 in cluster C

NY Spills **S107658371**
N/A

Relative:
Lower

Actual:
736 ft.

SPILLS:

Facility ID:	0551775
Facility Type:	ER
Spill Number:	0551775
DER Facility ID:	311533
Site ID:	361339
DEC Region:	9
Closed Date:	2006-03-21
Spill Cause:	Unknown
Spill Class:	D4
SWIS:	1560
Spill Date:	2002-02-01
Investigator:	RMCROSSE
Referred To:	Not reported
Reported to Dept:	2002-02-02
CID:	Not reported
Water Affected:	Not reported
Spill Source:	Unknown
Spill Notifier:	Affected Persons
Cleanup Ceased:	Not reported
Cleanup Meets Std:	False
Last Inspection:	Not reported
Recommended Penalty:	Not reported
UST Trust:	Not reported
Remediation Phase:	0
Date Entered In Computer:	2006-03-21
Spill Record Last Update:	2006-03-21
Spiller Name:	Not reported
Spiller Company:	Not reported
Spiller Address:	Not reported
Spiller Company:	Not reported
Contact Name:	Not reported
DEC Memo:	"03/21/06 RMC/FILE. PJB SENT I LETTER 03/06/02."
Remarks:	"REPORT FOR ROAD CONSTRUCTION PROJECT IDED PETROLEUM CONTAMINATION"

Adjacent???

All Materials:

Site ID:	361339
Operable Unit ID:	1119491
Operable Unit:	01
Material ID:	2108917
Material Code:	0066A
Material Name:	unknown petroleum
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	.00
Units:	G
Recovered:	.00
Oxygenate:	False

C17
WSW
< 1/8
0.070 mi.
369 ft.

PILOT FREIGHT
UNION & ORCHARD PARK RD.
ORCHARD PARK, NY

Site 3 of 3 in cluster C

NY Spills **S102132772**
N/A

Relative:
Lower

Actual:
736 ft.

SPILLS:

Facility ID:	8601337
Facility Type:	ER
Spill Number:	8601337
DER Facility ID:	165611
Site ID:	198986
DEC Region:	9
Closed Date:	1986-09-05
Spill Cause:	Traffic Accident
Spill Class:	Not reported
SWIS:	1560
Spill Date:	1986-05-27
Investigator:	MJHINTON
Referred To:	Not reported
Reported to Dept:	1986-05-27
CID:	Not reported
Water Affected:	Not reported
Spill Source:	Commercial Vehicle
Spill Notifier:	Police Department
Cleanup Ceased:	1986-09-05
Cleanup Meets Std:	True
Last Inspection:	1986-08-07
Recommended Penalty:	False
UST Trust:	False
Remediation Phase:	0
Date Entered In Computer:	1986-06-04
Spill Record Last Update:	1986-09-08
Spiller Name:	Not reported
Spiller Company:	PILOT FREIGHT
Spiller Address:	4400 RIVER ROAD
Spiller Company:	001
Contact Name:	Not reported
DEC Memo:	"Prior to Sept, 2004 data translation this spill Lead_DEC Field was MJH / / : SITE INSPECTION 05/27/86, CLEANUP REQUIRED AND UNDER-BY NYSE&G AND PILOT FREIGHT. / / : SAMPLE BY NYSE&G, TELECON 05/28/86 - NON PCB OIL. / / : T.V. CHANNEL 2,4,&7 ON SCENE. / / : DISPOSAL OF SPEEDY DRY & MINERAL OIL PENDING, TELCON 8/7/86 W/ NYSEG,PILOT,BFI SHOULD MOVE THINGS ALONG. "
Remarks:	"TRACTOR TRAILER HIT POWER POLE, TRANSFORMER ON POLE LEAKED ONTO TRAILER"

Adjacent???

All Materials:

Site ID:	198986
Operable Unit ID:	898936
Operable Unit:	01
Material ID:	477879
Material Code:	0017A
Material Name:	PCB oil
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	25.00
Units:	G
Recovered:	.00
Oxygenate:	Not reported

PILOT FREIGHT (Continued) **S102132772**

Site ID:	198986
Operable Unit ID:	898936
Operable Unit:	01
Material ID:	477880
Material Code:	0020A
Material Name:	transformer oil
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	.00
Units:	Not reported
Recovered:	.00
Oxygenate:	Not reported

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18 **POOL MART INC.** **NY CBS** **S102638803**
ENE **3066 SOUTHWESTERN BLVD.** **NY CBS AST** **N/A**
< 1/8 **ORCHARD PARK, NY 14127**
0.071 mi.
374 ft.

Relative:
Higher

Actual:
776 ft.

CBS:

CBS Number:	9-000180
Program Type:	CBS
Facility Status:	Unregulated/Closed
Expiration Date:	Not reported
Dec Region:	9
UTMX:	194122.29213
UTMY:	4745686.09424

CBS AST:

CBS Number:	9-000180
ICS Number:	9-700397
PBS Number:	Not reported
MOSF Number:	Not reported
SPDES Number:	Not reported
Facility Status:	IN SERVICE
Facility Type:	I
Telephone:	(716) 674-3800
Facility Town:	ORCHARD PARK
Region:	STATE
Expiration Date:	07/10/1997
Total Capacity of All Active Tanks(gal):	0
Operator:	RYAN A. DUNN
Emergency Contact:	VICTOR D. DUNN
Emergency Phone:	(716) 652-5787
Owner Name:	POOL MART INC.
Owner Address:	6410 TRANSIT ROAD
Owner City,St,Zip:	DEPEW, NY 14043
Owner Telephone:	(716) 683-5661
Owner Type:	Corporate/Commercial
Owner Sub Type:	Not reported
Mail Name:	POOL MART INC.
Mail Contact Addr:	6410 TRANSIT ROAD
Mail Contact Addr2:	Not reported
Mail Contact Contact:	VICTOR D. DUNN
Mail Contact City,St,Zip:	DEPEW, NY 14043
Mail Phone:	(716) 683-5661

POOL MART INC. (Continued) **S102638803**

Tank Id:	02
CAS Number:	7681529
Federal ID:	Not reported
Tank Status:	0
Install Date:	06/88
Tank Closed:	10/95
Capacity (Gal):	1550
Chemical:	Sodium hypochlorite
Tank Location:	Indoors, Aboveground
Tank Type:	Fiberglass reinforced plastic [FRP]
Total Tanks:	0
Tank Secret:	False
Tank Secondary Containment:	None
Tank Error Status:	No Missing Data
Date Entered:	07/10/1989
Certified Date:	07/06/1995
Substance:	Single Hazardous Substance on DEC List
Internal Protection:	None
External Protection:	None
Pipe Location:	Aboveground
Pipe Type:	Double Walled Fiberglass
Pipe Internal:	None
Pipe External:	None
Pipe Flag:	None
Leak Detection:	None
Overfill Protection:	Product Level Gauge
Haz Percent:	12
Last Test:	Not reported
Due Date:	Not reported
SWIS Code:	1460
Lat/Long:	Not reported
Is Updated:	False
Renew Date:	04/01/93
Is It There:	False
Delinquent:	False
Date Expired:	07/10/95
Owner Mark:	1
Certificate Needs to be Printed:	False
Fiscal Amt for Registration Fee Correct:	True
Renewal Has Been Printed for Facility:	True
Pre-Printed Renewal App Last Printed:	04/01/1997

E19 **WALKER SERVICE STATION** **NY LTANKS** **S101659192**
WNW **3008 UNION ROAD** **NY LIENS** **N/A**
< 1/8 **ORCHARD PARK, NY** **NY Spills**
0.084 mi.
442 ft. **Site 5 of 11 in cluster E**

Relative:
Lower

Actual:
716 ft.

LTANKS:

Facility ID:	9406100
Site ID:	186286
Closed Date:	1995-06-09
Spill Number:	9406100
Spill Date:	1994-08-03
Spill Cause:	Tank Failure
Spill Source:	Gasoline Station or other PBS Facility
Spill Class:	B3
Cleanup Ceased:	1995-06-09

WALKER SERVICE STATION (Continued) **S101659192**

SWIS:	1560
Investigator:	RMCROSSE
Referred To:	Not reported
Reported to Dept:	1994-08-03
CID:	Not reported
Water Affected:	Not reported
Spill Notifier:	Other
Last Inspection:	1995-05-30
Recommended Penalty:	True
Meets Standard:	True
UST Involvement:	True
Remediation Phase:	0
Date Entered In Computer:	1994-08-05
Spill Record Last Update:	2004-05-20
Spiller Name:	Not reported
Spiller Company:	WALKER SERVICE STATION
Spiller Address:	3008 UNION ROAD
Spiller County:	001
Spiller Contact:	Not reported
Spiller Phone:	Not reported
Spiller Extention:	Not reported
DEC Region:	9
DER Facility ID:	155721
DEC Memo:	"Prior to Sept, 2004 data translation this spill Lead_DEC Field was RMC 08/03/94: RMC/BADAME/WALKER/SITE THREE TANKS PULLED AND 30 YARDS CONTAMINATED SOIL REMOVED AROUND FILLS, CLEAN HOLE SAMPLE TAKEN. ADVISED OF REQUIREMENTS,LETTER,REINSPECT SOILPILE AND RP RESPONSE DUE 8/30/94. 08/16/94: RMC/BADAME/WALKER/SITE CLEAN HOLE SAMPLE RESULTS SHOW SIGNIFICANT CONTAMINATION, RMC ADVISED OF ADDITIONAL REMEDIATION AND DISPOSAL REQUIRMENTS, LETTER, RESPONSE DUE 9/15/94. 09/14/94: RMC/WALKER/SITE RP PUMPING OUT TANK PIT TO SANITARY SEWER,RP ADVISED THAT NO SAMPLING OR DISCHARGE PERMIT WAS OBTAINED,RMC REMINDED RP OF PREVIOUS MEETING+SAMPLING/DISPOSAL RQ,RMC SAMPLED,PUMPING STOP. 10/19/94: RMC/WALKER/SITE ADDVISED RP OF GW VIOLATIONS AND THAT STATE WOULD BE SEEKING PENALTY FOR PUMPING OUT TANK PIT, RP TO EXCAVATE BY NEXT WEEK, HAZARD EVALUATION HAS CONTRACT, REINSPECT 11/1/94. 11/15/94: RMC/RNL/WALKER/SITE HOLE NOW FILLED TO W/IN 1 FOOT OF TOP WITH WATER, HAZARD EVALUATIONS HAS CONTRACT TO REMEDIATE, WORK DUE 11/30/94. 12/06/94: RMC/HANNA/PHONE WORK TO BEGIN NEXT WEEK, APPROVAL RECEIVED, INSPECT 12/17/94. 01/05/95: RMC/SITE WORK NOT YET BEGUN, TO CONTACT RP. 01/18/95: RMC/MJS/SITE SEVERAL TIMES, WORK BEGUN, CONTAMINATED AREA GREATER THAN ORIGINALLY THOUGHT, RP AND RPS CONTRACTOR TO PROPOSE NEXT STEP, REINSPECT 1/31/95. 01/31/95: RMC/FOTI/PHONE FOTI ADVISED THAT ONLY VERY MINOR EXCEEDANCES OF STARS, TO MAIL RESULTS, TO SAMPLE AREA W/ODOR, ALL RESULTS DUE 2/14/95. 03/29/95: RMC/WALKER/PHONE RMC AGAIN ADVISED THAT SITE REPORT DUE. REPORT DUE 4/29/95. 04/04/95: RMC/WALKER/PHONE RMC AGAIN ADVISED THAT SITE REPORT DUE. REPORT DUE 4/29/95,REVISED TO 5/30/95. 06/09/95: RMC/FILE RECEIVED DISPOSAL RECEIPTS AND SAMPLE RESULTS AFTER REEXCAVATION, NO EXCEEDANCES, CLOSE OUT. "
Remarks:	"CONTAMINATION FOUND DURING TANK PULL, NOTIFIED BY TANK CONTRACTOR, STATION NUMBER 6749917"

All Materials:

Site ID:	186286
Operable Unit ID:	1003478
Operable Unit:	01
Material ID:	379154

WALKER SERVICE STATION (Continued) **S101659192**

Material Code:	0009
Material Name:	gasoline
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	.00
Units:	G
Recovered:	.00
Oxygenate:	Not reported

LIENS:

Region:	9
Spill No:	00-75493
Tax Map Id:	152.12-2-6
Lien Request Received:	07/13/2004
Request Sent To APA Or Vendor:	07/13/2004
Draft Lien Received From Vendor:	Not reported
Approved Lien To Administrator:	Not reported
Signed By Administrator:	07/30/2004
Received From Administrator:	Not reported
Sent For Filing:	Not reported
Resent For Filing:	Not reported
Proof Of Service Received:	09/28/2004
Sent To OAG:	09/28/2004
Amount:	$39,594.34
Release Required:	07/02/2009
Sent To Administrator:	07/07/2009
Signed By Adminstrator:	07/15/2009
Received From Adminsitrator:	07/16/2009
Release Sent To OAG:	07/16/2009
Complete:	True
Release:	True
Withdrawn:	False

Region:	9
Spill No:	00-75493
Tax Map Id:	152.12-2-6
Lien Request Received:	01/09/2006
Request Sent To APA Or Vendor:	01/13/2006
Draft Lien Received From Vendor:	Not reported
Approved Lien To Administrator:	Not reported
Signed By Administrator:	01/20/2006
Received From Administrator:	Not reported
Sent For Filing:	Not reported
Resent For Filing:	Not reported
Proof Of Service Received:	03/06/2006
Sent To OAG:	03/06/2006
Amount:	$91,470.95
Release Required:	07/02/2009
Sent To Administrator:	07/07/2009
Signed By Adminstrator:	07/15/2009
Received From Adminsitrator:	07/16/2009
Release Sent To OAG:	07/16/2009
Complete:	True
Release:	True
Withdrawn:	False

WALKER SERVICE STATION (Continued) **S101659192**

SPILLS:

Facility ID:	1001073
Facility Type:	ER
Spill Number:	1001073
DER Facility ID:	155721
Site ID:	434099
DEC Region:	9
Closed Date:	2010-11-10
Spill Cause:	Equipment Failure
Spill Class:	B3
SWIS:	1560
Spill Date:	2010-04-28
Investigator:	FXGALLEG
Referred To:	Not reported
Reported to Dept:	2010-04-28
CID:	Not reported
Water Affected:	Not reported
Spill Source:	Commercial/Industrial
Spill Notifier:	Other
Cleanup Ceased:	Not reported
Cleanup Meets Std:	True
Last Inspection:	2010-05-24
Recommended Penalty:	False
UST Trust:	Not reported
Remediation Phase:	0
Date Entered In Computer:	2010-04-28
Spill Record Last Update:	2010-11-10
Spiller Name:	Not reported
Spiller Company:	POINT 5 DEV. OP LLC
Spiller Address:	Not reported
Spiller Company:	001
Contact Name:	Not reported
DEC Memo:	"04/29/10 JFO ON SITE MET WITH DON ABRAMS (EVERGREEN TESTING) AND JEFF STELHAR (WESTLAKE DEVELOPMENT). A TANK WAS DISCOVERED IN THE MIDDLE OF THE SOUTHERN PROPERTY LINE. IT WAS CRUSHED AND THERE WERE NO ODORS OR VISUAL CONTAMINATION. THEY WILL COLLECT A FLOOR SAMPLE FROM BELOW THE TANK. THE OTHER TANK (500 GALLON WASTE OIL) IS INTACT. RUSSO DEVELOPMENT WILL REMOVE THE TANK. RIGHT NOW THERE IS NO INDICATION OF CONTAMINATION. THEY WILL CALL WHEN THE TANK IS OUT. 05/04/10 JFO CALL FROM JEFF S. THEY WILL BE REMOVING THE TANK TOMORROW MORNING. 05/05/10 JFO ON SITE MET WITH JEFF S AND DON ABRAMS. THE TANK IS OUT OF THE GROUND ALONG WITH THE 2 LIFTS AND THEIR CYLINDERS. THE CONTAMINATED SOIL (APPROX 300 TON) IS STAGED ON PLASTIC FOR DISPOSAL. THE EXCAVATION LOOKS GOOD. DON IS COLLECTING CONFIRMATORY SOIL SAMPLES. ANALYZE FOR METHODS 8260 AND 8270. RESULTS AND RECEIPTS TO FOLLOW. 05/10/10 JFO CALL FROM JEFF STEHLAR. THEY DISCOVERED SOME CONTAMINATION IN THE NORTHEAST CORNER OF THE PROPERTY. THEY ARE DOING SEWER WORK IN THAT AREA AT THE END OF THE WEEK. THEY WILL ADRESS THE PROBLEM THEN. HE WILL CALL. 05/24/10 JFO OPN SITE MET W/JEFF. THE EXCAVATED AREA LOOKS CLEAN. DON ABRAMS WILL SAMPLE BOTTOM AND SIDEWALLS. RESULTS AND RECEIPTS TO FOLLOW. 07/12/10 JFO RECEIVED THE SAMPLE RESULTS AND THE DISPOSAL RECEIPTS FOR 510.16 TONS OF CONTAMINATED SOIL. ALL SAMPLE RESULTS ARE <TAGMS. NO FURTHER ACTION REQUIRED. CLOSURE LETTER SENT 9/29/10 FG SITE INSPECTION. MET JEFF STEHLAR WITH WESTLAKE DEVELOPMENT AND DON ABRAMS ON SITE. DURING CONSTRUCTION, THEY RAN ACROSS ADDITIONAL SOIL CONTAMINATION ON THE MICHAEL ROAD SIDE OF THE SITE. THEY WILL REMOVE AND DISPOSE OF THE

WALKER SERVICE STATION (Continued) **S101659192**

CONTAMINATED SOIL AND WATER. THEY WILL NOTIFY THE DEPT WHEN THE WORK IS COMPLETE SO WE CAN INSPECT. THEY WILL COLLECT EXCAVATION SAMPLES AND PROVIDE THE RESULTS AND DISPOSAL RECEIPTS. 11/10/10 FG RECEIVED THE 11/2/10 EVERGREEN SUPPLEMENTAL SPILL CLOSURE REPORT. DURING CONSTRUCTION OF THE NEW WALGREENS ON THE PROPERTY, PETROLEUM CONTAMINATED SOIL WAS ENCOUNTERED. 17.46 TONS OF PETROLEUM CONTAMINATED SOIL WAS DISPOSED AT THE TONAWANDA LANDFILL. 5073 GALLONS OF PETROLEUM IMPACTED WATER WAS DISPOSED AT INDUSTRIAL OIL. DISPOSAL RECEIPTS WERE PROVIDED. THREE EXCAVATION SAMPLES WERE COLLECTED AND THE ANALYTICAL RESULTS WERE BELOW GUIDANCE LEVELS FOR THE 8260 AND 8270 STARS LIST OF COMPOUNDS. NO FURTHER WORK IS REQUIRED. THE SITE IS CLOSED. "

Remarks: "contamination and abandoned UST discovered. Uncovered today. Planning on removing the tank in the near future. Russo is site contractor for Envirnmental work. Will call back with contact and ownership infromation."

All Materials:

Site ID:	434099
Operable Unit ID:	1184947
Operable Unit:	01
Material ID:	2179227
Material Code:	0022
Material Name:	waste oil/used oil
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	Not reported
Units:	G
Recovered:	Not reported
Oxygenate:	Not reported

F20 **LOWES OF ORCHARD PARK NY #1882** **RCRA-SQG** **1004756400**
South **3195 SOUTHWESTERN BLVD** **FINDS** **NYD071483093**
< 1/8 **ORCHARD PARK, NY 14127** **ECHO**
0.089 mi.
468 ft. **Site 1 of 5 in cluster F**

Relative:
Higher

Actual:
775 ft.

RCRA-SQG:

Date form received by agency:	10/29/2013
Facility name:	LOWES OF ORCHARD PARK NY #1882
Facility address:	3195 SOUTHWESTERN BLVD ORCHARD PARK, NY 14127
EPA ID:	NYD071483093
Mailing address:	LOWES BLVD - A2ELP MOORESVILLE, NC 28117
Contact:	ROBERT A GASS
Contact address:	LOWES BLVD - A2ELP MOORESVILLE, NC 28117
Contact country:	US
Contact telephone:	704-758-6033
Contact email:	ROBERT.A.GASS@LOWES.COM
EPA Region:	02
Land type:	Private
Classification:	Small Small Quantity Generator
Description:	Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous

LOWES OF ORCHARD PARK NY #1882 (Continued) **1004756400**

waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Owner/Operator Summary:

Owner/operator name:	LOWES HOME CENTERS INC
Owner/operator address:	CURTIS BRIDGE RD WILKESBORO, NC 28697
Owner/operator country:	US
Owner/operator telephone:	704-758-6033
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	02/08/2005
Owner/Op end date:	Not reported

Owner/operator name:	LOWES HOME CENTERS INC
Owner/operator address:	CURTIS BRIDGE RD WILKESBORO, NC 28697
Owner/operator country:	US
Owner/operator telephone:	704-758-6033
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	02/08/2005
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

. Waste code:	D001
. Waste name:	IGNITABLE WASTE

. Waste code:	D002
. Waste name:	CORROSIVE WASTE

. Waste code:	D005
. Waste name:	BARIUM

LOWES OF ORCHARD PARK NY #1882 (Continued) **1004756400**

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D011
. Waste name: SILVER

. Waste code: D016
. Waste name: 2,4-D (2,4-DICHLOROPHENOXYACETIC ACID)

. Waste code: D018
. Waste name: BENZENE

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: U002
. Waste name: 2-PROPANONE (I) (OR) ACETONE (I)

. Waste code: U080
. Waste name: METHANE, DICHLORO- (OR) METHYLENE CHLORIDE

. Waste code: U154
. Waste name: METHANOL (I) (OR) METHYL ALCOHOL (I)

. Waste code: U159
. Waste name: 2-BUTANONE (I,T) (OR) METHYL ETHYL KETONE (MEK) (I,T)

. Waste code: U220
. Waste name: BENZENE, METHYL- (OR) TOLUENE

. Waste code: U239
. Waste name: BENZENE, DIMETHYL- (I,T) (OR) XYLENE (I)

Historical Generators:
Date form received by agency: 09/11/2007
Site name: LOWES OF ORCHARD PARK 1882
Classification: Conditionally Exempt Small Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D005
. Waste name: BARIUM

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007

LOWES OF ORCHARD PARK NY #1882 (Continued) **1004756400**

. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D011
. Waste name: SILVER

. Waste code: D016
. Waste name: 2,4-D (2,4-DICHLOROPHENOXYACETIC ACID)

. Waste code: D018
. Waste name: BENZENE

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: P012
. Waste name: ARSENIC OXIDE AS2O3 (OR) ARSENIC TRIOXIDE

. Waste code: U002
. Waste name: 2-PROPANONE (I) (OR) ACETONE (I)

. Waste code: U080
. Waste name: METHANE, DICHLORO- (OR) METHYLENE CHLORIDE

. Waste code: U154
. Waste name: METHANOL (I) (OR) METHYL ALCOHOL (I)

. Waste code: U159
. Waste name: 2-BUTANONE (I,T) (OR) METHYL ETHYL KETONE (MEK) (I,T)

. Waste code: U220
. Waste name: BENZENE, METHYL- (OR) TOLUENE

. Waste code: U239
. Waste name: BENZENE, DIMETHYL- (I,T) (OR) XYLENE (I)

Date form received by agency: 09/10/2007
Site name: LOWES OF ORCHARD PARK 1882
Classification: Conditionally Exempt Small Quantity Generator

Date form received by agency: 01/01/2006
Site name: KMART #4207
Classification: Not a generator, verified

Date form received by agency: 04/20/1992
Site name: KMART #4207
Classification: Conditionally Exempt Small Quantity Generator

. Waste code: D000
. Waste name: Not Defined

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002

LOWES OF ORCHARD PARK NY #1882 (Continued) **1004756400**

. Waste name: CORROSIVE WASTE

. Waste code: D003
. Waste name: REACTIVE WASTE

. Waste code: D008
. Waste name: LEAD

. Waste code: D018
. Waste name: BENZENE

. Waste code: D039
. Waste name: TETRACHLOROETHYLENE

Violation Status: No violations found

Evaluation Action Summary:
Evaluation date: 11/13/2009
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

FINDS:

Registry ID: 110004366999

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:
Envid: 1004756400
Registry ID: 110004366999
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110004366999

F21 **LOWES # 1882** **NY Spills** **S109582186**
South **3195 SOUTH WESTERN BLVD** **N/A**
< 1/8 **ORCHARD PARK, NY**
0.089 mi.
468 ft. **Site 2 of 5 in cluster F**

Relative:
Higher

Actual:
775 ft.

SPILLS:
Facility ID: 0900924
Facility Type: ER
Spill Number: 0900924
DER Facility ID: 362053
Site ID: 412884
DEC Region: 9

LOWES # 1882 (Continued) **S109582186**

Closed Date:	2009-06-18
Spill Cause:	Equipment Failure
Spill Class:	C4
SWIS:	1560
Spill Date:	2009-04-23
Investigator:	FXGALLEG
Referred To:	Not reported
Reported to Dept:	2009-04-23
CID:	Not reported
Water Affected:	Not reported
Spill Source:	Commercial/Industrial
Spill Notifier:	Other
Cleanup Ceased:	Not reported
Cleanup Meets Std:	False
Last Inspection:	Not reported
Recommended Penalty:	False
UST Trust:	False
Remediation Phase:	0
Date Entered In Computer:	2009-04-23
Spill Record Last Update:	2009-06-18
Spiller Name:	BUDD PADILLA
Spiller Company:	LOWES # 1882
Spiller Address:	3195 SOUTH WESTERN BLVD
Spiller Company:	999
Contact Name:	BUDD PADILLA
DEC Memo:	"4/23/09 FG SITE INSPECTION. MET GEI ON SITE. APPROX 25 GAL HYDRAULIC OIL HAD SPILLED TO THE GROUND DUE TO A FAILURE AT THE TRASH COMPACTOR. VEHICLES HAD DRIVEN THROUGH IT CAUSING IT TO BE SPREAD TO A LARGE AREA. WHEN FG ARRIVED THE AREA WAS BLOCKED OFF SO NO FURTHER SPREAD WOULD OCCUR. GEI WAS TO SPREAD SPEEDI DRY AND PROPERLY DISPOSE OF THE DEBRIS AND PROVIDE A RECEIPT. 4/24/09 FG SITE INSPECTION. STAINING STILL ON PAVEMENT BUT FREE PRODUCT REMOVED. NO FURTHER ACTION POSSIBLE. AWAITING DISPOSAL RECEIPTS. 6/18/09 RECD THE DISPOSAL RECEIPT. NO FURTHER WORK REQUIRED. THE SPILL IS CLOSED."
Remarks:	"LINE BREAK ON A TRASH COMPACTOR SPILL IS CONTAINED TO PAVEMENT. CLEAN UP IS IN PROGRESS."

All Materials:

Site ID:	412884
Operable Unit ID:	1169338
Operable Unit:	01
Material ID:	2160990
Material Code:	0010
Material Name:	hydraulic oil
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	25.00
Units:	G
Recovered:	25.00
Oxygenate:	Not reported

F22
South
< 1/8
0.089 mi.
468 ft.

PENSKE AUTO CENTER
S 3195 SOUTHWESTERN BLVD
ORCHARD PARK, NY 14127

Site 3 of 5 in cluster F

NY LTANKS **1004759684**
RCRA NonGen / NLR **NYR000017673**
NY MANIFEST

Relative:
Higher

Actual:
775 ft.

LTANKS:

Facility ID:	9008606
Site ID:	307367
Closed Date:	1991-09-06
Spill Number:	9008606
Spill Date:	1990-11-06
Spill Cause:	Tank Failure
Spill Source:	Commercial/Industrial
Spill Class:	Not reported
Cleanup Ceased:	1991-09-06
SWIS:	1560
Investigator:	LEARY
Referred To:	Not reported
Reported to Dept:	1990-11-06
CID:	Not reported
Water Affected:	Not reported
Spill Notifier:	Other
Last Inspection:	1991-08-21
Recommended Penalty:	False
Meets Standard:	True
UST Involvement:	False
Remediation Phase:	0
Date Entered In Computer:	1990-11-06
Spill Record Last Update:	2003-08-05
Spiller Name:	Not reported
Spiller Company:	KMART
Spiller Address:	425 HOFFMAN BOULEVARD
Spiller County:	001
Spiller Contact:	Not reported
Spiller Phone:	Not reported
Spiller Extention:	Not reported
DEC Region:	9
DER Facility ID:	248223
DEC Memo:	"Prior to Sept, 2004 data translation this spill Lead_DEC Field was RNL 11/07/90: RNL SITE INSP. 11/06/90, HEAVY SHEEN IN EXCAVATION, SOIL TO BE DISPOSED, MW TO BE PLACED, WATER TO BE REMOVED; RNL LETTER 11/07/90, GAVE CLEANUP REQUIREMENTS. 11/27/90: RNL SITE INSP. 11/27/90, WATER IN WELL HAD A VERY MINOR SPOTTY SHEEN(ONLY 18 DOWN) BAILED WATER HAD NO VISIBLE SHEEN, CONTAMINATED SOIL ON SITE, CONTINUE TO MONITOR. 01/04/91: RNL INSP. 01/04/91, CHECKED MW BUT DID NOT FIND ANY SHEEN, WEATHER WAS COLD AND WINDY, WELL CAP HAD BEEN BROKEN. 01/14/91: RNL LETTER TO KMART, NEED SOIL DISPOSAL RECEIPT, MAY NEED GROUNDWATER REMEDIATION. 02/08/91: RNL INSP. 02/08/91, SOIL STILL ON SITE, MW TOP BROKEN AND CAP MISSING, WATER ALMOST TO SURFACE, HAD SHEEN. 04/09/91: RNL AND MEL INSP. 03/20/91, SOIL STILL ON SITE, MW TOP BROKEN AND CAP MISSING, WATER ALMOST TO SURFACE, HAD SHEEN; RNL LETTER TO KAMRT 04/09/91. 05/16/91: RNL INSP. 05/16/91, SOIL REMOVED, MW DESTROYED, SURFACE OIL SPILLAGE ENTERING WELL. 08/21/91: RNL INSP. 08/21/91, MET CONTRACTOR, NEW MW INSTALED, PUMPED WELL FOR 15 MINUTES, NO SHEEN, CLOSEOUT ONCE DISPOSAL RECEIPT RECEIVED. 09/06/91: RNL LETTER TO KMART, SITE CLOSEOUT, KMART TRANSMITTAL AND DISPOSAL RECEIPT SATISFACTORY. "
Remarks:	"WASTE OIL TANK REMOVED AT KMART, CONTAMINATION FOUND"

PENSKE AUTO CENTER (Continued) **1004759684**

All Materials:

Site ID:	307367
Operable Unit ID:	945798
Operable Unit:	01
Material ID:	432413
Material Code:	0022
Material Name:	waste oil/used oil
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	.00
Units:	G
Recovered:	.00
Oxygenate:	Not reported

RCRA NonGen / NLR:

Date form received by agency:	01/01/2007
Facility name:	PENSKE AUTO CENTER
Facility address:	S 3195 SOUTHWESTERN BLVD SVC CTR ORCHARD PARK, NY 14127
EPA ID:	NYR000017673
Mailing address:	W BIG BEAVER RD TROY, NY 48084-3163
Contact:	DAVID TATUM
Contact address:	W BIG BEAVER RD TROY, NY 48084-3163
Contact country:	US
Contact telephone:	810-643-5171
Contact email:	Not reported
EPA Region:	02
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

Owner/operator name:	BENDERSON & BALDAUF
Owner/operator address:	570 DELAWARE AVE BUFFALO, NY 14202
Owner/operator country:	US
Owner/operator telephone:	212-555-1212
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Owner/operator name:	BENDERSON & BALDAUF
Owner/operator address:	570 DELAWARE AVE BUFFALO, NY 14202
Owner/operator country:	US
Owner/operator telephone:	212-555-1212
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported

PENSKE AUTO CENTER (Continued) **1004759684**

Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:
Date form received by agency: 01/01/2006
Site name: PENSKE AUTO CENTER
Classification: Not a generator, verified

Date form received by agency: 12/07/1995
Site name: PENSKE AUTO CENTER
Classification: Conditionally Exempt Small Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D018
. Waste name: BENZENE

. Waste code: D039
. Waste name: TETRACHLOROETHYLENE

Violation Status: No violations found

NY MANIFEST:
Country: USA
EPA ID: NYR000017673
Facility Status: Not reported
Location Address 1: 3195 SOUTHWESTERN BLVD
Code: BP
Location Address 2: Not reported
Total Tanks: Not reported
Location City: ORCHARD PARK
Location State: NY
Location Zip: 14127
Location Zip 4: Not reported

NY MANIFEST:
EPAID: NYR000017673

PENSKE AUTO CENTER (Continued) **1004759684**

Mailing Name:	PENSKE AUTO CENTER4207
Mailing Contact:	N/S
Mailing Address 1:	3195 SOUTHWESTERN BLVD
Mailing Address 2:	Not reported
Mailing City:	ORCHARD PARK
Mailing State:	NY
Mailing Zip:	14127
Mailing Zip 4:	Not reported
Mailing Country:	USA
Mailing Phone:	7166743888

NY MANIFEST:

Document ID:	NYC5133082
Manifest Status:	Not reported
seq:	01
Year:	1999
Trans1 State ID:	NY37056AR
Trans2 State ID:	11591P
Generator Ship Date:	02/24/1999
Trans1 Recv Date:	02/24/1999
Trans2 Recv Date:	02/26/1999
TSD Site Recv Date:	03/20/1999
Part A Recv Date:	Not reported
Part B Recv Date:	Not reported
Generator EPA ID:	NYR000017673
Trans1 EPA ID:	ILD984908202
Trans2 EPA ID:	NYD980769947
TSDF ID 1:	KYD053348108
TSDF ID 2:	Not reported
Manifest Tracking Number:	Not reported
Import Indicator:	Not reported
Export Indicator:	Not reported
Discr Quantity Indicator:	Not reported
Discr Type Indicator:	Not reported
Discr Residue Indicator:	Not reported
Discr Partial Reject Indicator:	Not reported
Discr Full Reject Indicator:	Not reported
Manifest Ref Number:	Not reported
Alt Facility RCRA ID:	Not reported
Alt Facility Sign Date:	Not reported
MGMT Method Type Code:	Not reported
Waste Code:	U154 - METHANOL
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Quantity:	00800
Units:	P - Pounds
Number of Containers:	002
Container Type:	DF - Fiberboard or plastic drums (glass)
Handling Method:	B Incineration, heat recovery, burning.
Specific Gravity:	01.00

Click this hyperlink while viewing on your computer to access additional NY_MANIFEST: detail in the EDR Site Report.

PENSKE AUTO CENTER (Continued) **1004759684**

Country:	USA
EPA ID:	NYD071483093
Facility Status:	Not reported
Location Address 1:	3195 SOUTHWEST BOULEVARD
Code:	BP
Location Address 2:	Not reported
Total Tanks:	Not reported
Location City:	ORCHARD PARK
Location State:	NY
Location Zip:	14127
Location Zip 4:	Not reported

NY MANIFEST:

EPAID:	NYD071483093
Mailing Name:	LOWES
Mailing Contact:	LOWES
Mailing Address 1:	1000 LOWES BLVD
Mailing Address 2:	MC A2ELP
Mailing City:	MOORESVILLE
Mailing State:	NC
Mailing Zip:	28117
Mailing Zip 4:	Not reported
Mailing Country:	USA
Mailing Phone:	7166740550

NY MANIFEST:

Document ID:	Not reported
Manifest Status:	Not reported
seq:	Not reported
Year:	2017
Trans1 State ID:	MNS000110924
Trans2 State ID:	Not reported
Generator Ship Date:	06/06/2017
Trans1 Recv Date:	06/06/2017
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	06/09/2017
Part A Recv Date:	Not reported
Part B Recv Date:	Not reported
Generator EPA ID:	NYD071483093
Trans1 EPA ID:	Not reported
Trans2 EPA ID:	Not reported
TSDF ID 1:	MID980615298
TSDF ID 2:	Not reported
Manifest Tracking Number:	001574899PSC
Import Indicator:	N
Export Indicator:	N
Discr Quantity Indicator:	N
Discr Type Indicator:	N
Discr Residue Indicator:	N
Discr Partial Reject Indicator:	N
Discr Full Reject Indicator:	N
Manifest Ref Number:	Not reported
Alt Facility RCRA ID:	Not reported
Alt Facility Sign Date:	Not reported
MGMT Method Type Code:	H141
Waste Code:	Not reported
Waste Code:	Not reported

PENSKE AUTO CENTER (Continued) **1004759684**

Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Quantity:	5
Units:	P - Pounds
Number of Containers:	1
Container Type:	DF - Fiberboard or plastic drums (glass)
Handling Method:	T Chemical, physical, or biological treatment.
Specific Gravity:	1
Waste Code:	Not reported
Waste Code 1_2:	D001
Waste Code 1_3:	D002
Waste Code 1_4:	Not reported
Waste Code 1_5:	Not reported
Waste Code 1_6:	Not reported

Click this hyperlink while viewing on your computer to access
32 additional NY_MANIFEST: record(s) in the EDR Site Report.

F23 **LOWE'S OF ORCHARD PARK, #1882** **NY AST** **A100304740**
South **3195 SOUTHWESTERN BOULEVARD** **N/A**
< 1/8 **ORCHARD PARK, NY 14127**
0.089 mi.
468 ft. **Site 4 of 5 in cluster F**

Relative:
Higher

Actual:
775 ft.

AST:

Region:	STATE
DEC Region:	9
Site Status:	Active
Facility Id:	9-600966
Program Type:	PBS
UTM X:	193624.16028
UTM Y:	4745146.41205
Expiration Date:	06/25/2022
Site Type:	Other Wholesale/Retail Sales

Affiliation Records:

Site Id:	383409
Affiliation Type:	Emergency Contact
Company Name:	LOWES HOME CENTERS INC
Contact Type:	Not reported
Contact Name:	HAZMAT SUPPORT
Address1:	Not reported
Address2:	Not reported
City:	Not reported
State:	NN
Zip Code:	Not reported
Country Code:	999
Phone:	(888) 429-6281
EMail:	Not reported
Fax Number:	Not reported
Modified By:	SLZIEMBA
Date Last Modified:	2012-03-27

Site Id:	383409
Affiliation Type:	Mail Contact

LOWE'S OF ORCHARD PARK, #1882 (Continued) **A100304740**

Company Name:	LOWES HOME CENTERS, INC
Contact Type:	Not reported
Contact Name:	MELISSA CALL, COMPLIANCE MANAGER
Address1:	P.O. BOX 1111
Address2:	1605 CURTIS BRIDGE ROAD
City:	NORTH WILKESBORO
State:	NC
Zip Code:	28656-0001
Country Code:	001
Phone:	(336) 658-5785
EMail:	MELISSA.M.CALL@LOWES.COM
Fax Number:	Not reported
Modified By:	SLZIEMBA
Date Last Modified:	2012-03-27

Site Id:	383409
Affiliation Type:	Facility Operator
Company Name:	LOWES OF ORCHARD PARK, #1882
Contact Type:	Not reported
Contact Name:	LOWE HOME CENTERS
Address1:	Not reported
Address2:	Not reported
City:	Not reported
State:	NN
Zip Code:	Not reported
Country Code:	001
Phone:	(716) 677-1500
EMail:	Not reported
Fax Number:	Not reported
Modified By:	SLZIEMBA
Date Last Modified:	2012-03-27

Site Id:	383409
Affiliation Type:	Facility Owner
Company Name:	LOWES HOME CENTERS INC
Contact Type:	VP E & C
Contact Name:	RICHARD GOODMAN
Address1:	P.O. BOX 1111
Address2:	Not reported
City:	NORTH WILKESBORO
State:	NC
Zip Code:	28656-0001
Country Code:	001
Phone:	(336) 658-4000
EMail:	Not reported
Fax Number:	Not reported
Modified By:	TAMAMUN
Date Last Modified:	2017-05-17

Tank Info:

Tank Number:	001
Tank Id:	217954
Material Code:	0008
Common Name of Substance:	Diesel

LOWE'S OF ORCHARD PARK, #1882 (Continued) **A100304740**

Equipment Records:

	C01 - Pipe Location - Aboveground
	I04 - Overfill - Product Level Gauge (A/G)
	J00 - Dispenser - None
	H06 - Tank Leak Detection - Impervious Barrier/Concrete Pad (A/G)
	D11 - Pipe Type - Flexible Piping
	E00 - Piping Secondary Containment - None
	I02 - Overfill - High Level Alarm
	K01 - Spill Prevention - Catch Basin
	L09 - Piping Leak Detection - Exempt Suction Piping
	F00 - Pipe External Protection - None
	A00 - Tank Internal Protection - None
	B01 - Tank External Protection - Painted/Asphalt Coating
	G09 - Tank Secondary Containment - Modified Double-Walled (Aboveground)
	H01 - Tank Leak Detection - Interstitial - Electronic Monitoring
Tank Location:	2
Tank Type:	Steel/Carbon Steel/Iron
Tank Status:	In Service
Pipe Model:	Not reported
Install Date:	12/29/2004
Capacity Gallons:	1500
Tightness Test Method:	NN
Date Test:	Not reported
Next Test Date:	Not reported
Date Tank Closed:	Not reported
Register:	True
Modified By:	SLZIEMBA
Last Modified:	04/14/2017
Material Name:	diesel

F24 **LOWES STORE # 1882** **NY Spills** **S117851726**
South **3195 SOUTH WESTERN BLVD** **N/A**
< 1/8 **ORCHARD PARK, NY 14127**
0.089 mi.
468 ft. **Site 5 of 5 in cluster F**

Relative:
Higher

Actual:
775 ft.

SPILLS:

Facility ID:	1500002
Facility Type:	ER
Spill Number:	1500002
DER Facility ID:	460929
Site ID:	506134
DEC Region:	9
Closed Date:	2015-10-09
Spill Cause:	Equipment Failure
Spill Class:	C3
SWIS:	1560
Spill Date:	2015-04-01
Investigator:	RJJONAK
Referred To:	Not reported
Reported to Dept:	2015-04-01
CID:	Not reported
Water Affected:	Not reported
Spill Source:	Commercial/Industrial
Spill Notifier:	Other
Cleanup Ceased:	Not reported

LOWES STORE # 1882 (Continued) **S117851726**

Cleanup Meets Std:	True
Last Inspection:	Not reported
Recommended Penalty:	False
UST Trust:	False
Remediation Phase:	0
Date Entered In Computer:	2015-04-01
Spill Record Last Update:	2015-10-09
Spiller Name:	ROB GASS
Spiller Company:	LOWES
Spiller Address:	3195 SOUTHWESTERN BLVD.
Spiller Company:	001
Contact Name:	PHIL DORSHEIMER
DEC Memo:	"4/1/2015: RJJ TELECON PHIL DORSHERIMER.LOWES MANAGER,HE SAID THAT THEIR COMPACTOR BROKE A HYDRAULIC HOSE,CAUSING ~25-30 GALS. OF HYDRAULIC OIL TO SPRAY OUT,ALL ON THEIR CONCRETE PAD,BEHIND THEIR STORE...LOWES HAS HIRED EP&S OF VERMONT TO CLEAN-UP/DISPOSE THIS SPILL...NONE OF THE OIL REACHED ANY SOIL OR WATERWAYS,IT IT ALL CONTAINED ON THE CONCRETE...PHIL WILL SEND ME THE DISPOSAL RECEIPTS...RJJ AT SITE AT 1230...EP&S of VERMONT ARE ALMOST FINISHED WITH THE CLEAN-UP...THEY HAVE SPREAD SPEEDI-DRY ON THE HYDRAULIC OIL AND WILL PICK-UP AND DISPOSE IT...MOST THE OIL IS ALL ON THE CONCRETE PAD,WHICH THE COMPACTOR IS ON...A SMALL AMOUNT WAS TRACKED BY VEHICLES,ON THE ASPHALT PARKING LOT, AND THIS TOO,WILL BE CLEANED-UP. 10/9/2015: RECEIVED THE 'CERTIFICATE OF DISPOSAL' FOR THE 1 CONTAINER OF SPILL MATERIAL TAKEN TO REPUBLIC ENVIRONMENTAL SYSTEMS, IN HATFIELD,PA....THE SPILL HAS BEEN CLEANED-UP & PROPERLY DISPOSED OF...NO FURTHER ACTION IS NEEDED...SPILL CLOSED OUT."
Remarks:	"on concrete from compactor - cleanup pending (company enr)"

All Materials:

Site ID:	506134
Operable Unit ID:	1255451
Operable Unit:	01
Material ID:	2258200
Material Code:	0010
Material Name:	hydraulic oil
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	30.00
Units:	G
Recovered:	30.00
Oxygenate:	Not reported

D25 **D AMATO SALVATORE** **EDR Hist Cleaner** **1019967892**
West **3039 ORCHARD PARK RD** **N/A**
< 1/8 **ORCHARD PARK, NY 14127**
0.092 mi.
487 ft. **Site 3 of 4 in cluster D**

Relative: EDR Hist Cleaner
Lower

Year:	Name:	Type:
1976	D AMATO SALVATORE	Drycleaning Plants, Except Rugs
1977	D AMATO SALVATORE	Drycleaning Plants, Except Rugs
1978	D AMATO SALVATORE	Drycleaning Plants, Except Rugs
1979	D AMATO SALVATORE	Drycleaning Plants, Except Rugs
1980	D AMATO SALVATORE	Drycleaning Plants, Except Rugs

Actual:
721 ft.

D AMATO SALVATORE (Continued) **1019967892**

1982	D AMATO SALVATORE	Drycleaning Plants, Except Rugs
1983	D AMATO SALVATORE	Drycleaning Plants, Except Rugs
1985	D AMATO SALVATORE	Drycleaning Plants, Except Rugs
1986	D AMATO SALVATORE	Drycleaning Plants, Except Rugs
1987	DAMATO SALVATORE	Drycleaning Plants, Except Rugs

E26 **NATIONAL FUEL GAS LINE** **NY Spills** **S104880478**
WNW **UNION & MICHAEL STS** **N/A**
< 1/8 **ORCHARD PARK/WEST SENECA, NY**
0.099 mi.
522 ft. **Site 6 of 11 in cluster E**

Relative:
Lower

Actual:
716 ft.

SPILLS:

Facility ID:	0075493
Facility Type:	ER
Spill Number:	0075493
DER Facility ID:	165341
Site ID:	198672
DEC Region:	9
Closed Date:	2005-01-25
Spill Cause:	Unknown
Spill Class:	B2
SWIS:	1500
Spill Date:	2000-11-01
Investigator:	BFGRABER
Referred To:	Not reported
Reported to Dept:	2000-11-14
CID:	Not reported
Water Affected:	Not reported
Spill Source:	Unknown
Spill Notifier:	Other
Cleanup Ceased:	Not reported
Cleanup Meets Std:	False
Last Inspection:	2004-12-03
Recommended Penalty:	False
UST Trust:	False
Remediation Phase:	0
Date Entered In Computer:	2000-11-14
Spill Record Last Update:	2011-05-17
Spiller Name:	RANDY WALKER
Spiller Company:	WALKER SERVICE
Spiller Address:	3008 UNION ROAD
Spiller Company:	001
Contact Name:	CHARLES BURKE
DEC Memo:	"Prior to Sept, 2004 data translation this spill Lead_DEC Field was BG 11/14/00: RMC/SITE CHECKED EXCAVATION SIGNIFICANT IMPACT OF GASOLINE NOTED, RMC HIRED NWI TO INVESTIGATE AND REMOVED CONTAMINATION SO THAT NATIONAL FUEL CAN PROCEED WITH REPAIR, RMC ADVISED SAC AND PJB OF WORK, 11/15/00: RMC/SITE EXCAVATING SIGNIFICANTLY IMPACED SOILS IN NFG EXCAVATION, SOURCE UNKNOWN AT THIS TIME, TAKED WITH RANDY WALKER, OWNER OF 3008 UNION, HE HAD 45,000 DOLLARS OF WORK DONE CLEANING UP THE PROPERTY IN 1994, DEC FILE 9406100 CLEAN CLOSURE, RMC ADVISED WE DO NOT YET KNOW SOURCE, 11/17/00: RMC/SITE WORK CONTINUES, HEAVILY IMPACTED SOILS IN THE NATURAL GAS LINE TRENCH, APPEARS TO BE ISOLATED TO THE TRENCH 11/20/00: RMC/NWI/PHONE NO WORK ON SITE TODAY, TO RESUME TOMORROW 12/01/00: RMC/FILE NUMEROUS VISITS, EXCAVATION COMPLETED ALONG UNION AND MICHAEL, SIGNIFICANT CONTAMINATION FOUND IN NFG TRENCH, CAN

Nearby???

NATIONAL FUEL GAS LINE (Continued) **S104880478**

EXCAVATE TO VISUAL CLEAN EXCEPT FOR A 2 TO 12 INCH LAYER OF NATURAL SAND, 12 TO 24 INCHES BELOW GRADE, RMC INSTRUCTED NWI TO SAMPLE LAYER AND BELOW, ALSO BOTTOM , TOTAL OF 8 TO 10 SAMPLES, NO PATH TO ANY RP FOUND TO DATE, 12/30/00: RMC/FILE REVIEW, EXCEEDANCES IN NUMEROUS LOCATION IN POST EXCAVTION SAMPLES, NWI REPORT DUE 1/15/01 03/23/01: RMC/RANDY WALKER/PHONE. DRIVEWAY IS IN NEED OF GRADING, RMC CONTACTED NWECC, THEY WILL GRADE AS NECESSARY. ALSO REQUESTED REPORT. DUE 4/1/01 05/18/01: RMC/PJB/MEETING, WENT OVER TEST RESULTS AND DRAFT NWECC REPORT, CONTAMINATION FOUND MOST CONCENTRATED AT AREAS ADJACENT TO THE FROMER PUMP ISLAND AT 3008 UNION, WALKER SERVICE, SOURCE IS OBVIOUS, PUMP ISLAND IS LIKELY SOURCE, REQUESTED FINAL REPORT, WILL THEN VISIT WALKER TO DISCUSS FINDING AND REMEDIATION OF OLD ISLAND AREA, REPORT DUE 6/15/01 11/20/02: RMC/FILE. REFERED TO LONG TERM GROUP FOR FOLLOW UP. 01/06/03: SPILL REASSIGNED TO BG. 01/08/03: BG SITE VISIT. PUMP ISLAND REMAINS IN-PLACE. BG CONTACTED ORCHARD PARK ASSESSORS OFFICE TO GET UP-TO-DATE OWNER'S NAME & MAILING ADDRESS OF WALKER SERVICE: HARVEY WALKER 3008 UNION ROAD BUFFALO, NEW YORK 14224 PHONE # (716) 674-9917 01/09/03: BG SENT HARVEY WALKER RP LETTER W/ROE FORM. RESPONSE DUE 2/14/03. 01/14/03: RANDY WALKER T/C BG AND SAID HARVEY IS IN FLA. - WILL SIGN ROE AND RETURN ASAP (MAY NOT BE BY 2/14/03). 02/10/03: REC'D SIGNED ROE TO INVESTIGATE FROM HARVEY WALKER. 02/26/03: BG SITE VISIT TO ACQUIRE ROE FROM ADJACENT PROPERTY OWNER SOUTH OF 3008 UNION. HE REFUSED. THE OWNER IS: BRUNO MOLINO 3020 S. UNION ROAD ORCHARD PARK, NY PH # (716) 675-3015 00/12/03: BG SENT NATURE'S WAY APPROVAL LETTER TO INVESTIGATIVE WORK PLAN. 03/12/03: BG SITE VISIT. SPOKE TO RANDY WALKER AND TOLD HIM OF ANTICIPATED DATES OF FIELD INVESTIGATION (MARCH 24-28) AND WHAT WILL BE DONE. HE SAID THAT WOULD BE OK WITH HIM. 03/26/03: NATURES WAY ON-SITE AND PERFORMED GEOPROBE SOIL SAMPLING TO DELINEATE CONTAMINATION. REPORT EXPECTED BY 4/30/03. 04/24/03: REC'D INVESTIGATION SOIL SAMPLE ANALYSIS FROM LAB W/PAYMENT REQUEST PACKAGE. 05/21/03: REC'D SUBSURFACE INVESTIGATION REPORT FROM NW. BG T/C NW AND INFORMED THEM ANALYTICAL DATA TABLE AND SECTION 4.1.3 IS INCORRECT. 06/11/03: REC'D CORRECTIONS TO INVESTIGATION REPORT FROM NATURE'S WAY. 06/13/03: BG T/C DALE G. (NW) AND REQUESTED AN ESTIMATE FOR REMEDIAL WORK. 06/20/03: REC'D ESTIMATE FROM NATURE'S WAY FOR SITE REMEDIATION. 06/23/03: BG SITE VISIT. GAVE RANDY WALKER COPY OF INVESTIGATION REPORT AND REMEDIATION COST ESTIMATE BY NATURE'S WAY. TOLD HIM DEC WILL SEND A RP LETTER AND ROE FORM FOR REMEDIATION TO HARVY WALKER (OWNER) TO SIGN IF OWNER DOESN'T WANT TO DO WORK. BG EXPLAINED OPTIONS. 06/30/03: RP LETTER W/ROE FORM SENT (CERTIFIED) TO HARVY WALKER FOR SITE REMEDIATION. RESPONSE DUE 8/4/02. 07/29/03: BG REC'D CALL FROM PAUL NOTARO-RP'S ATTORNEY REQUESTING A 30-DAY EXTENSION TO RESPOND TO RP LETTER/ROE FORM FOR REMEDIATION. OK FOR EXTENSION - BG REQUESTED LETTER FROM WALKER OR ATTORNEY TO ADDRESS EXTENSION. 07/31/03: REC'D LETTER FROM PAUL NOTARO CONFIRMING REQUEST FOR EXTENSION. 09/05/03: BG T/C PAUL NOTARO ASKING WHAT IS WALKER'S RESPONSE TO RP LETTER TO REMEDIATE. HE IS STILL CONFERRING WITH ENVIRONMENTAL ATTORNEY AND REQUESTED ANOTHER EXTENSION. OK GIVEN FOR EXTENSION. 09/17/03: BG T/C PAUL NOTARO'S OFFICE REQUESTING LETTER STATING PERIOD OF EXTENSION. BG WAS TOLD REQUEST IS FOR EXTENSION TO OCTOBER 10, 2003. PAUL WILL SEND LETTER. 09/22/03: REC'D LETTER FROM PAUL NOTARO CONFIRMING REQUEST FOR EXTENSION TO RESPOND BY OCTOBER 10,2003 TO THE 6/30/03 RP LETTER AND R-O-E FORM. 10/17/03: BG T/C PAUL NOTARO. PAUL IS TRYING TO SCHEDULE A MEETING WITH AN (ENVIRONMENTAL) ATTORNEY. AFTER HE SCHEDULES THE MEETING, HE WILL SEND A LETTER STATING THIS WITH A DATE HE WILL RESPOND TO THE 6/30/03

NATIONAL FUEL GAS LINE (Continued) **S104880478**

RP LETTER W/R-O-E FORM. 11/10/03: PAUL NOTARO T/C BG AND SAID LETTER WAS SENT 11/07/03 STATING HENRY KILLEEN (ENVIRONMENTAL ATTORNEY) IS LOOKING AT FILE AND DEC WILL GET A RESPONSE FROM WALKER ON R-O-E BY NOVEMBER 28, 2003. 11/12/03: REC'D LETTER FROM NOTARO REQUESTING EXTENSION UNTIL 11/28/03 TO RETURN R-O-E FORM. 12/03/03: HENRY KILLEEN (ENVIRONMENTAL ATTORNEY ADVISING PAUL NOTARO) T/C BG AND ASKED BG TO SUMMARISE SPILL AND CLEANUP. HE REQUESTED 2 WEEKS TO WORK W/NOTARO AND WALKER TO ADVISE WALKER WHAT TO DO. 12/19/03: BG T/C PAUL NOTARO - NOT IN - LEFT MESSAGE TO RETURN CALL TO UPDATE DEC OF WALKERS PLANS. 12/23/03: BG T/C PAUL NOTARO - NOT AVAILABLE - LEFT MESSAGE TO RETURN CALL. 12/29/03: LETTER TO PAUL NOTARO REQUESTING PLANS OR SIGNED R-O-E FORM FROM HARVY WALKER BY 1/16/03 OR DEC WILL REFER SPILL TO AG's OFFICE TO AQUIRE LEGAL ACCESS TO REMEDIATE. 01/13/04: BG T/C PAUL NOTARO AND WAS TOLD OWNER INTENDS TO SELL PROPERTY AND WILL TRY TO GET (SIGNED) R-O-E RETURNED TO DEC SOON. 02/02/04: BG T/C PAUL NOTARO AND WAS TOLD HE IS WAITING FOR WALKER TO RETURN SIGNED R-O-E FORM TO FORWARD ONTO SPILLS. 03/15/04: BG CALLED PAUL NOTARO - NOT IN. LEFT MESSAGE TO RETURN CALL. 05/05/04: REC'D SIGNED R-O-E FORM FROM HARVY WALKER. 05/07/04: SENT C&W ENVIRONMENTAL AUTHORIZATION TO PROCEED FORM- TO SUBMIT RAP AND REMEDIATE SITE. 05/12/04: BG MET MARK WILDER, CARL CROSSEN AND RANDY WALKER ON-SITE TO DISCUSS WORK TO BE DONE AND COORDINATE WORK W/RANDY TO NOT DISRUPT HIS BUSINESS. C&W TO SUBMIT RAP BY 5/21/04. 05/14/04: RAP SUBMITTED BY C&W. 05/18/05: BG SENT RAP APPROVAL LETTER TO C&W. BG T/C MARK WILDER AND SAID RAP IS OK. 05/19/04: MARK WILDER ON-SITE AND RANDY WALKER TOLD HIM THEY COULD NOT EXCAVATE. 05/20/04: BG SITE VISIT. RANDY AND HARVY WALKER TOLD ME THAT DEC CONTRACTOR COULD NOW EXCAVATE/REMEDIATE. BG INFORMED C&W. 05/26/04: C&W ON-SITE. EXCAVATED AND STAGED (HAZ) SOIL ON-SITE TO AERATE. 05/27/04: C&W CONTINUED TO EXCAVATE AND STAGE (HAZ) SOIL ON-SITE TO AERATE. 06/09/04: C&W ON-SITE REWORKING STAGED SOIL TO AERATE. 06/22/04: REC'D PAY PACKAGE #1 FROM C&W. APPROVED. 09/09/04: REC'D ANALYTICAL RESULTS FROM THE POST-EXCAVATION SOIL AND GROUNDWATER SAMPLING. 09/13/04: REC'D PAY PACKAGE #3 FROM C&W. DEC RETURNED IT W/COMMENTS. 09/24/04: REC'D REVISED PAY PACKAGE #3 FROM C&W W/REMEDIATION REPORT - APPROVED. 10/13/04: DISCUSSED SPILL W/MLD. HE REQUESTED 3 TEMPORARY MW'S BE INSTALLED & PLACED DOWNGRADIENT TO VERIFY CONTAMINATED GW IS NOT TRAVELING OFF-SITE. 10/14/04: BG, MLD, LR MET @ SITE AND AGREED WHERE (3) MW'S SHOULD BE LOCATED. 10/18/04: REC'D PAY PACKAGE #4 FROM C&W - APPROVED. 12/02/04: REC'D PAY PACKAGE #3 FROM LSL - APPROVED AND SENT ON TO ALBANY. 12/03/04: C&W & BG ON SITE. C&W INSTALLING (3) TEMP. WELLS TO VERIFY CONTAMINATION HAS NOT MIGRATED OFF SITE. C&W EXPECTS TO SAMPLE TUESDAY. 01/24/05: REC'D FINAL REMEDIATION REPORT. SPILL CLOSED. NO FURTHER WORK REQUIRED. 03/03/05: REC'D FINAL PAY REQUEST FROM C&W. APPROVED. 04/21/05: FINAL ISR SIGNEN AND SENT TO AG'S OFFICE. 05/17/2011: GPS - PRE-DEVELOPMENT PHASE I & PHASE II FILED IN EDOCS FOR FUTURE REFERENCE. SITE HAS CURRENTLY BEEN REDEVELOPED INTO A WALGREENS. NO IFORMATION AVAILABLE IF ADDITIONAL REMEDIAL WORK WAS COMPLETED DURING THE FACILITIES CONSTRUCTION."

Remarks: "WHILE DOING WORK IN THE RIGHT OF WAY, GASOLINE CONTAMINATION WAS FOUND"

All Materials:

Site ID:	198672
Operable Unit ID:	838377
Operable Unit:	01
Material ID:	539063
Material Code:	0009

NATIONAL FUEL GAS LINE (Continued) **S104880478**

Material Name:	gasoline
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	.00
Units:	G
Recovered:	.00
Oxygenate:	Not reported

E27 **D'AMATO'S CLEANERS** **NY DRYCLEANERS** **S110246347**
WNW **6471 MICHAEL ROAD** **N/A**
< 1/8 **ORCHARD PARK, NY 14127**
0.101 mi.
533 ft. **Site 7 of 11 in cluster E**

Relative:
Lower

Actual:
713 ft.

DRYCLEANERS:

Facility ID:	9-1460-00157
Phone Number:	716-675-1330
Region:	Not reported
Registration Effective Date:	6/24/2003 13:26:06:776
Inspection Date:	08JAN22
Install Date:	03
Drop Shop:	Not reported
Shutdown:	Not reported
Alternate Solvent:	Not reported
Current Business:	Not reported

E28 **D AMATOS CLEANERS INC** **RCRA-SQG** **1007112534**
WNW **6471 MICHAEL RD** **NY MANIFEST** **NYR000118109**
< 1/8 **ORCHARD PARK, NY 14127**
0.101 mi.
533 ft. **Site 8 of 11 in cluster E**

Relative:
Lower

Actual:
713 ft.

RCRA-SQG:

Date form received by agency:	01/01/2007
Facility name:	D AMATOS CLEANERS INC
Facility address:	6471 MICHAEL RD ORCHARD PARK, NY 14127
EPA ID:	NYR000118109
Mailing address:	MICHAEL RD ORCHARD PARK, NY 14127
Contact:	MICHAEL A D AMATO
Contact address:	MICHAEL RD ORCHARD PARK, NY 14127
Contact country:	US
Contact telephone:	716-675-1300
Contact email:	Not reported
EPA Region:	02
Classification:	Small Small Quantity Generator
Description:	Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

D AMATOS CLEANERS INC (Continued) **1007112534**

Owner/Operator Summary:
- Owner/operator name: MICHAEL A D AMATO
- Owner/operator address: MICHAEL RD
  ORCHARD PARK, NY 14127
- Owner/operator country: US
- Owner/operator telephone: 716-675-1330
- Owner/operator email: Not reported
- Owner/operator fax: Not reported
- Owner/operator extension: Not reported
- Legal status: Private
- Owner/Operator Type: Owner
- Owner/Op start date: 05/12/2003
- Owner/Op end date: Not reported

- Owner/operator name: MICHAEL A D AMATO
- Owner/operator address: MICHAEL RD
  ORCHARD PARK, NY 14127
- Owner/operator country: US
- Owner/operator telephone: 716-675-1330
- Owner/operator email: Not reported
- Owner/operator fax: Not reported
- Owner/operator extension: Not reported
- Legal status: Private
- Owner/Operator Type: Operator
- Owner/Op start date: 05/12/2003
- Owner/Op end date: Not reported

Handler Activities Summary:
- U.S. importer of hazardous waste: No
- Mixed waste (haz. and radioactive): No
- Recycler of hazardous waste: No
- Transporter of hazardous waste: No
- Treater, storer or disposer of HW: No
- Underground injection activity: No
- On-site burner exemption: No
- Furnace exemption: No
- Used oil fuel burner: No
- Used oil processor: No
- User oil refiner: No
- Used oil fuel marketer to burner: No
- Used oil Specification marketer: No
- Used oil transfer facility: No
- Used oil transporter: No

Historical Generators:
- Date form received by agency: 01/01/2006
- Site name: D AMATOS CLEANERS INC
- Classification: Conditionally Exempt Small Quantity Generator

- Date form received by agency: 09/11/2003
- Site name: D AMATOS CLEANERS INC
- Classification: Conditionally Exempt Small Quantity Generator

. Waste code: D007
. Waste name: CHROMIUM

D AMATOS CLEANERS INC (Continued) **1007112534**

. Waste code: D039
. Waste name: TETRACHLOROETHYLENE

. Waste code: D040
. Waste name: TRICHLORETHYLENE

. Waste code: F002
. Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

Violation Status: No violations found

NY MANIFEST:
Country: USA
EPA ID: NYR000118109
Facility Status: Not reported
Location Address 1: 6471 MICHAEL RD
Code: BP
Location Address 2: Not reported
Total Tanks: Not reported
Location City: ORCHARD PARK
Location State: NY
Location Zip: 14127
Location Zip 4: Not reported

NY MANIFEST:
EPAID: NYR000118109
Mailing Name: D AMATOS DRY CLEANERS
Mailing Contact: MICHAEL D AMATO
Mailing Address 1: 6471 MICHAEL RD
Mailing Address 2: Not reported
Mailing City: ORCHARD PARK
Mailing State: NY
Mailing Zip: 14127
Mailing Zip 4: Not reported
Mailing Country: USA
Mailing Phone: 7166751330

NY MANIFEST:
Document ID: Not reported
Manifest Status: Not reported
seq: Not reported
Year: 2009
Trans1 State ID: TXR000050930
Trans2 State ID: NJD071629976
Generator Ship Date: 04/24/2009
Trans1 Recv Date: 04/24/2009
Trans2 Recv Date: 05/07/2009
TSD Site Recv Date: 05/08/2009
Part A Recv Date: Not reported
Part B Recv Date: Not reported

D AMATOS CLEANERS INC (Continued) **1007112534**

Generator EPA ID:	NYR000118109
Trans1 EPA ID:	Not reported
Trans2 EPA ID:	Not reported
TSDF ID 1:	OHD980587364
TSDF ID 2:	Not reported
Manifest Tracking Number:	000541457SKS
Import Indicator:	N
Export Indicator:	N
Discr Quantity Indicator:	N
Discr Type Indicator:	N
Discr Residue Indicator:	N
Discr Partial Reject Indicator:	N
Discr Full Reject Indicator:	N
Manifest Ref Number:	Not reported
Alt Facility RCRA ID:	Not reported
Alt Facility Sign Date:	Not reported
MGMT Method Type Code:	H020
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Quantity:	100.0
Units:	P - Pounds
Number of Containers:	1.0
Container Type:	DF - Fiberboard or plastic drums (glass)
Handling Method:	R Material recovery of more than 75 percent of the total material.
Specific Gravity:	1.0
Waste Code:	F002
Waste Code 1_2:	D007
Waste Code 1_3:	D039
Waste Code 1_4:	D040
Waste Code 1_5:	Not reported
Waste Code 1_6:	Not reported

Click this hyperlink while viewing on your computer to access
36 additional NY_MANIFEST: record(s) in the EDR Site Report.

E29 **DAMATO ONE HOUR DRY CLEANERS** **EDR Hist Cleaner** **1019968612**
WNW **6471 MICHAEL RD** **N/A**
< 1/8 **ORCHARD PARK, NY 14127**
0.101 mi.
533 ft. **Site 9 of 11 in cluster E**

Relative: EDR Hist Cleaner
Lower

Actual: **713 ft.**

Year:	Name:	Type:
2004	DAMATO ONE HOUR DRY CLEANERS	Drycleaning Plants, Except Rugs
2005	DAMATO ONE HOUR DRY CLEANERS	Drycleaning Plants, Except Rugs
2006	DAMATO ONE HOUR DRY CLEANERS	Drycleaning Plants, Except Rugs
2007	DAMATO ONE HOUR DRY CLEANERS	Drycleaning Plants, Except Rugs
2008	DAMATO ONE HOUR DRY CLEANERS	Drycleaning Plants, Except Rugs
2009	DAMATO ONE HOUR DRY CLEANERS	Drycleaning Plants, Except Rugs
2010	DAMATO ONE HOUR DRY CLEANERS	Drycleaning Plants, Except Rugs
2011	DAMATO ONE HOUR DRY CLEANERS	Drycleaning Plants, Except Rugs

E30
WNW
< 1/8
0.102 mi.
540 ft.

BLUE COLOR IN CAZ CREEK
UNION ROAD & MICHAEL ST
WEST SENECA, NY

Site 10 of 11 in cluster E

NY Spills **S103482432**
N/A

Relative:
Lower

Actual:
715 ft.

SPILLS:

Facility ID:	9803132
Facility Type:	ER
Spill Number:	9803132
DER Facility ID:	223705
Site ID:	275126
DEC Region:	9
Closed Date:	1998-07-30
Spill Cause:	Equipment Failure
Spill Class:	C5
SWIS:	1568
Spill Date:	1998-06-10
Investigator:	RMCROSSE
Referred To:	Not reported
Reported to Dept:	1998-06-10
CID:	999
Water Affected:	SMOKE'S CREEK
Spill Source:	Commercial/Industrial
Spill Notifier:	Local Agency
Cleanup Ceased:	Not reported
Cleanup Meets Std:	True
Last Inspection:	1998-06-12
Recommended Penalty:	False
UST Trust:	False
Remediation Phase:	0
Date Entered In Computer:	1998-06-10
Spill Record Last Update:	1998-08-28
Spiller Name:	ROBERT FISCHER
Spiller Company:	DELTA SONIC
Spiller Address:	570 DELAWARE AVENUE
Spiller Company:	001
Contact Name:	Not reported
DEC Memo:	"Prior to Sept, 2004 data translation this spill Lead_DEC Field was RMC 08/10/98 RMC/FILE ORIGINAL NOTES ON COMPUTER LOST, RP FOUND TO BE DELTA SONIC WHO HAD A SEWER BACK UP WHICH ALLOW WASTE WATER TO GO TO THE STORM SEWER AND INTO A TRIB TO CAZ CREEK, RMC CALLED LAW ENFORCEMENT. ECO MAZURKIEWICZ RP 1500 FOR CONTRAVENTION TO WATER QUALITY STANDARDS, WATER WAS ALSO NOTIFIED, NO FURTHER ACTION REQUIRED. CLOSE OUT. "
Remarks:	"NEAR PUMP STATION. UNKNOWN BLUE COLORED SUBSTANCE IN CREEK. APPARENT FISHKILL."

Nearby/Site?

All Materials:

Site ID:	275126
Operable Unit ID:	1063947
Operable Unit:	01
Material ID:	321453
Material Code:	0045A
Material Name:	cleaning chemicals/products
Case No.:	Not reported
Material FA:	Other
Quantity:	.00
Units:	G
Recovered:	.00

BLUE COLOR IN CAZ CREEK (Continued) **S103482432**

Oxygenate: Not reported

Site ID: 275126
Operable Unit ID: 1063947
Operable Unit: 01
Material ID: 321454
Material Code: 0060A
Material Name: wastewater
Case No.: Not reported
Material FA: Other
Quantity: .00
Units: G
Recovered: .00
Oxygenate: Not reported

E31 **WALKER'S SERVICE** **NY UST** **U003317255**
WNW **UNION & MICHAEL RDS** **N/A**
< 1/8 **ORCHARD PARK, NY 14127**
0.102 mi.
540 ft. **Site 11 of 11 in cluster E**

Relative:
Lower

Actual:
715 ft.

UST:
Id/Status: 9-224278 / Unregulated/Closed
Program Type: PBS
Region: STATE
DEC Region: 9
Expiration Date: N/A
UTM X: 193214.54000
UTM Y: 4745869.51985
Site Type: Retail Gasoline Sales

Affiliation Records:
Site Id: 53233
Affiliation Type: Facility Owner
Company Name: HARVEY L WALKER
Contact Type: Not reported
Contact Name: Not reported
Address1: 292 UNION RD
Address2: Not reported
City: WEST SENECA
State: NY
Zip Code: 14224
Country Code: 001
Phone: (716) 674-8677
EMail: Not reported
Fax Number: Not reported
Modified By: TRANSLAT
Date Last Modified: 2004-03-04

Site Id: 53233
Affiliation Type: Mail Contact
Company Name: HARVEY L WALKER
Contact Type: Not reported
Contact Name: Not reported
Address1: 292 UNION RD
Address2: Not reported
City: WEST SENECA

WALKER'S SERVICE (Continued) **U003317255**

State: NY
Zip Code: 14224
Country Code: 001
Phone: (716) 674-8677
EMail: Not reported
Fax Number: Not reported
Modified By: TRANSLAT
Date Last Modified: 2004-03-04

Site Id: 53233
Affiliation Type: Facility Operator
Company Name: WALKERS SERVICE
Contact Type: Not reported
Contact Name: HARVEY L WALKER
Address1: Not reported
Address2: Not reported
City: Not reported
State: NN
Zip Code: Not reported
Country Code: 001
Phone: (716) 674-9917
EMail: Not reported
Fax Number: Not reported
Modified By: TRANSLAT
Date Last Modified: 2004-03-04

Site Id: 53233
Affiliation Type: Emergency Contact
Company Name: HARVEY L WALKER
Contact Type: Not reported
Contact Name: RANDY L WALKER
Address1: Not reported
Address2: Not reported
City: Not reported
State: NN
Zip Code: Not reported
Country Code: 001
Phone: (716) 537-9030
EMail: Not reported
Fax Number: Not reported
Modified By: TRANSLAT
Date Last Modified: 2004-03-04

Tank Info:

Tank Number: 1
Tank ID: 164637
Tank Status: Closed - Removed
Material Name: Closed - Removed
Capacity Gallons: 3000
Install Date: 01/01/1957
Date Tank Closed: 08/01/1994
Registered: True
Tank Location: Underground
Tank Type: Steel/carbon steel
Material Code: 0009
Common Name of Substance: Gasoline

WALKER'S SERVICE (Continued) **U003317255**

Tightness Test Method: NN
Date Test: Not reported
Next Test Date: Not reported
Pipe Model: Not reported
Modified By: TRANSLAT
Last Modified: 04/14/2017

Equipment Records:

H00 - Tank Leak Detection - None
I00 - Overfill - None
A00 - Tank Internal Protection - None
B00 - Tank External Protection - None
C00 - Pipe Location - No Piping
D02 - Pipe Type - Galvanized Steel
F00 - Pipe External Protection - None
G00 - Tank Secondary Containment - None
J02 - Dispenser - Suction Dispenser

Tank Number: 2
Tank ID: 164638
Tank Status: Closed - Removed
Material Name: Closed - Removed
Capacity Gallons: 3000
Install Date: 01/01/1957
Date Tank Closed: 08/01/1994
Registered: True
Tank Location: Underground
Tank Type: Steel/carbon steel
Material Code: 0009
Common Name of Substance: Gasoline

Tightness Test Method: NN
Date Test: Not reported
Next Test Date: Not reported
Pipe Model: Not reported
Modified By: TRANSLAT
Last Modified: 04/14/2017

Equipment Records:

B00 - Tank External Protection - None
C00 - Pipe Location - No Piping
D02 - Pipe Type - Galvanized Steel
F00 - Pipe External Protection - None
G00 - Tank Secondary Containment - None
J02 - Dispenser - Suction Dispenser
H00 - Tank Leak Detection - None
I00 - Overfill - None
A00 - Tank Internal Protection - None

Tank Number: 3
Tank ID: 164639
Tank Status: Closed - Removed
Material Name: Closed - Removed
Capacity Gallons: 4000
Install Date: 01/01/1973
Date Tank Closed: 08/01/1994

WALKER'S SERVICE (Continued) **U003317255**

Registered:	True
Tank Location:	Underground
Tank Type:	Steel/carbon steel
Material Code:	0009
Common Name of Substance:	Gasoline
Tightness Test Method:	NN
Date Test:	Not reported
Next Test Date:	Not reported
Pipe Model:	Not reported
Modified By:	TRANSLAT
Last Modified:	04/14/2017

Equipment Records:

J02 - Dispenser - Suction Dispenser
G00 - Tank Secondary Containment - None
A00 - Tank Internal Protection - None
H00 - Tank Leak Detection - None
I00 - Overfill - None
B00 - Tank External Protection - None
C00 - Pipe Location - No Piping
D02 - Pipe Type - Galvanized Steel
F00 - Pipe External Protection - None

D32 **DAMATO SALVATORE** **EDR Hist Cleaner** **1019968613**
West **3035 ORCHARD PARK RD** **N/A**
< 1/8 **ORCHARD PARK, NY 14127**
0.107 mi.
567 ft. **Site 4 of 4 in cluster D**

Relative:
Lower

Actual:
720 ft.

EDR Hist Cleaner

Year:	Name:	Type:
1988	DAMATO SALVATORE	Drycleaning Plants, Except Rugs
1989	DAMATO SALVATORE	Drycleaning Plants, Except Rugs
1990	DAMATO SALVATORE	Drycleaning Plants, Except Rugs
1991	DAMATO SALVATORE	Drycleaning Plants, Except Rugs
1992	DAMATO SALVATORE	Drycleaning Plants, Except Rugs
1993	DAMATO SALVATORE	Drycleaning Plants, Except Rugs
1994	DAMATO SALVATORE	Drycleaning Plants, Except Rugs
1995	DAMATO SALVATORE	Drycleaning Plants, Except Rugs
1996	DAMATO SALVATORE	Drycleaning Plants, Except Rugs
1997	DAMATO SALVATORE	Drycleaning Plants, Except Rugs
1998	DAMATO ONE HOUR DRY CLEANERS	Drycleaning Plants, Except Rugs
1999	DAMATO ONE HOUR DRY CLEANERS	Drycleaning Plants, Except Rugs
2000	DAMATO ONE HOUR DRY CLEANERS	Drycleaning Plants, Except Rugs
2001	DAMATO ONE HOUR DRY CLEANERS	Drycleaning Plants, Except Rugs
2002	DAMATO ONE HOUR DRY CLEANERS	Drycleaning Plants, Except Rugs
2003	DAMATO ONE HOUR DRY CLEANERS	Drycleaning Plants, Except Rugs

G33 **D'AMATO'S DRY CLEANERS** **NY DRYCLEANERS** **S110246348**
West **S-3035 ORCHARD PARK ROAD** **N/A**
< 1/8 **ORCHARD PARK, NY 14127**
0.108 mi.
572 ft. **Site 1 of 5 in cluster G**

Relative:
Lower

Actual:
720 ft.

DRYCLEANERS:

Facility ID:	9-1460-00003
Phone Number:	716-675-1330
Region:	Not reported
Registration Effective Date:	N/A
Inspection Date:	03JUN23
Install Date:	86/03
Drop Shop:	Not reported
Shutdown:	Y
Alternate Solvent:	Not reported
Current Business:	Not reported

G34 **TOWNE LINCOLN-MERCURY INC** **RCRA-CESQG** **1000311622**
West **3050 ORCHARD PARK RD** **FINDS** **NYD048392161**
< 1/8 **WEST SENECA, NY 14224** **ECHO**
0.115 mi. **NY MANIFEST**
607 ft. **Site 2 of 5 in cluster G**

Relative:
Lower

Actual:
720 ft.

RCRA-CESQG:

Date form received by agency:	01/01/2007
Facility name:	TOWNE LINCOLN-MERCURY INC
Facility address:	3050 ORCHARD PARK RD WEST SENECA, NY 14224
EPA ID:	NYD048392161
Mailing address:	ORCHARD PARK RD WEST SENECA, NY 14224
Contact:	Not reported
Contact address:	ORCHARD PARK RD WEST SENECA, NY 14224
Contact country:	US
Contact telephone:	Not reported
Contact email:	Not reported
EPA Region:	02
Land type:	Facility is not located on Indian land. Additional information is not known.
Classification:	Conditionally Exempt Small Quantity Generator
Description:	Handler: generates 100 kg or less of hazardous waste per calendar month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste

Owner/Operator Summary:

Owner/operator name:	F G DOWNING
Owner/operator address:	NOT REQUIRED

TOWNE LINCOLN-MERCURY INC (Continued) **1000311622**

NOT REQUIRED, WY 99999
Owner/operator country: US
Owner/operator telephone: 212-555-1212
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Owner/operator name: F G DOWNING
Owner/operator address: NOT REQUIRED
NOT REQUIRED, WY 99999
Owner/operator country: US
Owner/operator telephone: 212-555-1212
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:
Date form received by agency: 01/01/2006
Site name: TOWNE LINCOLN-MERCURY INC
Classification: Conditionally Exempt Small Quantity Generator

Date form received by agency: 07/14/1999
Site name: TOWNE LINCOLN-MERCURY INC
Classification: Small Quantity Generator

Date form received by agency: 04/04/1986
Site name: TOWNE LINCOLN-MERCURY INC
Classification: Large Quantity Generator

. Waste code: F005
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL

TOWNE LINCOLN-MERCURY INC (Continued) **1000311622**

KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

Facility Has Received Notices of Violations:
Regulation violated: FR - 40 cfr 264.51
Area of violation: Generators - General
Date violation determined: 04/29/1993
Date achieved compliance: 10/02/2001
Violation lead agency: EPA
Enforcement action: VERBAL INFORMAL
Enforcement action date: 10/06/1994
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: EPA
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Evaluation Action Summary:
Evaluation date: 10/02/2001
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 04/29/1993
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Generators - General
Date achieved compliance: 10/02/2001
Evaluation lead agency: EPA Contractor/Grantee

FINDS:

Registry ID: 110004357188

Environmental Interest/Information System

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

FIS (New York - Facility Information System) is New York's Department of Environmental Conservation (DEC) information system for tracking environmental facility information found across the State.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:

TOWNE LINCOLN-MERCURY INC (Continued) **1000311622**

Envid: 1000311622
Registry ID: 110004357188
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110004357188

NY MANIFEST:
Country: USA
EPA ID: NYD048392161
Facility Status: Not reported
Location Address 1: 3050 ORCHARD PARK
Code: BP
Location Address 2: Not reported
Total Tanks: Not reported
Location City: BUFFALO
Location State: NY
Location Zip: 14224
Location Zip 4: Not reported

NY MANIFEST:
EPAID: NYD048392161
Mailing Name: TOWNE LINCOLN MERCURY
Mailing Contact: TOWNE LINCOLN MERCURY
Mailing Address 1: 3050 ORCHARD PARK ROAD
Mailing Address 2: Not reported
Mailing City: BUFFALO
Mailing State: NY
Mailing Zip: 14224
Mailing Zip 4: Not reported
Mailing Country: USA
Mailing Phone: 7166752643

NY MANIFEST:
Document ID: NYG2661831
Manifest Status: Not reported
seq: 01
Year: 2003
Trans1 State ID: P207004IL
Trans2 State ID: Not reported
Generator Ship Date: 05/19/2003
Trans1 Recv Date: 05/19/2003
Trans2 Recv Date: Not reported
TSD Site Recv Date: 05/20/2003
Part A Recv Date: Not reported
Part B Recv Date: Not reported
Generator EPA ID: NYD048392161
Trans1 EPA ID: NJD080631369
Trans2 EPA ID: Not reported
TSDF ID 1: NYD049836679
TSDF ID 2: Not reported
Manifest Tracking Number: Not reported
Import Indicator: Not reported
Export Indicator: Not reported
Discr Quantity Indicator: Not reported
Discr Type Indicator: Not reported
Discr Residue Indicator: Not reported
Discr Partial Reject Indicator: Not reported
Discr Full Reject Indicator: Not reported
Manifest Ref Number: Not reported

TOWNE LINCOLN-MERCURY INC (Continued) **1000311622**

Alt Facility RCRA ID:	Not reported
Alt Facility Sign Date:	Not reported
MGMT Method Type Code:	Not reported
Waste Code:	F003 - UNKNOWN
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Quantity:	00040
Units:	G - Gallons (liquids only)* (8.3 pounds)
Number of Containers:	001
Container Type:	TT - Cargo tank, tank trucks
Handling Method:	B Incineration, heat recovery, burning.
Specific Gravity:	01.00

Click this hyperlink while viewing on your computer to access
268 additional NY_MANIFEST: record(s) in the EDR Site Report.

G35 **TOWNE LINCOLN-MERCURY** **NY AST** **U003066148**
West **3050 ORCHARD PARK RD** **N/A**
< 1/8 **BUFFALO, NY 14224**
0.115 mi.
607 ft. **Site 3 of 5 in cluster G**

Relative:
Lower

Actual:
720 ft.

AST:

Region:	STATE
DEC Region:	9
Site Status:	Unregulated/Closed
Facility Id:	9-600240
Program Type:	PBS
UTM X:	193033.37186
UTM Y:	4745682.17964
Expiration Date:	N/A
Site Type:	Other

Affiliation Records:

Site Id:	55102
Affiliation Type:	Facility Owner
Company Name:	FRANK DOWNING
Contact Type:	SERVICE MANAGER
Contact Name:	TOM A ANTONIADIS
Address1:	3050 ORCHARD PARK RD
Address2:	Not reported
City:	BUFFALO
State:	NY
Zip Code:	14224
Country Code:	001
Phone:	(716) 675-2550
EMail:	Not reported
Fax Number:	Not reported
Modified By:	LDGOMEZ
Date Last Modified:	2007-10-18

Site Id:	55102
Affiliation Type:	Mail Contact
Company Name:	TOWNE LINCOLN-MERCURY

TOWNE LINCOLN-MERCURY (Continued) **U003066148**

Contact Type:	Not reported
Contact Name:	TOM ANTONIADIS
Address1:	3050 ORCHARD PARK RD
Address2:	Not reported
City:	BUFFALO
State:	NY
Zip Code:	14224
Country Code:	001
Phone:	(716) 675-2550
EMail:	TANTONIADIS@TOWNEAUTO.COM
Fax Number:	Not reported
Modified By:	AESKALSK
Date Last Modified:	2005-12-07

Site Id:	55102
Affiliation Type:	Facility Operator
Company Name:	TOWNE LINCOLN-MERCURY
Contact Type:	Not reported
Contact Name:	TOM ANTONIADIS
Address1:	Not reported
Address2:	Not reported
City:	Not reported
State:	NN
Zip Code:	Not reported
Country Code:	001
Phone:	(716) 675-2550
EMail:	Not reported
Fax Number:	Not reported
Modified By:	LDGOMEZ
Date Last Modified:	2007-10-18

Site Id:	55102
Affiliation Type:	Emergency Contact
Company Name:	FRANK DOWNING
Contact Type:	Not reported
Contact Name:	TOM ANTONIADIS
Address1:	Not reported
Address2:	Not reported
City:	Not reported
State:	NN
Zip Code:	Not reported
Country Code:	999
Phone:	(716) 675-2550
EMail:	Not reported
Fax Number:	Not reported
Modified By:	AESKALSK
Date Last Modified:	2005-12-07

Tank Info:

Tank Number:	001
Tank Id:	173858
Material Code:	0022
Common Name of Substance:	Waste Oil/Used Oil

Equipment Records:

TOWNE LINCOLN-MERCURY (Continued) **U003066148**

J02 - Dispenser - Suction Dispenser
C01 - Pipe Location - Aboveground
L09 - Piping Leak Detection - Exempt Suction Piping
G03 - Tank Secondary Containment - Vault (w/o access)
H00 - Tank Leak Detection - None
D02 - Pipe Type - Galvanized Steel
F00 - Pipe External Protection - None
I03 - Overfill - Automatic Shut-Off
A00 - Tank Internal Protection - None
B01 - Tank External Protection - Painted/Asphalt Coating

Tank Location:	1
Tank Type:	Steel/Carbon Steel/Iron
Tank Status:	Closed - Removed
Pipe Model:	Not reported
Install Date:	04/01/1997
Capacity Gallons:	500
Tightness Test Method:	NN
Date Test:	Not reported
Next Test Date:	Not reported
Date Tank Closed:	07/01/2006
Register:	True
Modified By:	LDGOMEZ
Last Modified:	04/14/2017
Material Name:	waste oil/used oil

G36 **TOWNE LINCOLN-MERCURY** **NY UST** **U004081117**
West **3050 ORCHARD PARK RD** **N/A**
< 1/8 **BUFFALO, NY 14224**
0.115 mi.
607 ft. **Site 4 of 5 in cluster G**

Relative:
Lower

Actual:
720 ft.

UST:

Id/Status:	9-600240 / Unregulated/Closed
Program Type:	PBS
Region:	STATE
DEC Region:	9
Expiration Date:	N/A
UTM X:	193033.37186
UTM Y:	4745682.17964
Site Type:	Other

Affiliation Records:

Site Id:	55102
Affiliation Type:	Facility Owner
Company Name:	FRANK DOWNING
Contact Type:	SERVICE MANAGER
Contact Name:	TOM A ANTONIADIS
Address1:	3050 ORCHARD PARK RD
Address2:	Not reported
City:	BUFFALO
State:	NY
Zip Code:	14224
Country Code:	001
Phone:	(716) 675-2550
EMail:	Not reported
Fax Number:	Not reported
Modified By:	LDGOMEZ
Date Last Modified:	2007-10-18

TOWNE LINCOLN-MERCURY (Continued) **U004081117**

Site Id:	55102
Affiliation Type:	Mail Contact
Company Name:	TOWNE LINCOLN-MERCURY
Contact Type:	Not reported
Contact Name:	TOM ANTONIADIS
Address1:	3050 ORCHARD PARK RD
Address2:	Not reported
City:	BUFFALO
State:	NY
Zip Code:	14224
Country Code:	001
Phone:	(716) 675-2550
EMail:	TANTONIADIS@TOWNEAUTO.COM
Fax Number:	Not reported
Modified By:	AESKALSK
Date Last Modified:	2005-12-07

Site Id:	55102
Affiliation Type:	Facility Operator
Company Name:	TOWNE LINCOLN-MERCURY
Contact Type:	Not reported
Contact Name:	TOM ANTONIADIS
Address1:	Not reported
Address2:	Not reported
City:	Not reported
State:	NN
Zip Code:	Not reported
Country Code:	001
Phone:	(716) 675-2550
EMail:	Not reported
Fax Number:	Not reported
Modified By:	LDGOMEZ
Date Last Modified:	2007-10-18

Site Id:	55102
Affiliation Type:	Emergency Contact
Company Name:	FRANK DOWNING
Contact Type:	Not reported
Contact Name:	TOM ANTONIADIS
Address1:	Not reported
Address2:	Not reported
City:	Not reported
State:	NN
Zip Code:	Not reported
Country Code:	999
Phone:	(716) 675-2550
EMail:	Not reported
Fax Number:	Not reported
Modified By:	AESKALSK
Date Last Modified:	2005-12-07

Tank Info:

Tank Number:	WO1
Tank ID:	171892
Tank Status:	Closed - Removed
Material Name:	Closed - Removed

TOWNE LINCOLN-MERCURY (Continued) **U004081117**

Capacity Gallons:	500
Install Date:	05/01/1991
Date Tank Closed:	08/01/1997
Registered:	True
Tank Location:	Underground
Tank Type:	Steel/carbon steel
Material Code:	0022
Common Name of Substance:	Waste Oil/Used Oil
Tightness Test Method:	NN
Date Test:	Not reported
Next Test Date:	Not reported
Pipe Model:	Not reported
Modified By:	TRANSLAT
Last Modified:	04/14/2017

Equipment Records:

C02 - Pipe Location - Underground/On-ground
H00 - Tank Leak Detection - None
I00 - Overfill - None
D02 - Pipe Type - Galvanized Steel
F00 - Pipe External Protection - None
A00 - Tank Internal Protection - None
B01 - Tank External Protection - Painted/Asphalt Coating
G04 - Tank Secondary Containment - Double-Walled (Underground)

G37 **CVS PHARMACY #0533** **RCRA-LQG 1014927016**
WNW **3031 ORCHARD PARK RD** **NY MANIFEST NYR000188060**
< 1/8 **ORCHARD PARK, NY 14127**
0.123 mi.
648 ft. **Site 5 of 5 in cluster G**

Relative:
Lower

Actual:
718 ft.

RCRA-LQG:

Date form received by agency:	05/17/2016
Facility name:	CVS PHARMACY #0533
Facility address:	3031 ORCHARD PARK RD ORCHARD PARK, NY 14127
EPA ID:	NYR000188060
Mailing address:	CVS DR MAIL DROP 23062A WOONSOCKET, RI 02895
Contact:	NICOLE WILKINSON
Contact address:	CVS DR MAIL CODE 2340 WOONSOCKET, RI 02895
Contact country:	US
Contact telephone:	401-770-7132
Contact email:	NICOLE.WILKINSON@CVSHEALTH.COM
EPA Region:	02
Classification:	Large Quantity Generator
Description:	Handler: generates 1,000 kg or more of hazardous waste during any calendar month; or generates more than 1 kg of acutely hazardous waste during any calendar month; or generates more than 100 kg of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month; or generates 1 kg or less of acutely hazardous waste during any calendar month, and accumulates more than 1 kg of acutely hazardous waste at any time; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting

CVS PHARMACY #0533 (Continued) **1014927016**

from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates more than 100 kg of that material at any time

Owner/Operator Summary:

Owner/operator name:	ORCHARD PARK ASSOC
Owner/operator address:	MAIN ST STE 628 BUFFALO, NY 14203
Owner/operator country:	US
Owner/operator telephone:	716-819-3300
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	12/01/1972
Owner/Op end date:	Not reported

Owner/operator name:	CVS ALBANY L.L.C.
Owner/operator address:	CVS DR WOONSOCKET, RI 02895
Owner/operator country:	US
Owner/operator telephone:	Not reported
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	12/01/1972
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

. Waste code:	P001
. Waste name:	2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYLBUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3% (OR) WARFARIN, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3%

. Waste code:	P075
. Waste name:	NICOTINE, & SALTS (OR) PYRIDINE, 3-(1-METHYL-2-PYRROLIDINYL)-,(S)-, & SALTS

CVS PHARMACY #0533 (Continued) **1014927016**

Historical Generators:
Date form received by agency: 09/28/2015
Site name: CVS PHARMACY #0533
Classification: Not a generator, verified

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: P001
. Waste name: 2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYLBUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3% (OR) WARFARIN, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3%

. Waste code: P075
. Waste name: NICOTINE, & SALTS (OR) PYRIDINE, 3-(1-METHYL-2-PYRROLIDINYL)-,(S)-, & SALTS

. Waste code: P081
. Waste name: 1,2,3-PROPANETRIOL, TRINITRATE (R) (OR) NITROGLYCERINE (R)

. Waste code: P188
. Waste name: BENZOIC ACID, 2-HYDROXY-, COMPD. WITH (3AS-CIS)-1,2,3,3A,8,8A-HEXAHYDRO-1,3A,8-TRIMETHYLPYRROLO[2,3-B]INDOL-5-YL METHYLCARBAMATE ESTER (1:1) (OR) PHYSOSTIGMINE SALICYLATE

Date form received by agency: 03/14/2014
Site name: CVS PHARMACY #0533
Classification: Large Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: P001
. Waste name: 2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYLBUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3% (OR) WARFARIN, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3%

. Waste code: P075
. Waste name: NICOTINE, & SALTS (OR) PYRIDINE, 3-(1-METHYL-2-PYRROLIDINYL)-,(S)-, & SALTS

. Waste code: P081
. Waste name: 1,2,3-PROPANETRIOL, TRINITRATE (R) (OR) NITROGLYCERINE (R)

. Waste code: P188
. Waste name: BENZOIC ACID, 2-HYDROXY-, COMPD. WITH (3AS-CIS)-1,2,3,3A,8,8A-HEXAHYDRO-1,3A,8-TRIMETHYLPYRROLO[2,3-B]INDOL-5-YL METHYLCARBAMATE ESTER (1:1) (OR) PHYSOSTIGMINE SALICYLATE

Date form received by agency: 03/06/2012
Site name: CVS PHARMACY #0533
Classification: Large Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002

CVS PHARMACY #0533 (Continued) **1014927016**

. Waste name: CORROSIVE WASTE

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D009
. Waste name: MERCURY

. Waste code: D010
. Waste name: SELENIUM

. Waste code: D011
. Waste name: SILVER

. Waste code: P001
. Waste name: 2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYLBUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3% (OR) WARFARIN, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3%

. Waste code: P075
. Waste name: NICOTINE, & SALTS (OR) PYRIDINE, 3-(1-METHYL-2-PYRROLIDINYL)-,(S)-, & SALTS

Date form received by agency: 11/29/2011
Site name: CVS PHARMACY #0533
Classification: Large Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D011
. Waste name: SILVER

. Waste code: P001
. Waste name: 2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYLBUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3% (OR) WARFARIN, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3%

. Waste code: P042
. Waste name: 1,2-BENZENEDIOL, 4-[1-HYDROXY-2-(METHYLAMINO)ETHYL]-, (R)- (OR) EPINEPHRINE

. Waste code: P075
. Waste name: NICOTINE, & SALTS (OR) PYRIDINE, 3-(1-METHYL-2-PYRROLIDINYL)-,(S)-, & SALTS

. Waste code: P081
. Waste name: 1,2,3-PROPANETRIOL, TRINITRATE (R) (OR) NITROGLYCERINE (R)

Biennial Reports:

CVS PHARMACY #0533 (Continued) **1014927016**

Last Biennial Reporting Year: 2017

Annual Waste Handled:

Waste code:	P001
Waste name:	2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYLBUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3%
Amount (Lbs):	10
Waste code:	P075
Waste name:	NICOTINE, & SALTS
Amount (Lbs):	10

Violation Status: No violations found

NY MANIFEST:

Country:	USA
EPA ID:	NYR000188060
Facility Status:	Not reported
Location Address 1:	3031 ORCHARD PARK ROAD
Code:	BP
Location Address 2:	Not reported
Total Tanks:	Not reported
Location City:	ORCHARD PARK
Location State:	NY
Location Zip:	14127
Location Zip 4:	Not reported

NY MANIFEST:

EPAID:	NYR000188060
Mailing Name:	CVS #0533
Mailing Contact:	CVS #533
Mailing Address 1:	3031 ORCHARD PARK ROAD
Mailing Address 2:	Not reported
Mailing City:	ORCHARD PARK
Mailing State:	NY
Mailing Zip:	14127
Mailing Zip 4:	Not reported
Mailing Country:	USA
Mailing Phone:	Not reported

NY MANIFEST:

Document ID:	Not reported
Manifest Status:	Not reported
seq:	Not reported
Year:	2015
Trans1 State ID:	MNS000110924
Trans2 State ID:	MID021087275
Generator Ship Date:	09/02/2015
Trans1 Recv Date:	09/02/2015
Trans2 Recv Date:	09/14/2015
TSD Site Recv Date:	09/15/2015
Part A Recv Date:	Not reported
Part B Recv Date:	Not reported
Generator EPA ID:	NYR000188060
Trans1 EPA ID:	Not reported
Trans2 EPA ID:	Not reported
TSDF ID 1:	INR000110197

CVS PHARMACY #0533 (Continued) **1014927016**

TSDF ID 2:	Not reported
Manifest Tracking Number:	007348155FLE
Import Indicator:	N
Export Indicator:	N
Discr Quantity Indicator:	N
Discr Type Indicator:	N
Discr Residue Indicator:	N
Discr Partial Reject Indicator:	N
Discr Full Reject Indicator:	N
Manifest Ref Number:	Not reported
Alt Facility RCRA ID:	Not reported
Alt Facility Sign Date:	Not reported
MGMT Method Type Code:	H141
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Quantity:	0.04
Units:	P - Pounds
Number of Containers:	1
Container Type:	BA - Burlap, plastic, paper bags
Handling Method:	B Incineration, heat recovery, burning.
Specific Gravity:	1
Waste Code:	Not reported
Waste Code 1_2:	P001
Waste Code 1_3:	Not reported
Waste Code 1_4:	Not reported
Waste Code 1_5:	Not reported
Waste Code 1_6:	Not reported

Click this hyperlink while viewing on your computer to access
78 additional NY_MANIFEST: record(s) in the EDR Site Report.

38
West
1/8-1/4
0.163 mi.
862 ft.

BALLY MATRIX FITNESS
55 WEISS RD
ORCHARD PARK, NY 14224

NY CBS **S102640344**
NY CBS AST **N/A**

Relative:
Lower

Actual:
721 ft.

CBS:

CBS Number:	9-000352
Program Type:	CBS
Facility Status:	Unregulated/Closed
Expiration Date:	Not reported
Dec Region:	9
UTMX:	192876.88016
UTMY:	4745687.88486

CBS AST:

CBS Number:	9-000352
ICS Number:	Not reported
PBS Number:	Not reported
MOSF Number:	Not reported
SPDES Number:	Not reported

BALLY MATRIX FITNESS (Continued) **S102640344**

Facility Status:	IN SERVICE
Facility Type:	I
Telephone:	(716) 691-4292
Facility Town:	WEST SENECA
Region:	STATE
Expiration Date:	06/15/2000
Total Capacity of All Active Tanks(gal):	0
Operator:	SCOTT CASE
Emergency Contact:	SCOTT CASE
Emergency Phone:	(716) 433-1064
Owner Name:	BALLY'S HEALTH & TENNIS CORP.
Owner Address:	8700 WEST BRYN MAWR AVE
Owner City,St,Zip:	CHICAGO, IL 60631
Owner Telephone:	(312) 380-3000
Owner Type:	Corporate/Commercial
Owner Sub Type:	Not reported
Mail Name:	BALLY'S HEALTH & TENNIS CORP.
Mail Contact Addr:	8700 WEST BRYN MAWR AVE
Mail Contact Addr2:	Not reported
Mail Contact Contact:	SCOTT CASE
Mail Contact City,St,Zip:	CHICAGO, IL 60631
Mail Phone:	(312) 380-3000

Tank Id:	001
CAS Number:	7681529
Federal ID:	Not reported
Tank Status:	0
Install Date:	00/00
Tank Closed:	00/00
Capacity (Gal):	200
Chemical:	Sodium hypochlorite
Tank Location:	Indoors, Aboveground
Tank Type:	Fiberglass coated steel
Total Tanks:	0
Tank Secret:	False
Tank Secondary Containment:	None
Tank Error Status:	No Missing Data
Date Entered:	06/13/1994
Certified Date:	03/31/1998
Substance:	More than one Hazardous Substance on DEC List
Internal Protection:	None
External Protection:	None
Pipe Location:	Aboveground
Pipe Type:	Double Walled Fiberglass
Pipe Internal:	None
Pipe External:	None
Pipe Flag:	None
Leak Detection:	None
Overfill Protection:	Product Level Gauge
Haz Percent:	13
Last Test:	Not reported
Due Date:	Not reported
SWIS Code:	1468
Lat/Long:	Not reported
Is Updated:	False
Renew Date:	Not reported
Is It There:	False

BALLY MATRIX FITNESS (Continued) **S102640344**

Delinquent:	False
Date Expired:	Not reported
Owner Mark:	1
Certificate Needs to be Printed:	False
Fiscal Amt for Registration Fee Correct:	True
Renewal Has Been Printed for Facility:	True
Pre-Printed Renewal App Last Printed:	03/01/2000

H39 **3021 ORCHARD PARK ROAD SITE** **NY ENG CONTROLS** **S117269713**
WNW **3021 ORCHARD PARK ROAD** **NY INST CONTROL** **N/A**
1/8-1/4 **ORCHARD PARK, NY 14127** **NY BROWNFIELDS**
0.170 mi.
898 ft. **Site 1 of 2 in cluster H**

Relative:
Lower

Actual:
717 ft.

ENG CONTROLS:

Nearby

Site Code:	497747
HW Code:	C915289
Control Code:	15
Control Type:	ENG
Date Record Added:	11/19/2015
Date Rec Updated:	05/04/2017
Updated By:	dplocey
Site Description:	Location: The site is located in a moderately developed, mixed-use commercial and residential area of the Town of Orchard Park, Erie County, New York. The site is bordered by Orchard Park and Michael Roads on the west and north respectively, and commercial properties and Union Road to the south and east. Site Features: The site occupies 4.19 acres of a 5.06 acre tax parcel. The 0.87-acre portion of the parcel excluded from the site consists of the northwest corner (approximately 0.45 acres) which is covered with asphalt pavement and grass-covered landscaped areas along the perimeter of the parcel. A single story, multiple-tenant, commercial building occupies the eastern half of the site. The building and an asphalt parking lot cover the entire site. Current Zoning and Land Use: The site is zoned Business 2, for commercial use; a convenience store and credit union office currently occupy the north and south ends of the building, respectively. These two units will remain occupied throughout the site remediation and building redevelopment. Only commercial properties are located adjacent to the site. The nearest residential areas are located approximately 300 to 400 feet from the site boundaries, to the west (on Eaglebrook Drive) and northeast (on Union Road). Past Use of the Site: Between 1979 and 2008, the building housed a dry cleaning shop in two of the building units, addressed as 3035 and 3039 Orchard Park Road, near the south end of the building. The dry cleaning operations appear to have led to the site contamination. Other current and former tenants included discount, grocery, pharmacy, paint and antique stores as well as a bank, credit union, hair salon and a photocopy/printing shop. Site Geology and Hydrogeology: The site is generally flat and slopes gently to the north-northeast. Much of the site is covered with asphalt underlain with a poorly graded gravel and sand sub-base. Beneath the asphalt and sub-base, the native soil across the site is generally described as a brown to dark grey sandy clay (till). Bedrock is 11.5 to 17 feet below ground surface (fbgs). The upper 3 to 6.5 feet of bedrock is a very weathered, fissile shale followed by a more competent shale bedrock unit. Shallow groundwater was encountered generally between 1.7 and 7.3 fbgs. The shallow groundwater flow is dominated by the existing storm sewer/underdrain system present beneath the asphalted

3021 ORCHARD PARK ROAD SITE (Continued) **S117269713**

areas across the site. The invert elevations of the underdrain are generally 2 to 2.5 fbgs. The shallow groundwater is intercepted and directed by the underdrain system toward the northeast corner of the site where it exits through a single catch basin (CB-3) and connects to the Orchard Park storm sewer system on Michael Road. A localized (and possibly natural) groundwater mound extends from the southeast corner of the site, beneath the on-site building, toward and intercepted by the western portion of the underdrain system. Subsequent groundwater flow from this mound is west-northwest. In addition, the underdrain system has created a localized groundwater sink in the western portion of the site. Shallow groundwater flow associated with this sink is inward toward the underdrain system. The deeper, bedrock groundwater, flows in a northwesterly direction and is not apparently affected by the underdrain system. The elevation of the deeper groundwater varies from 4.1 to 6.7 fbgs, and the vertical gradient between shallow and deeper groundwater is variable.

Env Problem: Remediation at the site is complete. Prior to remediation, the primary contaminants of concern in soil and groundwater were volatile organic compounds (VOCs), including: trichloroethene (TCE), tetrachloroethene (PCE), trans and cis 1,2 dichloroethene (DCE), vinyl chloride, 2-butanone, acetone, toluene and xylenes. Remedial actions have successfully achieved soil cleanup objectives for restricted residential use. Residual contamination in the soil is being managed under a Site Management Plan. The long term effectiveness of in situ groundwater treatment is being assessed under a site Monitoring Plan. Any buildings constructed on site in the future will be evaluated for the potential of soil vapor intrusion.

Health Problem: The site is generally covered by asphalt, landscaped areas and a building, people will not come into contact with contaminated groundwater or soil unless they dig below these surfaces. 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 its water from a different source that is not affected by this contamination. Volatile organic compounds in the groundwater may move into the soil vapor (air spaces within the soil), which in turn may move into the overlying buildings and affect the indoor air quality. This process similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Sampling indicated that soil vapor intrusion is not a concern for the existing on-site building. In addition, sampling indicated that vapor intrusion was not a concern for adjacent off-site buildings.

Dump: False
Structure: False
Lagoon: False
Landfill: False
Pond: False
Disp Start: Not reported
Disp Term: Not reported
Lat/Long: Not reported
Dell: Not reported
Record Add: 7/22/2014 3:35:00 PM
Record Upd: 11/17/2015 2:01:00 PM
Updated By: dplocey
Own Op: Document Repository
Sub Type: NNN

3021 ORCHARD PARK ROAD SITE (Continued) **S117269713**

Owner Name:	Peggy Errington
Owner Company:	Buffalo & Erie County Public Library
Owner Address:	Orchard Park Branch
Owner Addr2:	4570 S Buffalo Street
Owner City,St,Zip:	Orchard Park, NY 14127
Owner Country:	United States of America
Own Op:	Owner
Sub Type:	06
Owner Name:	Paul Hogan, Jr.
Owner Company:	3021-3041 Orchard Park Road LLC
Owner Address:	162 Colgate Avenue
Owner Addr2:	Not reported
Owner City,St,Zip:	Buffalo, NY 14220-2116
Owner Country:	United States of America
Own Op:	Applicant/Requestor
Sub Type:	P03
Owner Name:	Paul Hogan, Jr.
Owner Company:	3021-3041 Orchard Park Road LLC
Owner Address:	162 Colgate Avenue
Owner Addr2:	Not reported
Owner City,St,Zip:	Buffalo, NY 14220-2116
Owner Country:	United States of America
Own Op:	Applicant/Requestor
Sub Type:	P03
Owner Name:	Christopher Jerzewski
Owner Company:	Comprehensive Cancer Services Oncology, P.C.
Owner Address:	45 Spindrift Drive, Suite 102
Owner Addr2:	Not reported
Owner City,St,Zip:	Williamsville, NY 14221
Owner Country:	United States of America
HW Code:	C915289
Waste Type:	trichloroethene (TCE)
Waste Quantity:	UNKNOWN
Waste Code:	Not reported
HW Code:	C915289
Waste Type:	trans-1,2-dichloroethene
Waste Quantity:	UNKNOWN
Waste Code:	Not reported
HW Code:	C915289
Waste Type:	xylene (mixed)
Waste Quantity:	UNKNOWN
Waste Code:	Not reported
HW Code:	C915289
Waste Type:	MEK
Waste Quantity:	UNKNOWN
Waste Code:	Not reported
HW Code:	C915289
Waste Type:	toluene
Waste Quantity:	UNKNOWN
Waste Code:	Not reported
HW Code:	C915289
Waste Type:	methyl ethyl ketone
Waste Quantity:	UNKNOWN
Waste Code:	Not reported
HW Code:	C915289
Waste Type:	cis-1,2-dichloroethene
Waste Quantity:	UNKNOWN

3021 ORCHARD PARK ROAD SITE (Continued) **S117269713**

Waste Code: Not reported
HW Code: C915289
Waste Type: tetrachloroethene (PCE)
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: acetone
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: arsenic
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: vinyl chloride
Waste Quantity: UNKNOWN
Waste Code: Not reported
Crossref ID: C915289-10-14
Cross Ref Type Code: 23
Cross Ref Type: Agreement/Consent Order Number
Record Added Date: 11/19/2015 1:11:00 PM
Record Updated: 11/19/2015 1:11:00 PM
Updated By: dplocey
Crossref ID: Bk/pg D 11288/2857
Cross Ref Type Code: 25
Cross Ref Type: County Recording Identifier
Record Added Date: 11/19/2015 1:17:00 PM
Record Updated: 11/19/2015 1:17:00 PM
Updated By: dplocey
Crossref ID: Receipt: 15188382
Cross Ref Type Code: 25
Cross Ref Type: County Recording Identifier
Record Added Date: 11/19/2015 1:07:00 PM
Record Updated: 11/19/2015 1:07:00 PM
Updated By: dplocey
Crossref ID: File: 2015237713
Cross Ref Type Code: 25
Cross Ref Type: County Recording Identifier
Record Added Date: 11/19/2015 1:00:00 PM
Record Updated: 11/19/2015 1:55:00 PM
Updated By: dplocey
Crossref ID: 11-07-2014
Cross Ref Type Code: 26
Cross Ref Type: Agreement/Consent Order Date
Record Added Date: 11/17/2015 2:23:00 PM
Record Updated: 11/19/2015 1:55:00 PM
Updated By: dplocey

INST CONTROL:
Site Code: 497747
Control Name: Soil Management Plan
HW Code: C915289
Control Code: 14
Control Type: INST
Dt record added: 11/19/2015
Dt rec updated: 05/04/2017
Updated By: dplocey

3021 ORCHARD PARK ROAD SITE (Continued) **S117269713**

Site Code: 497747

Site Description: Location: The site is located in a moderately developed, mixed-use commercial and residential area of the Town of Orchard Park, Erie County, New York. The site is bordered by Orchard Park and Michael Roads on the west and north respectively, and commercial properties and Union Road to the south and east. Site Features: The site occupies 4.19 acres of a 5.06 acre tax parcel. The 0.87-acre portion of the parcel excluded from the site consists of the northwest corner (approximately 0.45 acres) which is covered with asphalt pavement and grass-covered landscaped areas along the perimeter of the parcel. A single story, multiple-tenant, commercial building occupies the eastern half of the site. The building and an asphalt parking lot cover the entire site. Current Zoning and Land Use: The site is zoned Business 2, for commercial use; a convenience store and credit union office currently occupy the north and south ends of the building, respectively. These two units will remain occupied throughout the site remediation and building redevelopment. Only commercial properties are located adjacent to the site. The nearest residential areas are located approximately 300 to 400 feet from the site boundaries, to the west (on Eaglebrook Drive) and northeast (on Union Road). Past Use of the Site: Between 1979 and 2008, the building housed a dry cleaning shop in two of the building units, addressed as 3035 and 3039 Orchard Park Road, near the south end of the building. The dry cleaning operations appear to have led to the site contamination. Other current and former tenants included discount, grocery, pharmacy, paint and antique stores as well as a bank, credit union, hair salon and a photocopy/printing shop. Site Geology and Hydrogeology: The site is generally flat and slopes gently to the north-northeast. Much of the site is covered with asphalt underlain with a poorly graded gravel and sand sub-base. Beneath the asphalt and sub-base, the native soil across the site is generally described as a brown to dark grey sandy clay (till). Bedrock is 11.5 to 17 feet below ground surface (fbgs). The upper 3 to 6.5 feet of bedrock is a very weathered, fissile shale followed by a more competent shale bedrock unit. Shallow groundwater was encountered generally between 1.7 and 7.3 fbgs. The shallow groundwater flow is dominated by the existing storm sewer/underdrain system present beneath the asphalted areas across the site. The invert elevations of the underdrain are generally 2 to 2.5 fbgs. The shallow groundwater is intercepted and directed by the underdrain system toward the northeast corner of the site where it exits through a single catch basin (CB-3) and connects to the Orchard Park storm sewer system on Michael Road. A localized (and possibly natural) groundwater mound extends from the southeast corner of the site, beneath the on-site building, toward and intercepted by the western portion of the underdrain system. Subsequent groundwater flow from this mound is west-northwest. In addition, the underdrain system has created a localized groundwater sink in the western portion of the site. Shallow groundwater flow associated with this sink is inward toward the underdrain system. The deeper, bedrock groundwater, flows in a northwesterly direction and is not apparently affected by the underdrain system. The elevation of the deeper groundwater varies from 4.1 to 6.7 fbgs, and the vertical gradient between shallow and deeper groundwater is variable.

Env Problem: Remediation at the site is complete. Prior to remediation, the primary contaminants of concern in soil and groundwater were volatile organic compounds (VOCs), including: trichloroethene (TCE), tetrachloroethene (PCE), trans and cis 1,2 dichloroethene (DCE),

3021 ORCHARD PARK ROAD SITE (Continued) **S117269713**

vinyl chloride, 2-butanone, acetone, toluene and xylenes. Remedial actions have successfully achieved soil cleanup objectives for restricted residential use. Residual contamination in the soil is being managed under a Site Management Plan. The long term effectiveness of in situ groundwater treatment is being assessed under a site Monitoring Plan. Any buildings constructed on site in the future will be evaluated for the potential of soil vapor intrusion.

Health Problem: The site is generally covered by asphalt, landscaped areas and a building, people will not come into contact with contaminated groundwater or soil unless they dig below these surfaces. 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 its water from a different source that is not affected by this contamination. Volatile organic compounds in the groundwater may move into the soil vapor (air spaces within the soil), which in turn may move into the overlying buildings and affect the indoor air quality. This process similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Sampling indicated that soil vapor intrusion is not a concern for the existing on-site building. In addition, sampling indicated that vapor intrusion was not a concern for adjacent off-site buildings.

Dump: False
Structure: False
Lagoon: False
Landfill: False
Pond: False
Disp Start: Not reported
Disp Term: Not reported
Lat/Long: Not reported
Dell: Not reported
Record Add: 7/22/2014 3:35:00 PM
Record Upd: 11/17/2015 2:01:00 PM
Updated By: dplocey
Own Op: Document Repository
Sub Type: NNN
Owner Name: Peggy Errington
Owner Company: Buffalo & Erie County Public Library
Owner Address: Orchard Park Branch
Owner Addr2: 4570 S Buffalo Street
Owner City,St,Zip: Orchard Park, NY 14127
Owner Country: United States of America
Own Op: Owner
Sub Type: 06
Owner Name: Paul Hogan, Jr.
Owner Company: 3021-3041 Orchard Park Road LLC
Owner Address: 162 Colgate Avenue
Owner Addr2: Not reported
Owner City,St,Zip: Buffalo, NY 14220-2116
Owner Country: United States of America
Own Op: Applicant/Requestor
Sub Type: P03
Owner Name: Paul Hogan, Jr.
Owner Company: 3021-3041 Orchard Park Road LLC
Owner Address: 162 Colgate Avenue
Owner Addr2: Not reported

3021 ORCHARD PARK ROAD SITE (Continued) **S117269713**

Owner City,St,Zip: Buffalo, NY 14220-2116
Owner Country: United States of America
Own Op: Applicant/Requestor
Sub Type: P03
Owner Name: Christopher Jerzewski
Owner Company: Comprehensive Cancer Services Oncology, P.C.
Owner Address: 45 Spindrift Drive, Suite 102
Owner Addr2: Not reported
Owner City,St,Zip: Williamsville, NY 14221
Owner Country: United States of America
HW Code: C915289
Waste Type: trichloroethene (TCE)
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: trans-1,2-dichloroethene
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: xylene (mixed)
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: MEK
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: toluene
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: methyl ethyl ketone
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: cis-1,2-dichloroethene
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: tetrachloroethene (PCE)
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: acetone
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: arsenic
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: vinyl chloride
Waste Quantity: UNKNOWN
Waste Code: Not reported
Crossref ID: C915289-10-14
Cross Ref Type Code: 23
Cross Ref Type: Agreement/Consent Order Number

3021 ORCHARD PARK ROAD SITE (Continued) **S117269713**

Record Added Date: 11/19/2015 1:11:00 PM
Record Updated: 11/19/2015 1:11:00 PM
Updated By: dplocey
Crossref ID: Bk/pg D 11288/2857
Cross Ref Type Code: 25
Cross Ref Type: County Recording Identifier
Record Added Date: 11/19/2015 1:17:00 PM
Record Updated: 11/19/2015 1:17:00 PM
Updated By: dplocey
Crossref ID: Receipt: 15188382
Cross Ref Type Code: 25
Cross Ref Type: County Recording Identifier
Record Added Date: 11/19/2015 1:07:00 PM
Record Updated: 11/19/2015 1:07:00 PM
Updated By: dplocey
Crossref ID: File: 2015237713
Cross Ref Type Code: 25
Cross Ref Type: County Recording Identifier
Record Added Date: 11/19/2015 1:00:00 PM
Record Updated: 11/19/2015 1:55:00 PM
Updated By: dplocey
Crossref ID: 11-07-2014
Cross Ref Type Code: 26
Cross Ref Type: Agreement/Consent Order Date
Record Added Date: 11/17/2015 2:23:00 PM
Record Updated: 11/19/2015 1:55:00 PM
Updated By: dplocey

Site Code: 497747
Control Name: Environmental Easement
HW Code: C915289
Control Code: J
Control Type: INST
Dt record added: 11/19/2015
Dt rec updated: 05/04/2017
Updated By: dplocey
Site Code: 497747
Site Description: Location: The site is located in a moderately developed, mixed-use commercial and residential area of the Town of Orchard Park, Erie County, New York. The site is bordered by Orchard Park and Michael Roads on the west and north respectively, and commercial properties and Union Road to the south and east. Site Features: The site occupies 4.19 acres of a 5.06 acre tax parcel. The 0.87-acre portion of the parcel excluded from the site consists of the northwest corner (approximately 0.45 acres) which is covered with asphalt pavement and grass-covered landscaped areas along the perimeter of the parcel. A single story, multiple-tenant, commercial building occupies the eastern half of the site. The building and an asphalt parking lot cover the entire site. Current Zoning and Land Use: The site is zoned Business 2, for commercial use; a convenience store and credit union office currently occupy the north and south ends of the building, respectively. These two units will remain occupied throughout the site remediation and building redevelopment. Only commercial properties are located adjacent to the site. The nearest residential areas are located approximately 300 to 400 feet from the site boundaries, to the west (on Eaglebrook Drive) and northeast (on Union Road). Past Use of the Site: Between 1979 and 2008, the building

3021 ORCHARD PARK ROAD SITE (Continued) **S117269713**

housed a dry cleaning shop in two of the building units, addressed as 3035 and 3039 Orchard Park Road, near the south end of the building. The dry cleaning operations appear to have led to the site contamination. Other current and former tenants included discount, grocery, pharmacy, paint and antique stores as well as a bank, credit union, hair salon and a photocopy/printing shop. Site Geology and Hydrogeology: The site is generally flat and slopes gently to the north-northeast. Much of the site is covered with asphalt underlain with a poorly graded gravel and sand sub-base. Beneath the asphalt and sub-base, the native soil across the site is generally described as a brown to dark grey sandy clay (till). Bedrock is 11.5 to 17 feet below ground surface (fbgs). The upper 3 to 6.5 feet of bedrock is a very weathered, fissile shale followed by a more competent shale bedrock unit. Shallow groundwater was encountered generally between 1.7 and 7.3 fbgs. The shallow groundwater flow is dominated by the existing storm sewer/underdrain system present beneath the asphalted areas across the site. The invert elevations of the underdrain are generally 2 to 2.5 fbgs. The shallow groundwater is intercepted and directed by the underdrain system toward the northeast corner of the site where it exits through a single catch basin (CB-3) and connects to the Orchard Park storm sewer system on Michael Road. A localized (and possibly natural) groundwater mound extends from the southeast corner of the site, beneath the on-site building, toward and intercepted by the western portion of the underdrain system. Subsequent groundwater flow from this mound is west-northwest. In addition, the underdrain system has created a localized groundwater sink in the western portion of the site. Shallow groundwater flow associated with this sink is inward toward the underdrain system. The deeper, bedrock groundwater, flows in a northwesterly direction and is not apparently affected by the underdrain system. The elevation of the deeper groundwater varies from 4.1 to 6.7 fbgs, and the vertical gradient between shallow and deeper groundwater is variable.

Env Problem: Remediation at the site is complete. Prior to remediation, the primary contaminants of concern in soil and groundwater were volatile organic compounds (VOCs), including: trichloroethene (TCE), tetrachloroethene (PCE), trans and cis 1,2 dichloroethene (DCE), vinyl chloride, 2-butanone, acetone, toluene and xylenes. Remedial actions have successfully achieved soil cleanup objectives for restricted residential use. Residual contamination in the soil is being managed under a Site Management Plan. The long term effectiveness of in situ groundwater treatment is being assessed under a site Monitoring Plan. Any buildings constructed on site in the future will be evaluated for the potential of soil vapor intrusion.

Health Problem: The site is generally covered by asphalt, landscaped areas and a building, people will not come into contact with contaminated groundwater or soil unless they dig below these surfaces. 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 its water from a different source that is not affected by this contamination. Volatile organic compounds in the groundwater may move into the soil vapor (air spaces within the soil), which in turn may move into the overlying buildings and affect the indoor air quality. This process similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Sampling indicated that soil vapor intrusion is not a concern for the existing on-site building. In addition, sampling

3021 ORCHARD PARK ROAD SITE (Continued) **S117269713**

indicated that vapor intrusion was not a concern for adjacent off-site buildings.
Dump: False
Structure: False
Lagoon: False
Landfill: False
Pond: False
Disp Start: Not reported
Disp Term: Not reported
Lat/Long: Not reported
Dell: Not reported
Record Add: 7/22/2014 3:35:00 PM
Record Upd: 11/17/2015 2:01:00 PM
Updated By: dplocey
Own Op: Document Repository
Sub Type: NNN
Owner Name: Peggy Errington
Owner Company: Buffalo & Erie County Public Library
Owner Address: Orchard Park Branch
Owner Addr2: 4570 S Buffalo Street
Owner City,St,Zip: Orchard Park, NY 14127
Owner Country: United States of America
Own Op: Owner
Sub Type: 06
Owner Name: Paul Hogan, Jr.
Owner Company: 3021-3041 Orchard Park Road LLC
Owner Address: 162 Colgate Avenue
Owner Addr2: Not reported
Owner City,St,Zip: Buffalo, NY 14220-2116
Owner Country: United States of America
Own Op: Applicant/Requestor
Sub Type: P03
Owner Name: Paul Hogan, Jr.
Owner Company: 3021-3041 Orchard Park Road LLC
Owner Address: 162 Colgate Avenue
Owner Addr2: Not reported
Owner City,St,Zip: Buffalo, NY 14220-2116
Owner Country: United States of America
Own Op: Applicant/Requestor
Sub Type: P03
Owner Name: Christopher Jerzewski
Owner Company: Comprehensive Cancer Services Oncology, P.C.
Owner Address: 45 Spindrift Drive, Suite 102
Owner Addr2: Not reported
Owner City,St,Zip: Williamsville, NY 14221
Owner Country: United States of America
HW Code: C915289
Waste Type: trichloroethene (TCE)
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: trans-1,2-dichloroethene
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: xylene (mixed)
Waste Quantity: UNKNOWN

3021 ORCHARD PARK ROAD SITE (Continued) **S117269713**

Waste Code: Not reported
HW Code: C915289
Waste Type: MEK
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: toluene
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: methyl ethyl ketone
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: cis-1,2-dichloroethene
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: tetrachloroethene (PCE)
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: acetone
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: arsenic
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: vinyl chloride
Waste Quantity: UNKNOWN
Waste Code: Not reported
Crossref ID: C915289-10-14
Cross Ref Type Code: 23
Cross Ref Type: Agreement/Consent Order Number
Record Added Date: 11/19/2015 1:11:00 PM
Record Updated: 11/19/2015 1:11:00 PM
Updated By: dplocey
Crossref ID: Bk/pg D 11288/2857
Cross Ref Type Code: 25
Cross Ref Type: County Recording Identifier
Record Added Date: 11/19/2015 1:17:00 PM
Record Updated: 11/19/2015 1:17:00 PM
Updated By: dplocey
Crossref ID: Receipt: 15188382
Cross Ref Type Code: 25
Cross Ref Type: County Recording Identifier
Record Added Date: 11/19/2015 1:07:00 PM
Record Updated: 11/19/2015 1:07:00 PM
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Crossref ID: File: 2015237713
Cross Ref Type Code: 25
Cross Ref Type: County Recording Identifier
Record Added Date: 11/19/2015 1:00:00 PM
Record Updated: 11/19/2015 1:55:00 PM
Updated By: dplocey

3021 ORCHARD PARK ROAD SITE (Continued) **S117269713**

Crossref ID: 11-07-2014
Cross Ref Type Code: 26
Cross Ref Type: Agreement/Consent Order Date
Record Added Date: 11/17/2015 2:23:00 PM
Record Updated: 11/19/2015 1:55:00 PM
Updated By: dplocey

Site Code: 497747
Control Name: IC/EC Plan
HW Code: C915289
Control Code: 34
Control Type: INST
Dt record added: 11/19/2015
Dt rec updated: 05/04/2017
Updated By: dplocey
Site Code: 497747
Site Description: Location: The site is located in a moderately developed, mixed-use commercial and residential area of the Town of Orchard Park, Erie County, New York. The site is bordered by Orchard Park and Michael Roads on the west and north respectively, and commercial properties and Union Road to the south and east. Site Features: The site occupies 4.19 acres of a 5.06 acre tax parcel. The 0.87-acre portion of the parcel excluded from the site consists of the northwest corner (approximately 0.45 acres) which is covered with asphalt pavement and grass-covered landscaped areas along the perimeter of the parcel. A single story, multiple-tenant, commercial building occupies the eastern half of the site. The building and an asphalt parking lot cover the entire site. Current Zoning and Land Use: The site is zoned Business 2, for commercial use; a convenience store and credit union office currently occupy the north and south ends of the building, respectively. These two units will remain occupied throughout the site remediation and building redevelopment. Only commercial properties are located adjacent to the site. The nearest residential areas are located approximately 300 to 400 feet from the site boundaries, to the west (on Eaglebrook Drive) and northeast (on Union Road). Past Use of the Site: Between 1979 and 2008, the building housed a dry cleaning shop in two of the building units, addressed as 3035 and 3039 Orchard Park Road, near the south end of the building. The dry cleaning operations appear to have led to the site contamination. Other current and former tenants included discount, grocery, pharmacy, paint and antique stores as well as a bank, credit union, hair salon and a photocopy/printing shop. Site Geology and Hydrogeology: The site is generally flat and slopes gently to the north-northeast. Much of the site is covered with asphalt underlain with a poorly graded gravel and sand sub-base. Beneath the asphalt and sub-base, the native soil across the site is generally described as a brown to dark grey sandy clay (till). Bedrock is 11.5 to 17 feet below ground surface (fbgs). The upper 3 to 6.5 feet of bedrock is a very weathered, fissile shale followed by a more competent shale bedrock unit. Shallow groundwater was encountered generally between 1.7 and 7.3 fbgs. The shallow groundwater flow is dominated by the existing storm sewer/underdrain system present beneath the asphalted areas across the site. The invert elevations of the underdrain are generally 2 to 2.5 fbgs. The shallow groundwater is intercepted and directed by the underdrain system toward the northeast corner of the site where it exits through a single catch basin (CB-3) and connects to the Orchard Park storm sewer system on Michael Road. A localized

3021 ORCHARD PARK ROAD SITE (Continued) **S117269713**

(and possibly natural) groundwater mound extends from the southeast corner of the site, beneath the on-site building, toward and intercepted by the western portion of the underdrain system. Subsequent groundwater flow from this mound is west-northwest. In addition, the underdrain system has created a localized groundwater sink in the western portion of the site. Shallow groundwater flow associated with this sink is inward toward the underdrain system. The deeper, bedrock groundwater, flows in a northwesterly direction and is not apparently affected by the underdrain system. The elevation of the deeper groundwater varies from 4.1 to 6.7 fbgs, and the vertical gradient between shallow and deeper groundwater is variable.

Env Problem: Remediation at the site is complete. Prior to remediation, the primary contaminants of concern in soil and groundwater were volatile organic compounds (VOCs), including: trichloroethene (TCE), tetrachloroethene (PCE), trans and cis 1,2 dichloroethene (DCE), vinyl chloride, 2-butanone, acetone, toluene and xylenes. Remedial actions have successfully achieved soil cleanup objectives for restricted residential use. Residual contamination in the soil is being managed under a Site Management Plan. The long term effectiveness of in situ groundwater treatment is being assessed under a site Monitoring Plan. Any buildings constructed on site in the future will be evaluated for the potential of soil vapor intrusion.

Health Problem: The site is generally covered by asphalt, landscaped areas and a building, people will not come into contact with contaminated groundwater or soil unless they dig below these surfaces. 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 its water from a different source that is not affected by this contamination. Volatile organic compounds in the groundwater may move into the soil vapor (air spaces within the soil), which in turn may move into the overlying buildings and affect the indoor air quality. This process similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Sampling indicated that soil vapor intrusion is not a concern for the existing on-site building. In addition, sampling indicated that vapor intrusion was not a concern for adjacent off-site buildings.

Dump: False
Structure: False
Lagoon: False
Landfill: False
Pond: False
Disp Start: Not reported
Disp Term: Not reported
Lat/Long: Not reported
Dell: Not reported
Record Add: 7/22/2014 3:35:00 PM
Record Upd: 11/17/2015 2:01:00 PM
Updated By: dplocey
Own Op: Document Repository
Sub Type: NNN
Owner Name: Peggy Errington
Owner Company: Buffalo & Erie County Public Library
Owner Address: Orchard Park Branch
Owner Addr2: 4570 S Buffalo Street
Owner City,St,Zip: Orchard Park, NY 14127

3021 ORCHARD PARK ROAD SITE (Continued) **S117269713**

Owner Country: United States of America
Own Op: Owner
Sub Type: 06
Owner Name: Paul Hogan, Jr.
Owner Company: 3021-3041 Orchard Park Road LLC
Owner Address: 162 Colgate Avenue
Owner Addr2: Not reported
Owner City,St,Zip: Buffalo, NY 14220-2116
Owner Country: United States of America
Own Op: Applicant/Requestor
Sub Type: P03
Owner Name: Paul Hogan, Jr.
Owner Company: 3021-3041 Orchard Park Road LLC
Owner Address: 162 Colgate Avenue
Owner Addr2: Not reported
Owner City,St,Zip: Buffalo, NY 14220-2116
Owner Country: United States of America
Own Op: Applicant/Requestor
Sub Type: P03
Owner Name: Christopher Jerzewski
Owner Company: Comprehensive Cancer Services Oncology, P.C.
Owner Address: 45 Spindrift Drive, Suite 102
Owner Addr2: Not reported
Owner City,St,Zip: Williamsville, NY 14221
Owner Country: United States of America
HW Code: C915289
Waste Type: trichloroethene (TCE)
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: trans-1,2-dichloroethene
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: xylene (mixed)
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: MEK
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: toluene
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: methyl ethyl ketone
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: cis-1,2-dichloroethene
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: tetrachloroethene (PCE)
Waste Quantity: UNKNOWN
Waste Code: Not reported

3021 ORCHARD PARK ROAD SITE (Continued) **S117269713**

HW Code: C915289
Waste Type: acetone
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: arsenic
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: vinyl chloride
Waste Quantity: UNKNOWN
Waste Code: Not reported
Crossref ID: C915289-10-14
Cross Ref Type Code: 23
Cross Ref Type: Agreement/Consent Order Number
Record Added Date: 11/19/2015 1:11:00 PM
Record Updated: 11/19/2015 1:11:00 PM
Updated By: dplocey
Crossref ID: Bk/pg D 11288/2857
Cross Ref Type Code: 25
Cross Ref Type: County Recording Identifier
Record Added Date: 11/19/2015 1:17:00 PM
Record Updated: 11/19/2015 1:17:00 PM
Updated By: dplocey
Crossref ID: Receipt: 15188382
Cross Ref Type Code: 25
Cross Ref Type: County Recording Identifier
Record Added Date: 11/19/2015 1:07:00 PM
Record Updated: 11/19/2015 1:07:00 PM
Updated By: dplocey
Crossref ID: File: 2015237713
Cross Ref Type Code: 25
Cross Ref Type: County Recording Identifier
Record Added Date: 11/19/2015 1:00:00 PM
Record Updated: 11/19/2015 1:55:00 PM
Updated By: dplocey
Crossref ID: 11-07-2014
Cross Ref Type Code: 26
Cross Ref Type: Agreement/Consent Order Date
Record Added Date: 11/17/2015 2:23:00 PM
Record Updated: 11/19/2015 1:55:00 PM
Updated By: dplocey

Site Code: 497747
Control Name: Site Management Plan
HW Code: C915289
Control Code: 32
Control Type: INST
Dt record added: 11/19/2015
Dt rec updated: 05/04/2017
Updated By: dplocey
Site Code: 497747
Site Description: Location: The site is located in a moderately developed, mixed-use commercial and residential area of the Town of Orchard Park, Erie County, New York. The site is bordered by Orchard Park and Michael Roads on the west and north respectively, and commercial properties and Union Road to the south and east. Site Features: The site

3021 ORCHARD PARK ROAD SITE (Continued) **S117269713**

occupies 4.19 acres of a 5.06 acre tax parcel. The 0.87-acre portion of the parcel excluded from the site consists of the northwest corner (approximately 0.45 acres) which is covered with asphalt pavement and grass-covered landscaped areas along the perimeter of the parcel. A single story, multiple-tenant, commercial building occupies the eastern half of the site. The building and an asphalt parking lot cover the entire site. Current Zoning and Land Use: The site is zoned Business 2, for commercial use; a convenience store and credit union office currently occupy the north and south ends of the building, respectively. These two units will remain occupied throughout the site remediation and building redevelopment. Only commercial properties are located adjacent to the site. The nearest residential areas are located approximately 300 to 400 feet from the site boundaries, to the west (on Eaglebrook Drive) and northeast (on Union Road). Past Use of the Site: Between 1979 and 2008, the building housed a dry cleaning shop in two of the building units, addressed as 3035 and 3039 Orchard Park Road, near the south end of the building. The dry cleaning operations appear to have led to the site contamination. Other current and former tenants included discount, grocery, pharmacy, paint and antique stores as well as a bank, credit union, hair salon and a photocopy/printing shop. Site Geology and Hydrogeology: The site is generally flat and slopes gently to the north-northeast. Much of the site is covered with asphalt underlain with a poorly graded gravel and sand sub-base. Beneath the asphalt and sub-base, the native soil across the site is generally described as a brown to dark grey sandy clay (till). Bedrock is 11.5 to 17 feet below ground surface (fbgs). The upper 3 to 6.5 feet of bedrock is a very weathered, fissile shale followed by a more competent shale bedrock unit. Shallow groundwater was encountered generally between 1.7 and 7.3 fbgs. The shallow groundwater flow is dominated by the existing storm sewer/underdrain system present beneath the asphalted areas across the site. The invert elevations of the underdrain are generally 2 to 2.5 fbgs. The shallow groundwater is intercepted and directed by the underdrain system toward the northeast corner of the site where it exits through a single catch basin (CB-3) and connects to the Orchard Park storm sewer system on Michael Road. A localized (and possibly natural) groundwater mound extends from the southeast corner of the site, beneath the on-site building, toward and intercepted by the western portion of the underdrain system. Subsequent groundwater flow from this mound is west-northwest. In addition, the underdrain system has created a localized groundwater sink in the western portion of the site. Shallow groundwater flow associated with this sink is inward toward the underdrain system. The deeper, bedrock groundwater, flows in a northwesterly direction and is not apparently affected by the underdrain system. The elevation of the deeper groundwater varies from 4.1 to 6.7 fbgs, and the vertical gradient between shallow and deeper groundwater is variable.

Env Problem: Remediation at the site is complete. Prior to remediation, the primary contaminants of concern in soil and groundwater were volatile organic compounds (VOCs), including: trichloroethene (TCE), tetrachloroethene (PCE), trans and cis 1,2 dichloroethene (DCE), vinyl chloride, 2-butanone, acetone, toluene and xylenes. Remedial actions have successfully achieved soil cleanup objectives for restricted residential use. Residual contamination in the soil is being managed under a Site Management Plan. The long term effectiveness of in situ groundwater treatment is being assessed under a site Monitoring Plan. Any buildings constructed on site in

3021 ORCHARD PARK ROAD SITE (Continued) **S117269713**

	the future will be evaluated for the potential of soil vapor intrusion.
Health Problem:	The site is generally covered by asphalt, landscaped areas and a building, people will not come into contact with contaminated groundwater or soil unless they dig below these surfaces. 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 its water from a different source that is not affected by this contamination. Volatile organic compounds in the groundwater may move into the soil vapor (air spaces within the soil), which in turn may move into the overlying buildings and affect the indoor air quality. This process similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Sampling indicated that soil vapor intrusion is not a concern for the existing on-site building. In addition, sampling indicated that vapor intrusion was not a concern for adjacent off-site buildings.
Dump:	False
Structure:	False
Lagoon:	False
Landfill:	False
Pond:	False
Disp Start:	Not reported
Disp Term:	Not reported
Lat/Long:	Not reported
Dell:	Not reported
Record Add:	7/22/2014 3:35:00 PM
Record Upd:	11/17/2015 2:01:00 PM
Updated By:	dplocey
Own Op:	Document Repository
Sub Type:	NNN
Owner Name:	Peggy Errington
Owner Company:	Buffalo & Erie County Public Library
Owner Address:	Orchard Park Branch
Owner Addr2:	4570 S Buffalo Street
Owner City,St,Zip:	Orchard Park, NY 14127
Owner Country:	United States of America
Own Op:	Owner
Sub Type:	06
Owner Name:	Paul Hogan, Jr.
Owner Company:	3021-3041 Orchard Park Road LLC
Owner Address:	162 Colgate Avenue
Owner Addr2:	Not reported
Owner City,St,Zip:	Buffalo, NY 14220-2116
Owner Country:	United States of America
Own Op:	Applicant/Requestor
Sub Type:	P03
Owner Name:	Paul Hogan, Jr.
Owner Company:	3021-3041 Orchard Park Road LLC
Owner Address:	162 Colgate Avenue
Owner Addr2:	Not reported
Owner City,St,Zip:	Buffalo, NY 14220-2116
Owner Country:	United States of America
Own Op:	Applicant/Requestor
Sub Type:	P03
Owner Name:	Christopher Jerzewski
Owner Company:	Comprehensive Cancer Services Oncology, P.C.

3021 ORCHARD PARK ROAD SITE (Continued) **S117269713**

Owner Address: 45 Spindrift Drive, Suite 102
Owner Addr2: Not reported
Owner City,St,Zip: Williamsville, NY 14221
Owner Country: United States of America
HW Code: C915289
Waste Type: trichloroethene (TCE)
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: trans-1,2-dichloroethene
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: xylene (mixed)
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: MEK
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: toluene
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: methyl ethyl ketone
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: cis-1,2-dichloroethene
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: tetrachloroethene (PCE)
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: acetone
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: arsenic
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: vinyl chloride
Waste Quantity: UNKNOWN
Waste Code: Not reported
Crossref ID: C915289-10-14
Cross Ref Type Code: 23
Cross Ref Type: Agreement/Consent Order Number
Record Added Date: 11/19/2015 1:11:00 PM
Record Updated: 11/19/2015 1:11:00 PM
Updated By: dplocey
Crossref ID: Bk/pg D 11288/2857
Cross Ref Type Code: 25
Cross Ref Type: County Recording Identifier

3021 ORCHARD PARK ROAD SITE (Continued) **S117269713**

Record Added Date: 11/19/2015 1:17:00 PM
Record Updated: 11/19/2015 1:17:00 PM
Updated By: dplocey
Crossref ID: Receipt: 15188382
Cross Ref Type Code: 25
Cross Ref Type: County Recording Identifier
Record Added Date: 11/19/2015 1:07:00 PM
Record Updated: 11/19/2015 1:07:00 PM
Updated By: dplocey
Crossref ID: File: 2015237713
Cross Ref Type Code: 25
Cross Ref Type: County Recording Identifier
Record Added Date: 11/19/2015 1:00:00 PM
Record Updated: 11/19/2015 1:55:00 PM
Updated By: dplocey
Crossref ID: 11-07-2014
Cross Ref Type Code: 26
Cross Ref Type: Agreement/Consent Order Date
Record Added Date: 11/17/2015 2:23:00 PM
Record Updated: 11/19/2015 1:55:00 PM
Updated By: dplocey

Site Code: 497747
Control Name: Ground Water Use Restriction
HW Code: C915289
Control Code: 08
Control Type: INST
Dt record added: 11/19/2015
Dt rec updated: 05/04/2017
Updated By: dplocey
Site Code: 497747
Site Description: Location: The site is located in a moderately developed, mixed-use commercial and residential area of the Town of Orchard Park, Erie County, New York. The site is bordered by Orchard Park and Michael Roads on the west and north respectively, and commercial properties and Union Road to the south and east. Site Features: The site occupies 4.19 acres of a 5.06 acre tax parcel. The 0.87-acre portion of the parcel excluded from the site consists of the northwest corner (approximately 0.45 acres) which is covered with asphalt pavement and grass-covered landscaped areas along the perimeter of the parcel. A single story, multiple-tenant, commercial building occupies the eastern half of the site. The building and an asphalt parking lot cover the entire site. Current Zoning and Land Use: The site is zoned Business 2, for commercial use; a convenience store and credit union office currently occupy the north and south ends of the building, respectively. These two units will remain occupied throughout the site remediation and building redevelopment. Only commercial properties are located adjacent to the site. The nearest residential areas are located approximately 300 to 400 feet from the site boundaries, to the west (on Eaglebrook Drive) and northeast (on Union Road). Past Use of the Site: Between 1979 and 2008, the building housed a dry cleaning shop in two of the building units, addressed as 3035 and 3039 Orchard Park Road, near the south end of the building. The dry cleaning operations appear to have led to the site contamination. Other current and former tenants included discount, grocery, pharmacy, paint and antique stores as well as a bank, credit union, hair salon and a photocopy/printing shop. Site Geology and

3021 ORCHARD PARK ROAD SITE (Continued) **S117269713**

Hydrogeology: The site is generally flat and slopes gently to the north-northeast. Much of the site is covered with asphalt underlain with a poorly graded gravel and sand sub-base. Beneath the asphalt and sub-base, the native soil across the site is generally described as a brown to dark grey sandy clay (till). Bedrock is 11.5 to 17 feet below ground surface (fbgs). The upper 3 to 6.5 feet of bedrock is a very weathered, fissile shale followed by a more competent shale bedrock unit. Shallow groundwater was encountered generally between 1.7 and 7.3 fbgs. The shallow groundwater flow is dominated by the existing storm sewer/underdrain system present beneath the asphalted areas across the site. The invert elevations of the underdrain are generally 2 to 2.5 fbgs. The shallow groundwater is intercepted and directed by the underdrain system toward the northeast corner of the site where it exits through a single catch basin (CB-3) and connects to the Orchard Park storm sewer system on Michael Road. A localized (and possibly natural) groundwater mound extends from the southeast corner of the site, beneath the on-site building, toward and intercepted by the western portion of the underdrain system. Subsequent groundwater flow from this mound is west-northwest. In addition, the underdrain system has created a localized groundwater sink in the western portion of the site. Shallow groundwater flow associated with this sink is inward toward the underdrain system. The deeper, bedrock groundwater, flows in a northwesterly direction and is not apparently affected by the underdrain system. The elevation of the deeper groundwater varies from 4.1 to 6.7 fbgs, and the vertical gradient between shallow and deeper groundwater is variable.

Env Problem: Remediation at the site is complete. Prior to remediation, the primary contaminants of concern in soil and groundwater were volatile organic compounds (VOCs), including: trichloroethene (TCE), tetrachloroethene (PCE), trans and cis 1,2 dichloroethene (DCE), vinyl chloride, 2-butanone, acetone, toluene and xylenes. Remedial actions have successfully achieved soil cleanup objectives for restricted residential use. Residual contamination in the soil is being managed under a Site Management Plan. The long term effectiveness of in situ groundwater treatment is being assessed under a site Monitoring Plan. Any buildings constructed on site in the future will be evaluated for the potential of soil vapor intrusion.

Health Problem: The site is generally covered by asphalt, landscaped areas and a building, people will not come into contact with contaminated groundwater or soil unless they dig below these surfaces. 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 its water from a different source that is not affected by this contamination. Volatile organic compounds in the groundwater may move into the soil vapor (air spaces within the soil), which in turn may move into the overlying buildings and affect the indoor air quality. This process similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Sampling indicated that soil vapor intrusion is not a concern for the existing on-site building. In addition, sampling indicated that vapor intrusion was not a concern for adjacent off-site buildings.

Dump: False
Structure: False
Lagoon: False
Landfill: False

3021 ORCHARD PARK ROAD SITE (Continued) **S117269713**

Pond: False
Disp Start: Not reported
Disp Term: Not reported
Lat/Long: Not reported
Dell: Not reported
Record Add: 7/22/2014 3:35:00 PM
Record Upd: 11/17/2015 2:01:00 PM
Updated By: dplocey
Own Op: Document Repository
Sub Type: NNN
Owner Name: Peggy Errington
Owner Company: Buffalo & Erie County Public Library
Owner Address: Orchard Park Branch
Owner Addr2: 4570 S Buffalo Street
Owner City,St,Zip: Orchard Park, NY 14127
Owner Country: United States of America
Own Op: Owner
Sub Type: 06
Owner Name: Paul Hogan, Jr.
Owner Company: 3021-3041 Orchard Park Road LLC
Owner Address: 162 Colgate Avenue
Owner Addr2: Not reported
Owner City,St,Zip: Buffalo, NY 14220-2116
Owner Country: United States of America
Own Op: Applicant/Requestor
Sub Type: P03
Owner Name: Paul Hogan, Jr.
Owner Company: 3021-3041 Orchard Park Road LLC
Owner Address: 162 Colgate Avenue
Owner Addr2: Not reported
Owner City,St,Zip: Buffalo, NY 14220-2116
Owner Country: United States of America
Own Op: Applicant/Requestor
Sub Type: P03
Owner Name: Christopher Jerzewski
Owner Company: Comprehensive Cancer Services Oncology, P.C.
Owner Address: 45 Spindrift Drive, Suite 102
Owner Addr2: Not reported
Owner City,St,Zip: Williamsville, NY 14221
Owner Country: United States of America
HW Code: C915289
Waste Type: trichloroethene (TCE)
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: trans-1,2-dichloroethene
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: xylene (mixed)
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: MEK
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289

3021 ORCHARD PARK ROAD SITE (Continued) **S117269713**

Waste Type: toluene
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: methyl ethyl ketone
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: cis-1,2-dichloroethene
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: tetrachloroethene (PCE)
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: acetone
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: arsenic
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: vinyl chloride
Waste Quantity: UNKNOWN
Waste Code: Not reported
Crossref ID: C915289-10-14
Cross Ref Type Code: 23
Cross Ref Type: Agreement/Consent Order Number
Record Added Date: 11/19/2015 1:11:00 PM
Record Updated: 11/19/2015 1:11:00 PM
Updated By: dplocey
Crossref ID: Bk/pg D 11288/2857
Cross Ref Type Code: 25
Cross Ref Type: County Recording Identifier
Record Added Date: 11/19/2015 1:17:00 PM
Record Updated: 11/19/2015 1:17:00 PM
Updated By: dplocey
Crossref ID: Receipt: 15188382
Cross Ref Type Code: 25
Cross Ref Type: County Recording Identifier
Record Added Date: 11/19/2015 1:07:00 PM
Record Updated: 11/19/2015 1:07:00 PM
Updated By: dplocey
Crossref ID: File: 2015237713
Cross Ref Type Code: 25
Cross Ref Type: County Recording Identifier
Record Added Date: 11/19/2015 1:00:00 PM
Record Updated: 11/19/2015 1:55:00 PM
Updated By: dplocey
Crossref ID: 11-07-2014
Cross Ref Type Code: 26
Cross Ref Type: Agreement/Consent Order Date
Record Added Date: 11/17/2015 2:23:00 PM
Record Updated: 11/19/2015 1:55:00 PM
Updated By: dplocey

3021 ORCHARD PARK ROAD SITE (Continued) **S117269713**

Site Code: 497747
Control Name: Monitoring Plan
HW Code: C915289
Control Code: 31
Control Type: INST
Dt record added: 11/19/2015
Dt rec updated: 05/04/2017
Updated By: dplocey
Site Code: 497747
Site Description: Location: The site is located in a moderately developed, mixed-use commercial and residential area of the Town of Orchard Park, Erie County, New York. The site is bordered by Orchard Park and Michael Roads on the west and north respectively, and commercial properties and Union Road to the south and east. Site Features: The site occupies 4.19 acres of a 5.06 acre tax parcel. The 0.87-acre portion of the parcel excluded from the site consists of the northwest corner (approximately 0.45 acres) which is covered with asphalt pavement and grass-covered landscaped areas along the perimeter of the parcel. A single story, multiple-tenant, commercial building occupies the eastern half of the site. The building and an asphalt parking lot cover the entire site. Current Zoning and Land Use: The site is zoned Business 2, for commercial use; a convenience store and credit union office currently occupy the north and south ends of the building, respectively. These two units will remain occupied throughout the site remediation and building redevelopment. Only commercial properties are located adjacent to the site. The nearest residential areas are located approximately 300 to 400 feet from the site boundaries, to the west (on Eaglebrook Drive) and northeast (on Union Road). Past Use of the Site: Between 1979 and 2008, the building housed a dry cleaning shop in two of the building units, addressed as 3035 and 3039 Orchard Park Road, near the south end of the building. The dry cleaning operations appear to have led to the site contamination. Other current and former tenants included discount, grocery, pharmacy, paint and antique stores as well as a bank, credit union, hair salon and a photocopy/printing shop. Site Geology and Hydrogeology: The site is generally flat and slopes gently to the north-northeast. Much of the site is covered with asphalt underlain with a poorly graded gravel and sand sub-base. Beneath the asphalt and sub-base, the native soil across the site is generally described as a brown to dark grey sandy clay (till). Bedrock is 11.5 to 17 feet below ground surface (fbgs). The upper 3 to 6.5 feet of bedrock is a very weathered, fissile shale followed by a more competent shale bedrock unit. Shallow groundwater was encountered generally between 1.7 and 7.3 fbgs. The shallow groundwater flow is dominated by the existing storm sewer/underdrain system present beneath the asphalted areas across the site. The invert elevations of the underdrain are generally 2 to 2.5 fbgs. The shallow groundwater is intercepted and directed by the underdrain system toward the northeast corner of the site where it exits through a single catch basin (CB-3) and connects to the Orchard Park storm sewer system on Michael Road. A localized (and possibly natural) groundwater mound extends from the southeast corner of the site, beneath the on-site building, toward and intercepted by the western portion of the underdrain system. Subsequent groundwater flow from this mound is west-northwest. In addition, the underdrain system has created a localized groundwater sink in the western portion of the site. Shallow groundwater flow associated with this sink is inward toward the underdrain system. The

3021 ORCHARD PARK ROAD SITE (Continued) **S117269713**

deeper, bedrock groundwater, flows in a northwesterly direction and is not apparently affected by the underdrain system. The elevation of the deeper groundwater varies from 4.1 to 6.7 fbgs, and the vertical gradient between shallow and deeper groundwater is variable.

Env Problem: Remediation at the site is complete. Prior to remediation, the primary contaminants of concern in soil and groundwater were volatile organic compounds (VOCs), including: trichloroethene (TCE), tetrachloroethene (PCE), trans and cis 1,2 dichloroethene (DCE), vinyl chloride, 2-butanone, acetone, toluene and xylenes. Remedial actions have successfully achieved soil cleanup objectives for restricted residential use. Residual contamination in the soil is being managed under a Site Management Plan. The long term effectiveness of in situ groundwater treatment is being assessed under a site Monitoring Plan. Any buildings constructed on site in the future will be evaluated for the potential of soil vapor intrusion.

Health Problem: The site is generally covered by asphalt, landscaped areas and a building, people will not come into contact with contaminated groundwater or soil unless they dig below these surfaces. 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 its water from a different source that is not affected by this contamination. Volatile organic compounds in the groundwater may move into the soil vapor (air spaces within the soil), which in turn may move into the overlying buildings and affect the indoor air quality. This process similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Sampling indicated that soil vapor intrusion is not a concern for the existing on-site building. In addition, sampling indicated that vapor intrusion was not a concern for adjacent off-site buildings.

Dump: False
Structure: False
Lagoon: False
Landfill: False
Pond: False
Disp Start: Not reported
Disp Term: Not reported
Lat/Long: Not reported
Dell: Not reported
Record Add: 7/22/2014 3:35:00 PM
Record Upd: 11/17/2015 2:01:00 PM
Updated By: dplocey
Own Op: Document Repository
Sub Type: NNN
Owner Name: Peggy Errington
Owner Company: Buffalo & Erie County Public Library
Owner Address: Orchard Park Branch
Owner Addr2: 4570 S Buffalo Street
Owner City,St,Zip: Orchard Park, NY 14127
Owner Country: United States of America
Own Op: Owner
Sub Type: 06
Owner Name: Paul Hogan, Jr.
Owner Company: 3021-3041 Orchard Park Road LLC
Owner Address: 162 Colgate Avenue
Owner Addr2: Not reported

3021 ORCHARD PARK ROAD SITE (Continued) **S117269713**

Owner City,St,Zip: Buffalo, NY 14220-2116
Owner Country: United States of America
Own Op: Applicant/Requestor
Sub Type: P03
Owner Name: Paul Hogan, Jr.
Owner Company: 3021-3041 Orchard Park Road LLC
Owner Address: 162 Colgate Avenue
Owner Addr2: Not reported
Owner City,St,Zip: Buffalo, NY 14220-2116
Owner Country: United States of America
Own Op: Applicant/Requestor
Sub Type: P03
Owner Name: Christopher Jerzewski
Owner Company: Comprehensive Cancer Services Oncology, P.C.
Owner Address: 45 Spindrift Drive, Suite 102
Owner Addr2: Not reported
Owner City,St,Zip: Williamsville, NY 14221
Owner Country: United States of America
HW Code: C915289
Waste Type: trichloroethene (TCE)
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: trans-1,2-dichloroethene
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: xylene (mixed)
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: MEK
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: toluene
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: methyl ethyl ketone
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: cis-1,2-dichloroethene
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: tetrachloroethene (PCE)
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: acetone
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: arsenic
Waste Quantity: UNKNOWN

3021 ORCHARD PARK ROAD SITE (Continued) **S117269713**

Waste Code: Not reported
HW Code: C915289
Waste Type: vinyl chloride
Waste Quantity: UNKNOWN
Waste Code: Not reported
Crossref ID: C915289-10-14
Cross Ref Type Code: 23
Cross Ref Type: Agreement/Consent Order Number
Record Added Date: 11/19/2015 1:11:00 PM
Record Updated: 11/19/2015 1:11:00 PM
Updated By: dplocey
Crossref ID: Bk/pg D 11288/2857
Cross Ref Type Code: 25
Cross Ref Type: County Recording Identifier
Record Added Date: 11/19/2015 1:17:00 PM
Record Updated: 11/19/2015 1:17:00 PM
Updated By: dplocey
Crossref ID: Receipt: 15188382
Cross Ref Type Code: 25
Cross Ref Type: County Recording Identifier
Record Added Date: 11/19/2015 1:07:00 PM
Record Updated: 11/19/2015 1:07:00 PM
Updated By: dplocey
Crossref ID: File: 2015237713
Cross Ref Type Code: 25
Cross Ref Type: County Recording Identifier
Record Added Date: 11/19/2015 1:00:00 PM
Record Updated: 11/19/2015 1:55:00 PM
Updated By: dplocey
Crossref ID: 11-07-2014
Cross Ref Type Code: 26
Cross Ref Type: Agreement/Consent Order Date
Record Added Date: 11/17/2015 2:23:00 PM
Record Updated: 11/19/2015 1:55:00 PM
Updated By: dplocey

Site Code: 497747
Control Name: Landuse Restriction
HW Code: C915289
Control Code: 25
Control Type: INST
Dt record added: 11/19/2015
Dt rec updated: 05/04/2017
Updated By: dplocey
Site Code: 497747
Site Description: Location: The site is located in a moderately developed, mixed-use commercial and residential area of the Town of Orchard Park, Erie County, New York. The site is bordered by Orchard Park and Michael Roads on the west and north respectively, and commercial properties and Union Road to the south and east. Site Features: The site occupies 4.19 acres of a 5.06 acre tax parcel. The 0.87-acre portion of the parcel excluded from the site consists of the northwest corner (approximately 0.45 acres) which is covered with asphalt pavement and grass-covered landscaped areas along the perimeter of the parcel. A single story, multiple-tenant, commercial building occupies the eastern half of the site. The building and an asphalt parking lot cover the entire site. Current Zoning and Land Use: The site is zoned

3021 ORCHARD PARK ROAD SITE (Continued) **S117269713**

Business 2, for commercial use; a convenience store and credit union office currently occupy the north and south ends of the building, respectively. These two units will remain occupied throughout the site remediation and building redevelopment. Only commercial properties are located adjacent to the site. The nearest residential areas are located approximately 300 to 400 feet from the site boundaries, to the west (on Eaglebrook Drive) and northeast (on Union Road). Past Use of the Site: Between 1979 and 2008, the building housed a dry cleaning shop in two of the building units, addressed as 3035 and 3039 Orchard Park Road, near the south end of the building. The dry cleaning operations appear to have led to the site contamination. Other current and former tenants included discount, grocery, pharmacy, paint and antique stores as well as a bank, credit union, hair salon and a photocopy/printing shop. Site Geology and Hydrogeology: The site is generally flat and slopes gently to the north-northeast. Much of the site is covered with asphalt underlain with a poorly graded gravel and sand sub-base. Beneath the asphalt and sub-base, the native soil across the site is generally described as a brown to dark grey sandy clay (till). Bedrock is 11.5 to 17 feet below ground surface (fbgs). The upper 3 to 6.5 feet of bedrock is a very weathered, fissile shale followed by a more competent shale bedrock unit. Shallow groundwater was encountered generally between 1.7 and 7.3 fbgs. The shallow groundwater flow is dominated by the existing storm sewer/underdrain system present beneath the asphalted areas across the site. The invert elevations of the underdrain are generally 2 to 2.5 fbgs. The shallow groundwater is intercepted and directed by the underdrain system toward the northeast corner of the site where it exits through a single catch basin (CB-3) and connects to the Orchard Park storm sewer system on Michael Road. A localized (and possibly natural) groundwater mound extends from the southeast corner of the site, beneath the on-site building, toward and intercepted by the western portion of the underdrain system. Subsequent groundwater flow from this mound is west-northwest. In addition, the underdrain system has created a localized groundwater sink in the western portion of the site. Shallow groundwater flow associated with this sink is inward toward the underdrain system. The deeper, bedrock groundwater, flows in a northwesterly direction and is not apparently affected by the underdrain system. The elevation of the deeper groundwater varies from 4.1 to 6.7 fbgs, and the vertical gradient between shallow and deeper groundwater is variable.

Env Problem: Remediation at the site is complete. Prior to remediation, the primary contaminants of concern in soil and groundwater were volatile organic compounds (VOCs), including: trichloroethene (TCE), tetrachloroethene (PCE), trans and cis 1,2 dichloroethene (DCE), vinyl chloride, 2-butanone, acetone, toluene and xylenes. Remedial actions have successfully achieved soil cleanup objectives for restricted residential use. Residual contamination in the soil is being managed under a Site Management Plan. The long term effectiveness of in situ groundwater treatment is being assessed under a site Monitoring Plan. Any buildings constructed on site in the future will be evaluated for the potential of soil vapor intrusion.

Health Problem: The site is generally covered by asphalt, landscaped areas and a building, people will not come into contact with contaminated groundwater or soil unless they dig below these surfaces. Contaminated groundwater at the site is not used for drinking or other purposes and the site is served by a public water supply that

3021 ORCHARD PARK ROAD SITE (Continued) **S117269713**

obtains its water from a different source that is not affected by this contamination. Volatile organic compounds in the groundwater may move into the soil vapor (air spaces within the soil), which in turn may move into the overlying buildings and affect the indoor air quality. This process similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Sampling indicated that soil vapor intrusion is not a concern for the existing on-site building. In addition, sampling indicated that vapor intrusion was not a concern for adjacent off-site buildings.

Dump: False
Structure: False
Lagoon: False
Landfill: False
Pond: False
Disp Start: Not reported
Disp Term: Not reported
Lat/Long: Not reported
Dell: Not reported
Record Add: 7/22/2014 3:35:00 PM
Record Upd: 11/17/2015 2:01:00 PM
Updated By: dplocey
Own Op: Document Repository
Sub Type: NNN
Owner Name: Peggy Errington
Owner Company: Buffalo & Erie County Public Library
Owner Address: Orchard Park Branch
Owner Addr2: 4570 S Buffalo Street
Owner City,St,Zip: Orchard Park, NY 14127
Owner Country: United States of America
Own Op: Owner
Sub Type: 06
Owner Name: Paul Hogan, Jr.
Owner Company: 3021-3041 Orchard Park Road LLC
Owner Address: 162 Colgate Avenue
Owner Addr2: Not reported
Owner City,St,Zip: Buffalo, NY 14220-2116
Owner Country: United States of America
Own Op: Applicant/Requestor
Sub Type: P03
Owner Name: Paul Hogan, Jr.
Owner Company: 3021-3041 Orchard Park Road LLC
Owner Address: 162 Colgate Avenue
Owner Addr2: Not reported
Owner City,St,Zip: Buffalo, NY 14220-2116
Owner Country: United States of America
Own Op: Applicant/Requestor
Sub Type: P03
Owner Name: Christopher Jerzewski
Owner Company: Comprehensive Cancer Services Oncology, P.C.
Owner Address: 45 Spindrift Drive, Suite 102
Owner Addr2: Not reported
Owner City,St,Zip: Williamsville, NY 14221
Owner Country: United States of America
HW Code: C915289
Waste Type: trichloroethene (TCE)
Waste Quantity: UNKNOWN

3021 ORCHARD PARK ROAD SITE (Continued) **S117269713**

Waste Code: Not reported
HW Code: C915289
Waste Type: trans-1,2-dichloroethene
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: xylene (mixed)
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: MEK
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: toluene
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: methyl ethyl ketone
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: cis-1,2-dichloroethene
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: tetrachloroethene (PCE)
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: acetone
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: arsenic
Waste Quantity: UNKNOWN
Waste Code: Not reported
HW Code: C915289
Waste Type: vinyl chloride
Waste Quantity: UNKNOWN
Waste Code: Not reported
Crossref ID: C915289-10-14
Cross Ref Type Code: 23
Cross Ref Type: Agreement/Consent Order Number
Record Added Date: 11/19/2015 1:11:00 PM
Record Updated: 11/19/2015 1:11:00 PM
Updated By: dplocey
Crossref ID: Bk/pg D 11288/2857
Cross Ref Type Code: 25
Cross Ref Type: County Recording Identifier
Record Added Date: 11/19/2015 1:17:00 PM
Record Updated: 11/19/2015 1:17:00 PM
Updated By: dplocey
Crossref ID: Receipt: 15188382
Cross Ref Type Code: 25
Cross Ref Type: County Recording Identifier
Record Added Date: 11/19/2015 1:07:00 PM

3021 ORCHARD PARK ROAD SITE (Continued) **S117269713**

Record Updated: 11/19/2015 1:07:00 PM
Updated By: dplocey
Crossref ID: File: 2015237713
Cross Ref Type Code: 25
Cross Ref Type: County Recording Identifier
Record Added Date: 11/19/2015 1:00:00 PM
Record Updated: 11/19/2015 1:55:00 PM
Updated By: dplocey
Crossref ID: 11-07-2014
Cross Ref Type Code: 26
Cross Ref Type: Agreement/Consent Order Date
Record Added Date: 11/17/2015 2:23:00 PM
Record Updated: 11/19/2015 1:55:00 PM
Updated By: dplocey

BROWNFIELDS:
Program: BCP
Site Code: 497747
Acres: 4.19
HW Code: C915289
SWIS: 1560
Town: Orchard Park
Record Added Date: 07/22/2014
Record Updated Date: 03/17/2017
Update By: CRSTANIS
Site Description: Location: The site is located in a moderately developed, mixed-use commercial and residential area of the Town of Orchard Park, Erie County, New York. The site is bordered by Orchard Park and Michael Roads on the west and north respectively, and commercial properties and Union Road to the south and east. Site Features: The site occupies 4.19 acres of a 5.06 acre tax parcel. The 0.87-acre portion of the parcel excluded from the site consists of the northwest corner (approximately 0.45 acres) which is covered with asphalt pavement and grass-covered landscaped areas along the perimeter of the parcel. A single story, multiple-tenant, commercial building occupies the eastern half of the site. The building and an asphalt parking lot cover the entire site. Current Zoning and Land Use: The site is zoned Business 2, for commercial use; a convenience store and credit union office currently occupy the north and south ends of the building, respectively. These two units will remain occupied throughout the site remediation and building redevelopment. Only commercial properties are located adjacent to the site. The nearest residential areas are located approximately 300 to 400 feet from the site boundaries, to the west (on Eaglebrook Drive) and northeast (on Union Road). Past Use of the Site: Between 1979 and 2008, the building housed a dry cleaning shop in two of the building units, addressed as 3035 and 3039 Orchard Park Road, near the south end of the building. The dry cleaning operations appear to have led to the site contamination. Other current and former tenants included discount, grocery, pharmacy, paint and antique stores as well as a bank, credit union, hair salon and a photocopy/printing shop. Site Geology and Hydrogeology: The site is generally flat and slopes gently to the north-northeast. Much of the site is covered with asphalt underlain with a poorly graded gravel and sand sub-base. Beneath the asphalt and sub-base, the native soil across the site is generally described as a brown to dark grey sandy clay (till). Bedrock is 11.5 to 17 feet below ground surface (fbgs). The upper 3 to 6.5 feet of bedrock is a

3021 ORCHARD PARK ROAD SITE (Continued) **S117269713**

very weathered, fissile shale followed by a more competent shale bedrock unit. Shallow groundwater was encountered generally between 1.7 and 7.3 fbgs. The shallow groundwater flow is dominated by the existing storm sewer/underdrain system present beneath the asphalted areas across the site. The invert elevations of the underdrain are generally 2 to 2.5 fbgs. The shallow groundwater is intercepted and directed by the underdrain system toward the northeast corner of the site where it exits through a single catch basin (CB-3) and connects to the Orchard Park storm sewer system on Michael Road. A localized (and possibly natural) groundwater mound extends from the southeast corner of the site, beneath the on-site building, toward and intercepted by the western portion of the underdrain system. Subsequent groundwater flow from this mound is west-northwest. In addition, the underdrain system has created a localized groundwater sink in the western portion of the site. Shallow groundwater flow associated with this sink is inward toward the underdrain system. The deeper, bedrock groundwater, flows in a northwesterly direction and is not apparently affected by the underdrain system. The elevation of the deeper groundwater varies from 4.1 to 6.7 fbgs, and the vertical gradient between shallow and deeper groundwater is variable.

Env Problem: Remediation at the site is complete. Prior to remediation, the primary contaminants of concern in soil and groundwater were volatile organic compounds (VOCs), including: trichloroethene (TCE), tetrachloroethene (PCE), trans and cis 1,2 dichloroethene (DCE), vinyl chloride, 2-butanone, acetone, toluene and xylenes. Remedial actions have successfully achieved soil cleanup objectives for restricted residential use. Residual contamination in the soil is being managed under a Site Management Plan. The long term effectiveness of in situ groundwater treatment is being assessed under a site Monitoring Plan. Any buildings constructed on site in the future will be evaluated for the potential of soil vapor intrusion.

Health Problem: The site is generally covered by asphalt, landscaped areas and a building, people will not come into contact with contaminated groundwater or soil unless they dig below these surfaces. 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 its water from a different source that is not affected by this contamination. Volatile organic compounds in the groundwater may move into the soil vapor (air spaces within the soil), which in turn may move into the overlying buildings and affect the indoor air quality. This process similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Sampling indicated that soil vapor intrusion is not a concern for the existing on-site building. In addition, sampling indicated that vapor intrusion was not a concern for adjacent off-site buildings.

Dump: False
Structure: False
Lagoon: False
Landfill: False
Pond: False
Disp Start: Not reported
Disp Term: Not reported
Lat/Long: Not reported
Dell: Not reported
Record Add: 7/22/2014 3:35:00 PM
Record Upd: 11/17/2015 2:01:00 PM

3021 ORCHARD PARK ROAD SITE (Continued) **S117269713**

Updated By:	dplocey
Own Op:	Document Repository
Sub Type:	NNN
Owner Name:	Peggy Errington
Owner Company:	Buffalo & Erie County Public Library
Owner Address:	Orchard Park Branch
Owner Addr2:	4570 S Buffalo Street
Owner City,St,Zip:	Orchard Park, NY 14127
Owner Country:	United States of America
Own Op:	Owner
Sub Type:	06
Owner Name:	Paul Hogan, Jr.
Owner Company:	3021-3041 Orchard Park Road LLC
Owner Address:	162 Colgate Avenue
Owner Addr2:	Not reported
Owner City,St,Zip:	Buffalo, NY 14220-2116
Owner Country:	United States of America
Own Op:	Applicant/Requestor
Sub Type:	P03
Owner Name:	Paul Hogan, Jr.
Owner Company:	3021-3041 Orchard Park Road LLC
Owner Address:	162 Colgate Avenue
Owner Addr2:	Not reported
Owner City,St,Zip:	Buffalo, NY 14220-2116
Owner Country:	United States of America
Own Op:	Applicant/Requestor
Sub Type:	P03
Owner Name:	Christopher Jerzewski
Owner Company:	Comprehensive Cancer Services Oncology, P.C.
Owner Address:	45 Spindrift Drive, Suite 102
Owner Addr2:	Not reported
Owner City,St,Zip:	Williamsville, NY 14221
Owner Country:	United States of America
HW Code:	C915289
Waste Type:	trichloroethene (TCE)
Waste Quantity:	UNKNOWN
Waste Code:	Not reported
HW Code:	C915289
Waste Type:	trans-1,2-dichloroethene
Waste Quantity:	UNKNOWN
Waste Code:	Not reported
HW Code:	C915289
Waste Type:	xylene (mixed)
Waste Quantity:	UNKNOWN
Waste Code:	Not reported
HW Code:	C915289
Waste Type:	MEK
Waste Quantity:	UNKNOWN
Waste Code:	Not reported
HW Code:	C915289
Waste Type:	toluene
Waste Quantity:	UNKNOWN
Waste Code:	Not reported
HW Code:	C915289
Waste Type:	methyl ethyl ketone
Waste Quantity:	UNKNOWN
Waste Code:	Not reported

3021 ORCHARD PARK ROAD SITE (Continued) **S117269713**

HW Code:	C915289
Waste Type:	cis-1,2-dichloroethene
Waste Quantity:	UNKNOWN
Waste Code:	Not reported
HW Code:	C915289
Waste Type:	tetrachloroethene (PCE)
Waste Quantity:	UNKNOWN
Waste Code:	Not reported
HW Code:	C915289
Waste Type:	acetone
Waste Quantity:	UNKNOWN
Waste Code:	Not reported
HW Code:	C915289
Waste Type:	arsenic
Waste Quantity:	UNKNOWN
Waste Code:	Not reported
HW Code:	C915289
Waste Type:	vinyl chloride
Waste Quantity:	UNKNOWN
Waste Code:	Not reported
Crossref ID:	C915289-10-14
Cross Ref Type Code:	23
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Updated By:	dplocey
Crossref ID:	Bk/pg D 11288/2857
Cross Ref Type Code:	25
Cross Ref Type:	County Recording Identifier
Record Added Date:	11/19/2015 1:17:00 PM
Record Updated:	11/19/2015 1:17:00 PM
Updated By:	dplocey
Crossref ID:	Receipt: 15188382
Cross Ref Type Code:	25
Cross Ref Type:	County Recording Identifier
Record Added Date:	11/19/2015 1:07:00 PM
Record Updated:	11/19/2015 1:07:00 PM
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Updated By:	dplocey
Crossref ID:	11-07-2014
Cross Ref Type Code:	26
Cross Ref Type:	Agreement/Consent Order Date
Record Added Date:	11/17/2015 2:23:00 PM
Record Updated:	11/19/2015 1:55:00 PM
Updated By:	dplocey

H40
WNW
1/8-1/4
0.170 mi.
898 ft.

FAMILY DOLLAR STORE #7547
3021 ORCHARD PARK RD
ORCHARD PARK, NY 14127

Site 2 of 2 in cluster H

RCRA-CESQG | **1016975068** | **NYR000215285**

Relative:
Lower

Actual:
717 ft.

RCRA-CESQG:

Date form received by agency:	08/25/2015
Facility name:	FAMILY DOLLAR STORE #7547
Facility address:	3021 ORCHARD PARK RD ORCHARD PARK, NY 14127
EPA ID:	NYR000215285
Mailing address:	PO BOX 1017 CHARLOTTE, NC 28201
Contact:	KEVIN STRAIGHT
Contact address:	PO BOX 1017 CHARLOTTE, NC 28201
Contact country:	US
Contact telephone:	704-708-1909
Contact email:	KSTRAIGHT@FAMILYDOLLAR.COM
EPA Region:	02
Classification:	Conditionally Exempt Small Quantity Generator
Description:	Handler: generates 100 kg or less of hazardous waste per calendar month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste

Owner/Operator Summary:

Owner/operator name:	3021-3041 ORCHARD PARK ROAD LLC
Owner/operator address:	ORCHARD PARK RD WEST SENECA, NY 14224
Owner/operator country:	US
Owner/operator telephone:	716-656-2200
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	11/15/2006
Owner/Op end date:	Not reported

Owner/operator name:	FAMILY DOLLAR STORES
Owner/operator address:	Not reported Not reported
Owner/operator country:	US
Owner/operator telephone:	Not reported
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported

FAMILY DOLLAR STORE #7547 (Continued) **1016975068**

Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: 11/15/2006
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D004
. Waste name: ARSENIC

. Waste code: D005
. Waste name: BARIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

. Waste code: D010
. Waste name: SELENIUM

. Waste code: D011
. Waste name: SILVER

. Waste code: D016
. Waste name: 2,4-D (2,4-DICHLOROPHENOXYACETIC ACID)

. Waste code: D024
. Waste name: M-CRESOL

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

FAMILY DOLLAR STORE #7547 (Continued) **1016975068**

. Waste code: U002
. Waste name: 2-PROPANONE (I) (OR) ACETONE (I)

Historical Generators:
Date form received by agency: 11/17/2014
Site name: FAMILY DOLLAR STORE 7547
Classification: Conditionally Exempt Small Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D004
. Waste name: ARSENIC

. Waste code: D005
. Waste name: BARIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

. Waste code: D010
. Waste name: SELENIUM

. Waste code: D011
. Waste name: SILVER

. Waste code: D016
. Waste name: 2,4-D (2,4-DICHLOROPHENOXYACETIC ACID)

. Waste code: D024
. Waste name: M-CRESOL

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: U002
. Waste name: 2-PROPANONE (I) (OR) ACETONE (I)

Violation Status: No violations found

I41 **DELTA SONIC - ORCHARD PARK** **RCRA NonGen / NLR** **1004757205**
SW **3205 ORCHARD PARK RD** **FINDS** **NYD986907921**
1/8-1/4 **ORCHARD PARK, NY 14127** **ECHO**
0.184 mi. **NY MANIFEST**
974 ft. **Site 1 of 4 in cluster I**

Relative:
Lower

Actual:
754 ft.

RCRA NonGen / NLR:
Date form received by agency: 01/01/2007
Facility name: DELTA SONIC - ORCHARD PARK
Facility address: 3205 ORCHARD PARK RD
ORCHARD PARK, NY 14127
EPA ID: NYD986907921

DELTA SONIC - ORCHARD PARK (Continued) **1004757205**

Mailing address:	DELAWARE AVE
	BUFFALO, NY 14202
Contact:	BRUCE NATALIZIA
Contact address:	DELAWARE AVE
	BUFFALO, NY 14202
Contact country:	US
Contact telephone:	716-886-0931
Contact email:	Not reported
EPA Region:	02
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

Owner/operator name:	DELTA SONIC CAR WASH SYSTEMS INC
Owner/operator address:	NOT REQUIRED
	NOT REQUIRED, WY 99999
Owner/operator country:	US
Owner/operator telephone:	212-555-1212
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Owner/operator name:	DELTA SONIC CAR WASH SYSTEMS INC
Owner/operator address:	NOT REQUIRED
	NOT REQUIRED, WY 99999
Owner/operator country:	US
Owner/operator telephone:	212-555-1212
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

DELTA SONIC - ORCHARD PARK (Continued) **1004757205**

Historical Generators:
Date form received by agency: 01/01/2006
Site name: DELTA SONIC - ORCHARD PARK
Classification: Not a generator, verified

Date form received by agency: 07/23/1990
Site name: DELTA SONIC - ORCHARD PARK
Classification: Conditionally Exempt Small Quantity Generator

Violation Status: No violations found

FINDS:

Registry ID: 110004450406

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:
Envid: 1004757205
Registry ID: 110004450406
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110004450406

NY MANIFEST:
Country: USA
EPA ID: NYD986907921
Facility Status: Not reported
Location Address 1: 3205 ORCHARD PARK ROAD
Code: BP
Location Address 2: Not reported
Total Tanks: Not reported
Location City: ORCHARD PARK
Location State: NY
Location Zip: 14127
Location Zip 4: Not reported

NY MANIFEST:
EPAID: NYD986907921
Mailing Name: DELTA SONIC ORCHARD PARK
Mailing Contact: BRUCE NATALIZIA
Mailing Address 1: 570 DELAWARE AVE
Mailing Address 2: Not reported
Mailing City: BUFFALO
Mailing State: NY
Mailing Zip: 14202
Mailing Zip 4: Not reported
Mailing Country: USA
Mailing Phone: 7168860931

DELTA SONIC - ORCHARD PARK (Continued) **1004757205**

NY MANIFEST:

Document ID:	NYB1715202
Manifest Status:	C
seq:	Not reported
Year:	1996
Trans1 State ID:	NYJA4821
Trans2 State ID:	Not reported
Generator Ship Date:	01/29/1996
Trans1 Recv Date:	01/29/1996
Trans2 Recv Date:	/ /
TSD Site Recv Date:	01/30/1996
Part A Recv Date:	03/20/1996
Part B Recv Date:	02/09/1996
Generator EPA ID:	NYD986907921
Trans1 EPA ID:	NYD986941607
Trans2 EPA ID:	Not reported
TSDF ID 1:	NYD095577342
TSDF ID 2:	Not reported
Manifest Tracking Number:	Not reported
Import Indicator:	Not reported
Export Indicator:	Not reported
Discr Quantity Indicator:	Not reported
Discr Type Indicator:	Not reported
Discr Residue Indicator:	Not reported
Discr Partial Reject Indicator:	Not reported
Discr Full Reject Indicator:	Not reported
Manifest Ref Number:	Not reported
Alt Facility RCRA ID:	Not reported
Alt Facility Sign Date:	Not reported
MGMT Method Type Code:	Not reported
Waste Code:	D001 - NON-LISTED IGNITABLE WASTES
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Quantity:	00050
Units:	G - Gallons (liquids only)* (8.3 pounds)
Number of Containers:	001
Container Type:	DM - Metal drums, barrels
Handling Method:	R Material recovery of more than 75 percent of the total material.
Specific Gravity:	100

Click this hyperlink while viewing on your computer to access additional NY_MANIFEST: detail in the EDR Site Report.

I42 **DELTA SONIC ORCHARD PARK** **NY LTANKS** **U003317321**
SW **3205 ORCHARD PARK RD** **NY UST** **N/A**
1/8-1/4 **ORCHARD PARK, NY 14127** **NY Spills**
0.184 mi.
974 ft. **Site 2 of 4 in cluster I**

Relative:
Lower

Actual:
754 ft.

LTANKS:

Facility ID:	0550112
Site ID:	343813
Closed Date:	2005-05-25

Nearby ???

DELTA SONIC ORCHARD PARK (Continued) **U003317321**

Spill Number:	0550112
Spill Date:	2005-04-01
Spill Cause:	Tank Failure
Spill Source:	Gasoline Station or other PBS Facility
Spill Class:	B3
Cleanup Ceased:	Not reported
SWIS:	1560
Investigator:	JFOTTO
Referred To:	Not reported
Reported to Dept:	2005-04-18
CID:	Not reported
Water Affected:	Not reported
Spill Notifier:	Tank Tester
Last Inspection:	Not reported
Recommended Penalty:	False
Meets Standard:	True
UST Involvement:	True
Remediation Phase:	0
Date Entered In Computer:	2005-04-18
Spill Record Last Update:	2005-05-25
Spiller Name:	BRUCE NATALIZIA
Spiller Company:	DELTA SONIC CORP
Spiller Address:	Not reported
Spiller County:	999
Spiller Contact:	BRUCE NATALIZIA
Spiller Phone:	(716) 998-9963
Spiller Extention:	Not reported
DEC Region:	9
DER Facility ID:	290415
DEC Memo:	"04/20/05 JFO TELCON WITH JOHN GRAMZ OF PRIME TIME SRVS. ON MONDAY THEY WILL BE UNCOVERING THE TANK TO MAKE ANY NECESSARY REPAIRS. I WILL VISIT SITE ON MONDAY. 05/03/05 JFO TELCON WITH BRUCE N OF DELTA SONIC. THEY ARE REPLACING THE SUBMERSIBLE AND THE RISER AND WILL RETEST. HE WILL FORWARD THE FAILED TEST REPORT AND THE RETEST WHEN COMPLETED. 05/13/05 JFO CALL TO PRIME TYME SRVS. THEY WILL FAX BOTH TESTS. 05/17/05 JFO REC'D TANK TEST FAILURE FROM PRIME TYME. NEED PASSING TEST. 05/18/05 JFO CALL TO BRUCE N OF DELTA SONIC. HE SENT THE PASSING TANK TEST OUT IN TODAY'S MAIL. 05/25/05 JFO RECEIVED THE RETEST. TANK PASSED. NO FURTHER ACTION NECESSARY. CLOSED"
Remarks:	"Tank failed tightness test. They believe a truck backed over vent line yesterday allowing water to enter the tank."

All TTF:

Facility ID:	0550112
Spill Number:	0550112
Spill Tank Test:	1548820
Site ID:	343813
Tank Number:	8
Tank Size:	4000
Material:	0009
EPA UST:	Not reported
UST:	Not reported
Cause:	Not reported
Source:	Not reported
Test Method:	21
Test Method 2:	Horner EZY3/EZY3 Locator Plus
Leak Rate:	Not reported
Gross Fail:	Not reported

DELTA SONIC ORCHARD PARK (Continued) **U003317321**

Modified By: SACALAND
Last Modified Date: Not reported

All Materials:
Site ID: 343813
Operable Unit ID: 1102492
Operable Unit: 01
Material ID: 582710
Material Code: 0009
Material Name: gasoline
Case No.: Not reported
Material FA: Petroleum
Quantity: Not reported
Units: G
Recovered: Not reported
Oxygenate: False

UST:
Id/Status: 9-225266 / Active
Program Type: PBS
Region: STATE
DEC Region: 9
Expiration Date: 08/17/2022
UTM X: 193200.32820
UTM Y: 4745127.44714
Site Type: Retail Gasoline Sales

Affiliation Records:
Site Id: 53314
Affiliation Type: Facility Owner
Company Name: DELTA SONIC CARWASH SYSTEMS, INC.
Contact Type: ENVIRONMENTAL COMPLIANCE OFFICER
Contact Name: MICHAEL YOUNT
Address1: 570 DELAWARE AVE
Address2: Not reported
City: BUFFALO
State: NY
Zip Code: 14202
Country Code: 001
Phone: (716) 886-0931
EMail: Not reported
Fax Number: Not reported
Modified By: aeskalsk
Date Last Modified: 2013-12-10

Site Id: 53314
Affiliation Type: Emergency Contact
Company Name: DELTA SONIC CARWASH SYSTEMS, INC.
Contact Type: Not reported
Contact Name: MICHAEL YOUNT
Address1: Not reported
Address2: Not reported
City: Not reported
State: NN
Zip Code: Not reported
Country Code: 999

DELTA SONIC ORCHARD PARK (Continued) **U003317321**

Phone:	(716) 481-6898
EMail:	Not reported
Fax Number:	Not reported
Modified By:	aeskalsk
Date Last Modified:	2013-12-10

Site Id:	53314
Affiliation Type:	Mail Contact
Company Name:	DELTA SONIC CARWASH SYSTEMS, INC.
Contact Type:	Not reported
Contact Name:	MICHAEL YOUNT
Address1:	570 DELAWARE AVE
Address2:	Not reported
City:	BUFFALO
State:	NY
Zip Code:	14202
Country Code:	001
Phone:	(716) 541-2178
EMail:	MIKEYOUNT@DELTASONICCARWASH.COM
Fax Number:	Not reported
Modified By:	AESKALSK
Date Last Modified:	2015-01-22

Site Id:	53314
Affiliation Type:	Facility Operator
Company Name:	DELTA SONIC ORCHARD PARK
Contact Type:	Not reported
Contact Name:	MICHAEL YOUNT
Address1:	Not reported
Address2:	Not reported
City:	Not reported
State:	NN
Zip Code:	Not reported
Country Code:	001
Phone:	(716) 674-8312
EMail:	Not reported
Fax Number:	Not reported
Modified By:	AYLAGATI
Date Last Modified:	2016-11-14

Tank Info:

Tank Number:	1
Tank ID:	164857
Tank Status:	Closed - Removed
Material Name:	Closed - Removed
Capacity Gallons:	4000
Install Date:	11/01/1985
Date Tank Closed:	10/23/2007
Registered:	True
Tank Location:	Underground
Tank Type:	Equivalent technology
Material Code:	0009
Common Name of Substance:	Gasoline

Tightness Test Method:	NN
Date Test:	Not reported

DELTA SONIC ORCHARD PARK (Continued) **U003317321**

Next Test Date: Not reported
Pipe Model: Not reported
Modified By: aeskalsk
Last Modified: 04/14/2017

Equipment Records:

H99 - Tank Leak Detection - Other
G00 - Tank Secondary Containment - None
C02 - Pipe Location - Underground/On-ground
L07 - Piping Leak Detection - Pressurized Piping Leak Detector
J01 - Dispenser - Pressurized Dispenser
E04 - Piping Secondary Containment - Double walled UG
F00 - Pipe External Protection - None
H04 - Tank Leak Detection - Groundwater Well
K01 - Spill Prevention - Catch Basin
B04 - Tank External Protection - Fiberglass
D11 - Pipe Type - Flexible Piping
I03 - Overfill - Automatic Shut-Off
A00 - Tank Internal Protection - None

Tank Number: 10
Tank ID: 219839
Tank Status: In Service
Material Name: In Service
Capacity Gallons: 20000
Install Date: 10/01/2007
Date Tank Closed: Not reported
Registered: True
Tank Location: Underground
Tank Type: Equivalent technology
Material Code: 2712
Common Name of Substance: Gasoline/Ethanol

Tightness Test Method: -
Date Test: Not reported
Next Test Date: Not reported
Pipe Model: Not reported
Modified By: TAMAMUN
Last Modified: 08/01/2017

Equipment Records:

H05 - Tank Leak Detection - In-Tank System (ATG)
L01 - Piping Leak Detection - Interstitial - Electronic Monitoring
C02 - Pipe Location - Underground/On-ground
L07 - Piping Leak Detection - Pressurized Piping Leak Detector
F00 - Pipe External Protection - None
J01 - Dispenser - Pressurized Dispenser
E04 - Piping Secondary Containment - Double walled UG
K01 - Spill Prevention - Catch Basin
B04 - Tank External Protection - Fiberglass
G04 - Tank Secondary Containment - Double-Walled (Underground)
D11 - Pipe Type - Flexible Piping
H01 - Tank Leak Detection - Interstitial - Electronic Monitoring
I03 - Overfill - Automatic Shut-Off
A00 - Tank Internal Protection - None

DELTA SONIC ORCHARD PARK (Continued) **U003317321**

Tank Number:	11A
Tank ID:	219840
Tank Status:	In Service
Material Name:	In Service
Capacity Gallons:	12000
Install Date:	10/01/2007
Date Tank Closed:	Not reported
Registered:	True
Tank Location:	Underground
Tank Type:	Equivalent technology
Material Code:	2712
Common Name of Substance:	Gasoline/Ethanol
Tightness Test Method:	-
Date Test:	Not reported
Next Test Date:	Not reported
Pipe Model:	Not reported
Modified By:	TAMAMUN
Last Modified:	08/01/2017

Equipment Records:

E04 - Piping Secondary Containment - Double walled UG
F00 - Pipe External Protection - None
J01 - Dispenser - Pressurized Dispenser
D11 - Pipe Type - Flexible Piping
G04 - Tank Secondary Containment - Double-Walled (Underground)
L07 - Piping Leak Detection - Pressurized Piping Leak Detector
B04 - Tank External Protection - Fiberglass
K01 - Spill Prevention - Catch Basin
A00 - Tank Internal Protection - None
H01 - Tank Leak Detection - Interstitial - Electronic Monitoring
I03 - Overfill - Automatic Shut-Off
C02 - Pipe Location - Underground/On-ground
L01 - Piping Leak Detection - Interstitial - Electronic Monitoring
H05 - Tank Leak Detection - In-Tank System (ATG)

Tank Number:	11B
Tank ID:	219841
Tank Status:	In Service
Material Name:	In Service
Capacity Gallons:	8000
Install Date:	10/01/2007
Date Tank Closed:	Not reported
Registered:	True
Tank Location:	Underground
Tank Type:	Equivalent technology
Material Code:	0008
Common Name of Substance:	Diesel
Tightness Test Method:	-
Date Test:	Not reported
Next Test Date:	Not reported
Pipe Model:	Not reported
Modified By:	TAMAMUN
Last Modified:	08/01/2017

Equipment Records:

DELTA SONIC ORCHARD PARK (Continued) **U003317321**

H05 - Tank Leak Detection - In-Tank System (ATG)
D11 - Pipe Type - Flexible Piping
G04 - Tank Secondary Containment - Double-Walled (Underground)
C02 - Pipe Location - Underground/On-ground
L01 - Piping Leak Detection - Interstitial - Electronic Monitoring
E04 - Piping Secondary Containment - Double walled UG
F00 - Pipe External Protection - None
J01 - Dispenser - Pressurized Dispenser
B04 - Tank External Protection - Fiberglass
K01 - Spill Prevention - Catch Basin
L07 - Piping Leak Detection - Pressurized Piping Leak Detector
A00 - Tank Internal Protection - None
H01 - Tank Leak Detection - Interstitial - Electronic Monitoring
I03 - Overfill - Automatic Shut-Off

Tank Number:	2
Tank ID:	164858
Tank Status:	Closed - Removed
Material Name:	Closed - Removed
Capacity Gallons:	4000
Install Date:	11/01/1985
Date Tank Closed:	10/23/2007
Registered:	True
Tank Location:	Underground
Tank Type:	Equivalent technology
Material Code:	0009
Common Name of Substance:	Gasoline
Tightness Test Method:	NN
Date Test:	Not reported
Next Test Date:	Not reported
Pipe Model:	Not reported
Modified By:	aeskalsk
Last Modified:	04/14/2017

Equipment Records:

E04 - Piping Secondary Containment - Double walled UG
F00 - Pipe External Protection - None
H04 - Tank Leak Detection - Groundwater Well
J01 - Dispenser - Pressurized Dispenser
L07 - Piping Leak Detection - Pressurized Piping Leak Detector
B04 - Tank External Protection - Fiberglass
K01 - Spill Prevention - Catch Basin
D11 - Pipe Type - Flexible Piping
A00 - Tank Internal Protection - None
I03 - Overfill - Automatic Shut-Off
C02 - Pipe Location - Underground/On-ground
G00 - Tank Secondary Containment - None
H99 - Tank Leak Detection - Other

Tank Number:	3
Tank ID:	164859
Tank Status:	Closed - Removed
Material Name:	Closed - Removed
Capacity Gallons:	4000
Install Date:	11/01/1985

DELTA SONIC ORCHARD PARK (Continued) **U003317321**

Date Tank Closed: 10/23/2007
Registered: True
Tank Location: Underground
Tank Type: Equivalent technology
Material Code: 0009
Common Name of Substance: Gasoline

Tightness Test Method: NN
Date Test: Not reported
Next Test Date: Not reported
Pipe Model: Not reported
Modified By: aeskalsk
Last Modified: 04/14/2017

Equipment Records:

H99 - Tank Leak Detection - Other
E04 - Piping Secondary Containment - Double walled UG
F00 - Pipe External Protection - None
H04 - Tank Leak Detection - Groundwater Well
J01 - Dispenser - Pressurized Dispenser
C02 - Pipe Location - Underground/On-ground
G00 - Tank Secondary Containment - None
B04 - Tank External Protection - Fiberglass
K01 - Spill Prevention - Catch Basin
D11 - Pipe Type - Flexible Piping
A00 - Tank Internal Protection - None
I03 - Overfill - Automatic Shut-Off
L07 - Piping Leak Detection - Pressurized Piping Leak Detector

Tank Number: 4
Tank ID: 164860
Tank Status: Closed - In Place
Material Name: Closed - In Place
Capacity Gallons: 8000
Install Date: 11/01/1985
Date Tank Closed: 10/01/1998
Registered: True
Tank Location: Underground
Tank Type: Steel/carbon steel
Material Code: 0009
Common Name of Substance: Gasoline

Tightness Test Method: 18
Date Test: 10/01/1993
Next Test Date: Not reported
Pipe Model: Not reported
Modified By: AESKALSK
Last Modified: 04/14/2017

Equipment Records:

H99 - Tank Leak Detection - Other
L07 - Piping Leak Detection - Pressurized Piping Leak Detector
G00 - Tank Secondary Containment - None
C02 - Pipe Location - Underground/On-ground
F00 - Pipe External Protection - None
H04 - Tank Leak Detection - Groundwater Well
J01 - Dispenser - Pressurized Dispenser

DELTA SONIC ORCHARD PARK (Continued) **U003317321**

B00 - Tank External Protection - None
D02 - Pipe Type - Galvanized Steel
I00 - Overfill - None
A01 - Tank Internal Protection - Epoxy Liner

Tank Number:	5
Tank ID:	164861
Tank Status:	Closed - In Place
Material Name:	Closed - In Place
Capacity Gallons:	6000
Install Date:	11/01/1985
Date Tank Closed:	10/01/1998
Registered:	True
Tank Location:	Underground
Tank Type:	Steel/carbon steel
Material Code:	0009
Common Name of Substance:	Gasoline
Tightness Test Method:	18
Date Test:	10/01/1993
Next Test Date:	Not reported
Pipe Model:	Not reported
Modified By:	TRANSLAT
Last Modified:	04/14/2017

Equipment Records:

B00 - Tank External Protection - None
D02 - Pipe Type - Galvanized Steel
F00 - Pipe External Protection - None
H04 - Tank Leak Detection - Groundwater Well
J01 - Dispenser - Pressurized Dispenser
A01 - Tank Internal Protection - Epoxy Liner
I00 - Overfill - None
C02 - Pipe Location - Underground/On-ground
G00 - Tank Secondary Containment - None
H99 - Tank Leak Detection - Other

Tank Number:	6
Tank ID:	164862
Tank Status:	Closed - Removed
Material Name:	Closed - Removed
Capacity Gallons:	4000
Install Date:	11/01/1985
Date Tank Closed:	10/23/2007
Registered:	True
Tank Location:	Underground
Tank Type:	Equivalent technology
Material Code:	0009
Common Name of Substance:	Gasoline
Tightness Test Method:	NN
Date Test:	Not reported
Next Test Date:	Not reported
Pipe Model:	Not reported
Modified By:	aeskalsk
Last Modified:	04/14/2017

DELTA SONIC ORCHARD PARK (Continued) **U003317321**

Equipment Records:

H99 - Tank Leak Detection - Other
C02 - Pipe Location - Underground/On-ground
G00 - Tank Secondary Containment - None
E04 - Piping Secondary Containment - Double walled UG
F00 - Pipe External Protection - None
H04 - Tank Leak Detection - Groundwater Well
J01 - Dispenser - Pressurized Dispenser
L07 - Piping Leak Detection - Pressurized Piping Leak Detector
B04 - Tank External Protection - Fiberglass
K01 - Spill Prevention - Catch Basin
A00 - Tank Internal Protection - None
I03 - Overfill - Automatic Shut-Off
D11 - Pipe Type - Flexible Piping

Tank Number:	7
Tank ID:	164863
Tank Status:	Closed - Removed
Material Name:	Closed - Removed
Capacity Gallons:	4000
Install Date:	11/01/1985
Date Tank Closed:	10/23/2007
Registered:	True
Tank Location:	Underground
Tank Type:	Equivalent technology
Material Code:	0009
Common Name of Substance:	Gasoline
Tightness Test Method:	NN
Date Test:	Not reported
Next Test Date:	Not reported
Pipe Model:	Not reported
Modified By:	aeskalsk
Last Modified:	04/14/2017

Equipment Records:

E04 - Piping Secondary Containment - Double walled UG
F00 - Pipe External Protection - None
H04 - Tank Leak Detection - Groundwater Well
J01 - Dispenser - Pressurized Dispenser
L07 - Piping Leak Detection - Pressurized Piping Leak Detector
B04 - Tank External Protection - Fiberglass
K01 - Spill Prevention - Catch Basin
D11 - Pipe Type - Flexible Piping
C02 - Pipe Location - Underground/On-ground
G00 - Tank Secondary Containment - None
A00 - Tank Internal Protection - None
I03 - Overfill - Automatic Shut-Off
H99 - Tank Leak Detection - Other

Tank Number:	8
Tank ID:	164864
Tank Status:	Closed - Removed
Material Name:	Closed - Removed
Capacity Gallons:	4000

DELTA SONIC ORCHARD PARK (Continued) **U003317321**

Install Date:	11/01/1985
Date Tank Closed:	10/23/2007
Registered:	True
Tank Location:	Underground
Tank Type:	Equivalent technology
Material Code:	0009
Common Name of Substance:	Gasoline
Tightness Test Method:	21
Date Test:	05/05/2005
Next Test Date:	Not reported
Pipe Model:	Not reported
Modified By:	aeskalsk
Last Modified:	04/14/2017

Equipment Records:

L07 - Piping Leak Detection - Pressurized Piping Leak Detector
E04 - Piping Secondary Containment - Double walled UG
F00 - Pipe External Protection - None
H04 - Tank Leak Detection - Groundwater Well
J01 - Dispenser - Pressurized Dispenser
B04 - Tank External Protection - Fiberglass
K01 - Spill Prevention - Catch Basin
A00 - Tank Internal Protection - None
I03 - Overfill - Automatic Shut-Off
D11 - Pipe Type - Flexible Piping
C02 - Pipe Location - Underground/On-ground
G00 - Tank Secondary Containment - None
H99 - Tank Leak Detection - Other

Tank Number:	9
Tank ID:	219838
Tank Status:	In Service
Material Name:	In Service
Capacity Gallons:	20000
Install Date:	10/01/2007
Date Tank Closed:	Not reported
Registered:	True
Tank Location:	Underground
Tank Type:	Equivalent technology
Material Code:	2712
Common Name of Substance:	Gasoline/Ethanol
Tightness Test Method:	-
Date Test:	Not reported
Next Test Date:	Not reported
Pipe Model:	Not reported
Modified By:	TAMAMUN
Last Modified:	08/01/2017

Equipment Records:

H05 - Tank Leak Detection - In-Tank System (ATG)
C02 - Pipe Location - Underground/On-ground
L01 - Piping Leak Detection - Interstitial - Electronic Monitoring
E04 - Piping Secondary Containment - Double walled UG
F00 - Pipe External Protection - None
J01 - Dispenser - Pressurized Dispenser

DELTA SONIC ORCHARD PARK (Continued) **U003317321**

B04 - Tank External Protection - Fiberglass
K01 - Spill Prevention - Catch Basin
D11 - Pipe Type - Flexible Piping
G04 - Tank Secondary Containment - Double-Walled (Underground)
L07 - Piping Leak Detection - Pressurized Piping Leak Detector
A00 - Tank Internal Protection - None
H01 - Tank Leak Detection - Interstitial - Electronic Monitoring
I03 - Overfill - Automatic Shut-Off

SPILLS:

Facility ID:	9512293
Facility Type:	ER
Spill Number:	9512293
DER Facility ID:	66875
Site ID:	70476
DEC Region:	9
Closed Date:	1996-01-04
Spill Cause:	Traffic Accident
Spill Class:	C4
SWIS:	1560
Spill Date:	1996-01-01
Investigator:	MXFRANKS
Referred To:	Not reported
Reported to Dept:	1996-01-01
CID:	349
Water Affected:	Not reported
Spill Source:	Passenger Vehicle
Spill Notifier:	Fire Department
Cleanup Ceased:	1996-01-04
Cleanup Meets Std:	True
Last Inspection:	Not reported
Recommended Penalty:	False
UST Trust:	False
Remediation Phase:	0
Date Entered In Computer:	1996-01-01
Spill Record Last Update:	1996-01-18
Spiller Name:	Not reported
Spiller Company:	JAMES EDWARDS
Spiller Address:	1075 DLAKEY ROAD
Spiller Company:	001
Contact Name:	BRUCE NATALIZIA
DEC Memo:	"Prior to Sept, 2004 data translation this spill Lead_DEC Field was MF 01/02/96: MF T/C DEAN MESSING, EC HAZ MAT. USED 15 PADS, WANT ME TO CONTACT DELTA SONIC FOR DISPOSAL. 01/04/96: T/C BRUCE NATALIZIA, HE WILL MAKE SURE PADS GET TO LANDFILL. SMALL SPILL, 10 GALLONS, NO FURTHER ACTION NECESSARY."
Remarks:	"spill occured while vehicle was driving through lot - cleaned up w/absorbants "

All Materials:

Site ID:	70476
Operable Unit ID:	1023252
Operable Unit:	01
Material ID:	356046
Material Code:	0009
Material Name:	gasoline
Case No.:	Not reported

DELTA SONIC ORCHARD PARK (Continued) **U003317321**

Material FA:	Petroleum
Quantity:	10.00
Units:	G
Recovered:	10.00
Oxygenate:	Not reported

Facility ID:	9907918
Facility Type:	ER
Spill Number:	9907918
DER Facility ID:	66875
Site ID:	70477
DEC Region:	9
Closed Date:	1999-09-30
Spill Cause:	Equipment Failure
Spill Class:	C3
SWIS:	1560
Spill Date:	1999-09-29
Investigator:	JFOTTO
Referred To:	Not reported
Reported to Dept:	1999-09-29
CID:	246
Water Affected:	Not reported
Spill Source:	Gasoline Station or other PBS Facility
Spill Notifier:	Responsible Party
Cleanup Ceased:	Not reported
Cleanup Meets Std:	False
Last Inspection:	Not reported
Recommended Penalty:	False
UST Trust:	True
Remediation Phase:	0
Date Entered In Computer:	1999-09-29
Spill Record Last Update:	2002-04-16
Spiller Name:	Not reported
Spiller Company:	CROSSETT INC
Spiller Address:	Not reported
Spiller Company:	001
Contact Name:	BRUCE NATALIZIA
DEC Memo:	"Prior to Sept, 2004 data translation this spill Lead_DEC Field was JFO 09/30/99: JFO NOTE, SPILL HANDLED BY MARTY DOSTER, DUTY OFFICER. SPILLS NOT NOTIFIED, THUS, NO RESPONSE"
Remarks:	"driver fueling tank in ground - poss bad connection caused overflow all product recovered"

All Materials:

Site ID:	70477
Operable Unit ID:	1086573
Operable Unit:	01
Material ID:	300601
Material Code:	0009
Material Name:	gasoline
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	10.00
Units:	G
Recovered:	10.00
Oxygenate:	Not reported

43
SSW
1/8-1/4
0.189 mi.
997 ft.

MOBIL OIL
3225 SOUTHWESTERN BLVD
ORCHARD PARK, NY

NY LTANKS **S100155332**
N/A

Relative:
Higher

Actual:
772 ft.

Nearby ???

LTANKS:

Facility ID:	9002352
Site ID:	184285
Closed Date:	1990-05-31
Spill Number:	9002352
Spill Date:	1990-05-25
Spill Cause:	Tank Test Failure
Spill Source:	Gasoline Station or other PBS Facility
Spill Class:	Not reported
Cleanup Ceased:	1990-05-31
SWIS:	1560
Investigator:	ROSS
Referred To:	Not reported
Reported to Dept:	1990-05-25
CID:	Not reported
Water Affected:	Not reported
Spill Notifier:	Other
Last Inspection:	Not reported
Recommended Penalty:	False
Meets Standard:	True
UST Involvement:	True
Remediation Phase:	0
Date Entered In Computer:	1990-06-01
Spill Record Last Update:	1991-03-04
Spiller Name:	Not reported
Spiller Company:	MOBIL OIL
Spiller Address:	3225 GALLOWS ROAD
Spiller County:	001
Spiller Contact:	Not reported
Spiller Phone:	Not reported
Spiller Extention:	Not reported
DEC Region:	9
DER Facility ID:	154224
DEC Memo:	"Prior to Sept, 2004 data translation this spill Lead_DEC Field was LQR 05/31/90: SEE SPILL REPORT 9001862. "
Remarks:	"12000 GAL TANK LEAK RATE -.403 GPH"

All TTF:

Facility ID:	9002352
Spill Number:	9002352
Spill Tank Test:	1537138
Site ID:	184285
Tank Number:	Not reported
Tank Size:	0
Material:	0009
EPA UST:	Not reported
UST:	Not reported
Cause:	Not reported
Source:	Not reported
Test Method:	00
Test Method 2:	Unknown
Leak Rate:	.00
Gross Fail:	Not reported
Modified By:	Spills

MOBIL OIL (Continued) **S100155332**

Last Modified Date: Not reported

All Materials:
Site ID: 184285
Operable Unit ID: 942205
Operable Unit: 01
Material ID: 437095
Material Code: 0009
Material Name: gasoline
Case No.: Not reported
Material FA: Petroleum
Quantity: .00
Units: G
Recovered: .00
Oxygenate: Not reported

44
ENE
1/8-1/4
0.203 mi.
1071 ft.

FRED N DARSTEIN JR/FRED'S SVC **NY UST** **U003317112**
3020 SOUTH WESTERN BLVD **N/A**
ORCHARD PARK, NY 14127

Relative:
Lower

Actual:
760 ft.

UST:
Id/Status: 9-384968 / Unregulated/Closed
Program Type: PBS
Region: STATE
DEC Region: 9
Expiration Date: N/A
UTM X: 194266.65188
UTM Y: 4745789.55850
Site Type: Retail Gasoline Sales

Affiliation Records:
Site Id: 53610
Affiliation Type: Facility Owner
Company Name: FRED N DARSTEIN JR
Contact Type: Not reported
Contact Name: Not reported
Address1: 1706 B LAKELEY RD
Address2: Not reported
City: E AURORA
State: NY
Zip Code: 14052
Country Code: 001
Phone: (716) 652-9418
EMail: Not reported
Fax Number: Not reported
Modified By: TRANSLAT
Date Last Modified: 2004-03-04

Site Id: 53610
Affiliation Type: Mail Contact
Company Name: FRED N DARSTEIN JR
Contact Type: Not reported
Contact Name: Not reported
Address1: 1706 B LAKELEY RD
Address2: Not reported

FRED N DARSTEIN JR/FRED'S SVC (Continued) **U003317112**

City: E AURORA
State: NY
Zip Code: 14052
Country Code: 001
Phone: (716) 652-9418
EMail: Not reported
Fax Number: Not reported
Modified By: TRANSLAT
Date Last Modified: 2004-03-04

Site Id: 53610
Affiliation Type: Facility Operator
Company Name: FRED N DARSTEIN JR/FREDS SVC
Contact Type: Not reported
Contact Name: FRED N DARSTEIN JR
Address1: Not reported
Address2: Not reported
City: Not reported
State: NN
Zip Code: Not reported
Country Code: 001
Phone: (716) 675-2521
EMail: Not reported
Fax Number: Not reported
Modified By: TRANSLAT
Date Last Modified: 2004-03-04

Site Id: 53610
Affiliation Type: Emergency Contact
Company Name: FRED N DARSTEIN JR
Contact Type: Not reported
Contact Name: FRED N DARSTEIN JR
Address1: Not reported
Address2: Not reported
City: Not reported
State: NN
Zip Code: Not reported
Country Code: 001
Phone: (716) 652-9418
EMail: Not reported
Fax Number: Not reported
Modified By: TRANSLAT
Date Last Modified: 2004-03-04

Tank Info:

Tank Number: 1
Tank ID: 163839
Tank Status: Closed - Removed
Material Name: Closed - Removed
Capacity Gallons: 6000
Install Date: 01/01/1979
Date Tank Closed: 03/01/1999
Registered: True
Tank Location: Underground
Tank Type: Steel/carbon steel
Material Code: 0009

FRED N DARSTEIN JR/FRED'S SVC (Continued) **U003317112**

Common Name of Substance: Gasoline

Tightness Test Method: 03
Date Test: 07/01/1993
Next Test Date: Not reported
Pipe Model: Not reported
Modified By: TRANSLAT
Last Modified: 04/14/2017

Equipment Records:

H05 - Tank Leak Detection - In-Tank System (ATG)
G00 - Tank Secondary Containment - None
I00 - Overfill - None
J01 - Dispenser - Pressurized Dispenser
C00 - Pipe Location - No Piping
D02 - Pipe Type - Galvanized Steel
F00 - Pipe External Protection - None
B00 - Tank External Protection - None
A00 - Tank Internal Protection - None

Tank Number: 2
Tank ID: 163840
Tank Status: Closed - Removed
Material Name: Closed - Removed
Capacity Gallons: 6000
Install Date: 01/01/1979
Date Tank Closed: 03/01/1999
Registered: True
Tank Location: Underground
Tank Type: Steel/carbon steel
Material Code: 0009
Common Name of Substance: Gasoline

Tightness Test Method: 03
Date Test: 07/01/1993
Next Test Date: Not reported
Pipe Model: Not reported
Modified By: TRANSLAT
Last Modified: 04/14/2017

Equipment Records:

H05 - Tank Leak Detection - In-Tank System (ATG)
G00 - Tank Secondary Containment - None
I00 - Overfill - None
J01 - Dispenser - Pressurized Dispenser
B00 - Tank External Protection - None
C00 - Pipe Location - No Piping
D02 - Pipe Type - Galvanized Steel
F00 - Pipe External Protection - None
A00 - Tank Internal Protection - None

Tank Number: 3
Tank ID: 163841
Tank Status: Closed - Removed
Material Name: Closed - Removed
Capacity Gallons: 4000

FRED N DARSTEIN JR/FRED'S SVC (Continued) **U003317112**

Install Date: 01/01/1979
Date Tank Closed: 03/01/1999
Registered: True
Tank Location: Underground
Tank Type: Steel/carbon steel
Material Code: 0009
Common Name of Substance: Gasoline

Tightness Test Method: 03
Date Test: 07/01/1993
Next Test Date: Not reported
Pipe Model: Not reported
Modified By: TRANSLAT
Last Modified: 04/14/2017

Equipment Records:

H05 - Tank Leak Detection - In-Tank System (ATG)
G00 - Tank Secondary Containment - None
I00 - Overfill - None
J01 - Dispenser - Pressurized Dispenser
B00 - Tank External Protection - None
C00 - Pipe Location - No Piping
D02 - Pipe Type - Galvanized Steel
F00 - Pipe External Protection - None
A00 - Tank Internal Protection - None

Tank Number: 4
Tank ID: 163842
Tank Status: Closed - Removed
Material Name: Closed - Removed
Capacity Gallons: 550
Install Date: 01/01/1979
Date Tank Closed: 03/01/1999
Registered: True
Tank Location: Underground
Tank Type: Steel/carbon steel
Material Code: 0022
Common Name of Substance: Waste Oil/Used Oil

Tightness Test Method: NN
Date Test: Not reported
Next Test Date: Not reported
Pipe Model: Not reported
Modified By: TRANSLAT
Last Modified: 04/14/2017

Equipment Records:

G00 - Tank Secondary Containment - None
J02 - Dispenser - Suction Dispenser
H00 - Tank Leak Detection - None
I00 - Overfill - None
B00 - Tank External Protection - None
C00 - Pipe Location - No Piping
D02 - Pipe Type - Galvanized Steel
F00 - Pipe External Protection - None
A00 - Tank Internal Protection - None

I45 **EXPRESS MART #378** **NY UST** **U001327018**
SW **3225 ORCHARD PARK RD** **N/A**
1/8-1/4 **ORCHARD PARK, NY 14127**
0.222 mi.
1173 ft. **Site 3 of 4 in cluster I**

Relative:
Lower

Actual:
760 ft.

UST:

Id/Status:	9-041688 / Unregulated/Closed
Program Type:	PBS
Region:	STATE
DEC Region:	9
Expiration Date:	N/A
UTM X:	193198.09324
UTM Y:	4745090.15552
Site Type:	Retail Gasoline Sales

Affiliation Records:

Site Id:	52313
Affiliation Type:	Emergency Contact
Company Name:	PETR-ALL CORP.
Contact Type:	Not reported
Contact Name:	PATRICK HYDE
Address1:	Not reported
Address2:	Not reported
City:	Not reported
State:	NN
Zip Code:	Not reported
Country Code:	999
Phone:	(315) 415-9115
EMail:	Not reported
Fax Number:	Not reported
Modified By:	rjschowe
Date Last Modified:	2010-07-13

Site Id:	52313
Affiliation Type:	Facility Owner
Company Name:	PETR-ALL CORP.
Contact Type:	FACILITIES MANAGER
Contact Name:	PATRICK HYDE
Address1:	6567 KINNE ROAD
Address2:	Not reported
City:	DEWITT
State:	NY
Zip Code:	13214
Country Code:	001
Phone:	(315) 446--0125 115
EMail:	PAT@EXPRESSMART.COM
Fax Number:	Not reported
Modified By:	aeskalsk
Date Last Modified:	2008-01-16

Site Id:	52313
Affiliation Type:	Mail Contact
Company Name:	PETR-ALL CORP.
Contact Type:	FACILITIES MANAGER
Contact Name:	PATRICK HYDE
Address1:	6567 KINNE ROAD
Address2:	Not reported
City:	DEWITT
State:	NY

EXPRESS MART #378 (Continued) **U001327018**

Zip Code:	13214
Country Code:	001
Phone:	(315) 446--0125 115
EMail:	PAT@EXPRESSMART.COM
Fax Number:	Not reported
Modified By:	aeskalsk
Date Last Modified:	2008-01-16

Site Id:	52313
Affiliation Type:	Facility Operator
Company Name:	EXPRESS MART #378
Contact Type:	Not reported
Contact Name:	EXPRESS MART MANAGER
Address1:	Not reported
Address2:	Not reported
City:	Not reported
State:	NN
Zip Code:	Not reported
Country Code:	001
Phone:	(716) 675-7799
EMail:	Not reported
Fax Number:	Not reported
Modified By:	AESKALSK
Date Last Modified:	2006-04-21

Tank Info:

Tank Number:	01
Tank ID:	209982
Tank Status:	Closed Prior to Micro Conversion, 03/91
Material Name:	Closed Prior to Micro Conversion, 03/91
Capacity Gallons:	4000
Install Date:	Not reported
Date Tank Closed:	Not reported
Registered:	True
Tank Location:	Underground
Tank Type:	Steel/carbon steel
Material Code:	0009
Common Name of Substance:	Gasoline

Tightness Test Method:	NN
Date Test:	Not reported
Next Test Date:	Not reported
Pipe Model:	Not reported
Modified By:	LJJUDD
Last Modified:	04/14/2017

Equipment Records:

B00 - Tank External Protection - None
C00 - Pipe Location - No Piping
D02 - Pipe Type - Galvanized Steel
F00 - Pipe External Protection - None
J01 - Dispenser - Pressurized Dispenser
H00 - Tank Leak Detection - None
I00 - Overfill - None
A00 - Tank Internal Protection - None
G00 - Tank Secondary Containment - None

EXPRESS MART #378 (Continued) **U001327018**

Tank Number:	1
Tank ID:	161390
Tank Status:	Closed Prior to Micro Conversion, 03/91
Material Name:	Closed Prior to Micro Conversion, 03/91
Capacity Gallons:	4000
Install Date:	01/01/1971
Date Tank Closed:	Not reported
Registered:	True
Tank Location:	Underground
Tank Type:	Steel/carbon steel
Material Code:	0009
Common Name of Substance:	Gasoline
Tightness Test Method:	NN
Date Test:	Not reported
Next Test Date:	Not reported
Pipe Model:	Not reported
Modified By:	TRANSLAT
Last Modified:	04/14/2017

Equipment Records:

H00 - Tank Leak Detection - None
I00 - Overfill - None
A00 - Tank Internal Protection - None
B00 - Tank External Protection - None
C00 - Pipe Location - No Piping
D02 - Pipe Type - Galvanized Steel
F00 - Pipe External Protection - None
J01 - Dispenser - Pressurized Dispenser
G00 - Tank Secondary Containment - None

Tank Number:	1A
Tank ID:	161393
Tank Status:	Closed - Removed
Material Name:	Closed - Removed
Capacity Gallons:	12000
Install Date:	12/01/1985
Date Tank Closed:	09/30/2006
Registered:	True
Tank Location:	Underground
Tank Type:	Equivalent technology
Material Code:	0009
Common Name of Substance:	Gasoline
Tightness Test Method:	21
Date Test:	11/09/2005
Next Test Date:	Not reported
Pipe Model:	C
Modified By:	AESKALSK
Last Modified:	04/14/2017

Equipment Records:

K01 - Spill Prevention - Catch Basin
D06 - Pipe Type - Fiberglass Reinforced Plastic (FRP)
E00 - Piping Secondary Containment - None
B04 - Tank External Protection - Fiberglass
J01 - Dispenser - Pressurized Dispenser

EXPRESS MART #378 (Continued) **U001327018**

L07 - Piping Leak Detection - Pressurized Piping Leak Detector
I01 - Overfill - Float Vent Valve
L99 - Piping Leak Detection - Other
A03 - Tank Internal Protection - Fiberglass Liner (FRP)
C02 - Pipe Location - Underground/On-ground
F04 - Pipe External Protection - Fiberglass
G00 - Tank Secondary Containment - None
H05 - Tank Leak Detection - In-Tank System (ATG)

Tank Number:	2
Tank ID:	161391
Tank Status:	Closed Prior to Micro Conversion, 03/91
Material Name:	Closed Prior to Micro Conversion, 03/91
Capacity Gallons:	6000
Install Date:	01/01/1967
Date Tank Closed:	Not reported
Registered:	True
Tank Location:	Underground
Tank Type:	Steel/carbon steel
Material Code:	0009
Common Name of Substance:	Gasoline
Tightness Test Method:	NN
Date Test:	Not reported
Next Test Date:	Not reported
Pipe Model:	Not reported
Modified By:	LJJUDD
Last Modified:	04/14/2017

Equipment Records:

H00 - Tank Leak Detection - None
I00 - Overfill - None
A00 - Tank Internal Protection - None
B00 - Tank External Protection - None
C00 - Pipe Location - No Piping
D02 - Pipe Type - Galvanized Steel
F00 - Pipe External Protection - None
J01 - Dispenser - Pressurized Dispenser
G00 - Tank Secondary Containment - None

Tank Number:	2A
Tank ID:	161394
Tank Status:	Closed - Removed
Material Name:	Closed - Removed
Capacity Gallons:	10000
Install Date:	12/01/1985
Date Tank Closed:	09/30/2006
Registered:	True
Tank Location:	Underground
Tank Type:	Equivalent technology
Material Code:	0009
Common Name of Substance:	Gasoline
Tightness Test Method:	21
Date Test:	11/09/2005
Next Test Date:	Not reported

EXPRESS MART #378 (Continued) **U001327018**

Pipe Model: C
Modified By: AESKALSK
Last Modified: 04/14/2017

Equipment Records:

H05 - Tank Leak Detection - In-Tank System (ATG)
A03 - Tank Internal Protection - Fiberglass Liner (FRP)
J01 - Dispenser - Pressurized Dispenser
B04 - Tank External Protection - Fiberglass
D06 - Pipe Type - Fiberglass Reinforced Plastic (FRP)
E00 - Piping Secondary Containment - None
K01 - Spill Prevention - Catch Basin
L07 - Piping Leak Detection - Pressurized Piping Leak Detector
I01 - Overfill - Float Vent Valve
L99 - Piping Leak Detection - Other
C02 - Pipe Location - Underground/On-ground
F04 - Pipe External Protection - Fiberglass
G00 - Tank Secondary Containment - None

Tank Number: 3
Tank ID: 161392
Tank Status: Closed Prior to Micro Conversion, 03/91
Material Name: Closed Prior to Micro Conversion, 03/91
Capacity Gallons: 8000
Install Date: 01/01/1967
Date Tank Closed: Not reported
Registered: True
Tank Location: Underground
Tank Type: Steel/carbon steel
Material Code: 0009
Common Name of Substance: Gasoline

Tightness Test Method: NN
Date Test: Not reported
Next Test Date: Not reported
Pipe Model: Not reported
Modified By: LJJUDD
Last Modified: 04/14/2017

Equipment Records:

B00 - Tank External Protection - None
C00 - Pipe Location - No Piping
D02 - Pipe Type - Galvanized Steel
F00 - Pipe External Protection - None
J01 - Dispenser - Pressurized Dispenser
H00 - Tank Leak Detection - None
I00 - Overfill - None
A00 - Tank Internal Protection - None
G00 - Tank Secondary Containment - None

Tank Number: 3A
Tank ID: 161395
Tank Status: Closed - Removed
Material Name: Closed - Removed
Capacity Gallons: 6000
Install Date: 12/01/1985

EXPRESS MART #378 (Continued) **U001327018**

Date Tank Closed: 09/30/2006
Registered: True
Tank Location: Underground
Tank Type: Equivalent technology
Material Code: 0009
Common Name of Substance: Gasoline

Tightness Test Method: 21
Date Test: 11/09/2005
Next Test Date: Not reported
Pipe Model: C
Modified By: AESKALSK
Last Modified: 04/14/2017

Equipment Records:

H05 - Tank Leak Detection - In-Tank System (ATG)
J01 - Dispenser - Pressurized Dispenser
B04 - Tank External Protection - Fiberglass
D06 - Pipe Type - Fiberglass Reinforced Plastic (FRP)
E00 - Piping Secondary Containment - None
K01 - Spill Prevention - Catch Basin
L07 - Piping Leak Detection - Pressurized Piping Leak Detector
A03 - Tank Internal Protection - Fiberglass Liner (FRP)
I01 - Overfill - Float Vent Valve
L99 - Piping Leak Detection - Other
C02 - Pipe Location - Underground/On-ground
F04 - Pipe External Protection - Fiberglass
G00 - Tank Secondary Containment - None

Tank Number: 4A
Tank ID: 161396
Tank Status: Closed - Removed
Material Name: Closed - Removed
Capacity Gallons: 6000
Install Date: 12/01/1985
Date Tank Closed: 09/30/2006
Registered: True
Tank Location: Underground
Tank Type: Equivalent technology
Material Code: 0008
Common Name of Substance: Diesel

Tightness Test Method: 21
Date Test: 11/09/2005
Next Test Date: Not reported
Pipe Model: C
Modified By: AESKALSK
Last Modified: 04/14/2017

Equipment Records:

J01 - Dispenser - Pressurized Dispenser
I01 - Overfill - Float Vent Valve
L99 - Piping Leak Detection - Other
B04 - Tank External Protection - Fiberglass
D06 - Pipe Type - Fiberglass Reinforced Plastic (FRP)
E00 - Piping Secondary Containment - None
K01 - Spill Prevention - Catch Basin

EXPRESS MART #378 (Continued) **U001327018**

L07 - Piping Leak Detection - Pressurized Piping Leak Detector
A03 - Tank Internal Protection - Fiberglass Liner (FRP)
C02 - Pipe Location - Underground/On-ground
F04 - Pipe External Protection - Fiberglass
G00 - Tank Secondary Containment - None
H05 - Tank Leak Detection - In-Tank System (ATG)

Tank Number:	5A
Tank ID:	161397
Tank Status:	Closed - Removed
Material Name:	Closed - Removed
Capacity Gallons:	550
Install Date:	12/01/1985
Date Tank Closed:	09/30/2006
Registered:	True
Tank Location:	Underground
Tank Type:	Equivalent technology
Material Code:	0001
Common Name of Substance:	#2 Fuel Oil (On-Site Consumption)
Tightness Test Method:	21
Date Test:	11/09/2005
Next Test Date:	Not reported
Pipe Model:	Not reported
Modified By:	AESKALSK
Last Modified:	04/14/2017

Equipment Records:

A03 - Tank Internal Protection - Fiberglass Liner (FRP)
D02 - Pipe Type - Galvanized Steel
F00 - Pipe External Protection - None
B04 - Tank External Protection - Fiberglass
H00 - Tank Leak Detection - None
I00 - Overfill - None
C02 - Pipe Location - Underground/On-ground
G00 - Tank Secondary Containment - None

I46 **MOBIL OIL CORP SS 454** **RCRA-CESQG** **1000254044**
SW **3225 ORCHARD PARK RD** **NY LTANKS** **NYD986902021**
1/8-1/4 **ORCHARD PARK, NY 14127** **NY Spills**
0.222 mi. **FINDS**
1173 ft. **Site 4 of 4 in cluster I** **ECHO**
NY MANIFEST

Relative:
Lower

Actual:
760 ft.

RCRA-CESQG:

Nearby???

Date form received by agency:	01/01/2007
Facility name:	MOBIL OIL CORP SS 454
Facility address:	3225 ORCHARD PARK RD ORCHARD PARK, NY 14127-1224
EPA ID:	NYD986902021
Mailing address:	GALLOWS RD - MKTG ENVIRON FAIRFAX, NY 22037
Contact:	Not reported
Contact address:	GALLOWS RD - MKTG ENVIRON FAIRFAX, NY 22037
Contact country:	US
Contact telephone:	Not reported

MOBIL OIL CORP SS 454 (Continued) **1000254044**

Contact email: Not reported
EPA Region: 02
Land type: Facility is not located on Indian land. Additional information is not known.
Classification: Conditionally Exempt Small Quantity Generator
Description: Handler: generates 100 kg or less of hazardous waste per calendar month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste

Owner/Operator Summary:
Owner/operator name: MOBIL OIL CORP - MKTG ENVIRON
Owner/operator address: 3225 GALLOWS RD
FAIRFAX, VA 22037
Owner/operator country: US
Owner/operator telephone: 703-849-3330
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Owner/operator name: MOBIL OIL CORP - MKTG ENVIRON
Owner/operator address: 3225 GALLOWS RD
FAIRFAX, VA 22037
Owner/operator country: US
Owner/operator telephone: 703-849-3330
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No

MOBIL OIL CORP SS 454 (Continued) **1000254044**

Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:
Date form received by agency: 01/01/2006
Site name: MOBIL OIL CORP SS 454
Classification: Conditionally Exempt Small Quantity Generator

Date form received by agency: 07/08/1999
Site name: MOBIL OIL CORP SS 454
Classification: Not a generator, verified

Date form received by agency: 06/01/1992
Site name: MOBIL OIL CORP.
Classification: Large Quantity Generator

Date form received by agency: 05/29/1990
Site name: MOBIL OIL CORP SS 454
Classification: Small Quantity Generator

. Waste code: D000
. Waste name: Not Defined

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D008
. Waste name: LEAD

. Waste code: X003
. Waste name: OTHER STATE REGULATED WASTES [i.e., DIESEL FUEL, GASOLINE AND HOME HEATING OIL]

Violation Status: No violations found

Evaluation Action Summary:
Evaluation date: 05/07/1993
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: EPA Contractor/Grantee

LTANKS:
Facility ID: 9110060
Site ID: 240938
Closed Date: 1991-12-23
Spill Number: 9110060
Spill Date: 1991-12-21
Spill Cause: Tank Test Failure
Spill Source: Gasoline Station or other PBS Facility
Spill Class: Not reported
Cleanup Ceased: 1991-12-23
SWIS: 1560

MOBIL OIL CORP SS 454 (Continued) **1000254044**

Investigator:	SACALAND
Referred To:	Not reported
Reported to Dept:	1991-12-21
CID:	Not reported
Water Affected:	Not reported
Spill Notifier:	Tank Tester
Last Inspection:	Not reported
Recommended Penalty:	False
Meets Standard:	True
UST Involvement:	True
Remediation Phase:	0
Date Entered In Computer:	1991-12-23
Spill Record Last Update:	1992-04-21
Spiller Name:	Not reported
Spiller Company:	MOBIL OIL
Spiller Address:	187 WOLF ROAD
Spiller County:	001
Spiller Contact:	Not reported
Spiller Phone:	Not reported
Spiller Extention:	Not reported
DEC Region:	9
DER Facility ID:	198124
DEC Memo:	"Prior to Sept, 2004 data translation this spill Lead_DEC Field was SAC 12/23/91: ROBERTA BOTELER INFORMED SAC THAT CONTAMINATION CONSISTED OF SHOVEL FULL OF GRAVEL. LINE WAS REPAIRED. "
Remarks:	"TESTED LINE COULD NOT HOLD PRESSURE. EXCAVATION,CLEAN UP,AND HELIUM TEST IS PLAN OF ACTION."

All TTF:

Facility ID:	9110060
Spill Number:	9110060
Spill Tank Test:	1539457
Site ID:	240938
Tank Number:	Not reported
Tank Size:	0
Material:	0009
EPA UST:	Not reported
UST:	Not reported
Cause:	Not reported
Source:	Not reported
Test Method:	00
Test Method 2:	Unknown
Leak Rate:	.00
Gross Fail:	Not reported
Modified By:	Spills
Last Modified Date:	Not reported

All Materials:

Site ID:	240938
Operable Unit ID:	963724
Operable Unit:	01
Material ID:	418633
Material Code:	0009
Material Name:	gasoline
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	.00

MOBIL OIL CORP SS 454 (Continued) **1000254044**

Units:	Not reported
Recovered:	.00
Oxygenate:	Not reported
Facility ID:	9201626
Site ID:	240939
Closed Date:	1992-05-15
Spill Number:	9201626
Spill Date:	1992-05-11
Spill Cause:	Tank Failure
Spill Source:	Gasoline Station or other PBS Facility
Spill Class:	C3
Cleanup Ceased:	1992-05-15
SWIS:	1560
Investigator:	MXFRANKS
Referred To:	Not reported
Reported to Dept:	1992-05-11
CID:	Not reported
Water Affected:	Not reported
Spill Notifier:	Responsible Party
Last Inspection:	1992-05-13
Recommended Penalty:	False
Meets Standard:	True
UST Involvement:	True
Remediation Phase:	0
Date Entered In Computer:	1992-05-15
Spill Record Last Update:	1992-07-24
Spiller Name:	Not reported
Spiller Company:	MOBIL OIL
Spiller Address:	Not reported
Spiller County:	999
Spiller Contact:	Not reported
Spiller Phone:	Not reported
Spiller Extention:	Not reported
DEC Region:	9
DER Facility ID:	198124
DEC Memo:	"Prior to Sept, 2004 data translation this spill Lead_DEC Field was MF 05/15/92: MF 5/13/92 SITE VISIT/CONTRACTOR. NO PRODUCT NOTICED IN THE MW'S. 6 OF WATER PUMPED FROM TANT. SPILL # 9108573 OPEN & ACTIVE. WILL CLOSE THIS SPILL. NO FURTHER ACTION NECESSARY. "
Remarks:	"TANK TAKING ON WATER - SAME SITE AS SPILL 9108573"

All Materials:

Site ID:	240939
Operable Unit ID:	965706
Operable Unit:	01
Material ID:	412923
Material Code:	0008
Material Name:	diesel
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	570.00
Units:	G
Recovered:	.00
Oxygenate:	Not reported

MOBIL OIL CORP SS 454 (Continued) **1000254044**

SPILLS:

Facility ID:	0011162
Facility Type:	ER
Spill Number:	0011162
DER Facility ID:	198124
Site ID:	240935
DEC Region:	9
Closed Date:	2001-01-26
Spill Cause:	Equipment Failure
Spill Class:	D3
SWIS:	1560
Spill Date:	2001-01-13
Investigator:	JFOTTO
Referred To:	Not reported
Reported to Dept:	2001-01-13
CID:	255
Water Affected:	Not reported
Spill Source:	Gasoline Station or other PBS Facility
Spill Notifier:	Other
Cleanup Ceased:	Not reported
Cleanup Meets Std:	True
Last Inspection:	2001-01-25
Recommended Penalty:	False
UST Trust:	True
Remediation Phase:	0
Date Entered In Computer:	2001-01-13
Spill Record Last Update:	2002-04-17
Spiller Name:	ROBERT PERODEAU
Spiller Company:	MOBIL OIL
Spiller Address:	464 DOUGHTY BLVD
Spiller Company:	001
Contact Name:	EVERETT SIMMONS
DEC Memo:	"Prior to Sept, 2004 data translation this spill Lead_DEC Field was JFO 01/16/01: DUTY OFFICER, MLD, SPOKE WITH STATION REPRESENTATIVE, PUMP LEAK WAS FIXED. ALL SET TO GO. 01/18/01: JFO CALL FROM DOUG LIDDELL OF GES. I WILL MEET HIM ON SITE MONDAY THE 22ND. HE WILL SAMPLE BELOW THE DISPENSER. 01/22/01: JFO CALL FROM DOUG LIDDELL, HE WILL NOT BE ABLE TO MEET TODAY. WE WILL MEET JAN 25, 01. 01/25/01: JFO ON SITE WITH DOUG LIDDELL OF GES AND KEVIN OF C. A. BATT. KEVIN WAS OUT TO FIX THE DISPENSER THE NIGHT IT LEAKED. KEVIN SAID THE METER LEAKED AND WAS FIXED. THE METER CONTAINS <1 GALLON OF GAS. THEREFORE IT COULD NOT LEAK ANY MORE THAN THAT. THERE IS A SLIGHT GAS ODOR UNDER THE DISPENSER. DOUG LIDDELL WILL SEND A REPORT. NO EXCAVATION IS NECESSARY. 01/26/01: JFO RECEIVED THE REPORT. SEE ALSO SPILL #9108573 AT THIS SITE, NO FURTHER ACTION IS NECESSARY. CLOSED"
Remarks:	"Pump had an inside leak and leaked into ground - notified remediation engineer - he to follow up"

All Materials:

Site ID:	240935
Operable Unit ID:	833229
Operable Unit:	01
Material ID:	541484
Material Code:	0009
Material Name:	gasoline
Case No.:	Not reported
Material FA:	Petroleum

MOBIL OIL CORP SS 454 (Continued) **1000254044**

Quantity:	5.00
Units:	G
Recovered:	5.00
Oxygenate:	Not reported

Facility ID:	9108573
Facility Type:	ER
Spill Number:	9108573
DER Facility ID:	198124
Site ID:	240936
DEC Region:	9
Closed Date:	2000-12-15
Spill Cause:	Unknown
Spill Class:	A3
SWIS:	1560
Spill Date:	1991-11-11
Investigator:	TEDIEFFE
Referred To:	Not reported
Reported to Dept:	1991-11-11
CID:	Not reported
Water Affected:	Not reported
Spill Source:	Gasoline Station or other PBS Facility
Spill Notifier:	Responsible Party
Cleanup Ceased:	Not reported
Cleanup Meets Std:	False
Last Inspection:	1994-09-19
Recommended Penalty:	False
UST Trust:	True
Remediation Phase:	0
Date Entered In Computer:	1991-11-12
Spill Record Last Update:	2001-01-22
Spiller Name:	Not reported
Spiller Company:	MOBIL OIL
Spiller Address:	187 WOLF ROAD
Spiller Company:	001
Contact Name:	Not reported
DEC Memo:	"Prior to Sept, 2004 data translation this spill Lead_DEC Field was TED 11/11/91: MF SITE INSPECTION, PRODUCT COMING OUT OF THE GROUND. FOLLOWING CONDUIT TRENCH. TANKS PUMPED, CONTRACTOR CALLED, EXCAVATION STARTED. NO PRODUCT IN SEWERS, SPILL CONFINED TO SITE. 11/25/91: MF RECEIVED LETTER FROM MOBIL. PROBLEMS WILL BE ADDRESSED. 11/29/91: MF NOTE TO FILE, ANOTHER SPILL CALLED IN # 9109238 PRODUCT COMING OUT OF THE GROUND AGAIN (LOT OF RAIN). CONTRACTOR CALLED. 12/29/91: MF SITE INSPECTION, VERY LITTLE PRODUCT & SHEEN COMING OUT OF THE GROUND. PADS IN PLACE. MOBIL NOTIFIED. NIAGARE TANK ON SITE. 12/30/91: MF RECEIVED COPY OF TANK TEST RESULTS. ALL TANKS THAT WERE TESTED PASSED. 01/02/92: MF TELECON RP REGARDING SPILL #9110060. REG UNLEADED LINE LEAK WHEN INSTALLING OVERFILL PROTECTION ON TANKS. REPAIRED & ALL SYSTEMS RETESTED TIGHT. 01/06/92: MF RECEIVED SAMPLE RESULTS FOR DR'S DRINKING WATER WELL. WELL SAMPLES 4X, NOTHING DETECTED. 01/27/92: MF RECEIVED DISPOSAL RECEIPTS FOR THE CONTAMINATED SOIL. 01/30/92: MF RECEIVED RESULTS OF SOIL GAS SURVEY. FIVE MW'S TO BE INSTALLED 1/30/92 & 1/31/92. 03/19/92: MF SENT LETTER TO MOBIL REQUESTING UPDATE BY 4/10/92. 04/13/92: MF SITE INSPECTION, CHECKED MW IN TANK PIT, SLIGHT SHEEN NOTED. ALSO RECEIVED REMEDIATION PLAN FROM RP. 04/22/92: MF SENT LETTER TO RP ACCEPTING PLAN BUT

MOBIL OIL CORP SS 454 (Continued) **1000254044**

ASKING TO ADDRESS TANK PIT CONTAMINATION. 04/30/92: MF AND RNL MEETING AT DEC OFFICE WITH KEVIN SCHROEDER. TANK AREA WILL BE SAMPLED. RESULTS WILL DETERMINE IF AREA IS TO BE INCLUDED IN REMEDIATION PLAN. 07/08/92: MF SITE INSPECTION AFTER A COMPLAINT OF GASOLINE COMING OUT OF THE GROUND. NOTICED WATER WITH A PETROLEUM ODOR. MANAGER AWARE OF COMPLAINT. SYSTEM TO BE INSTALLED IN TWO WEEKS. 07/21/92: MF RECEIVED ACTIVITY REPORT 12/91 TO 6/92. REMEDIATION SYSTEM TO BE EXPANDED TO INCLUDE TANK PIT. 08/31/92: MF RECEIVED DESIGN REPORT. 09/98/92: MF SENT LETTER TO RP CONCURING WITH REPORT. SCHEDULED TO START CONSTRUCTION 9/28/92. 10/01/92: MF RECEIVED JULY 92 MONTHLY REPORT. INSTALLATION OF RECOVERY & SVES TO START 10/92. 10/16/92: MF RECEIVED AUG-SEPT MONTHLY REPORTS. REMEDIATION SYSTEM INSTALLATION SCHEDULED TO START 10/19/92. 12/03/92: MF SITE INSPECTION, MET CONTRACTOR. PIPING FOR SYSTEM INSTALLED, WAITING FOR MOTOR, PARTS, ETC. 02/10/93: MF SITE INSPECTION, SYSTEM NOT OPERATING. 02/12/93: MF RECEIVED OCT 92-DEC 92 MONITORING REPORTS HI BTEX IN TWO AREAS. SVES EXPECTED TO BE PUT ON LINE THE END OF FEB. 03/16/93: MF MEETING AT OFFICE WITH MOBIL. WAITING FOR APPROVAL FROM THE TOWN TO DISCHARGE INTO SANITARY. MF RECEIVED LETTER DATED 3/17/93 LETTER FROM THE TOWN CONFIRMING ABOVE. SOIL NON-HAZ 04/28/93: MF RECEIVED JAN-MARCH 93, MONITORING REPORT. STILL WAITING FOR PERMISSION FROM TOWN TO DISCHARGE INTO SANITARY SEWER. SYSTEM NOT OPERATING. 05/18/93: MF RECEIVED COPY OF LETTER, GTI APPLIED TO TOWN FOR STP DISCHARGE PERMIT. THEY RECEIVED PERMISSION FROM ERIE COUNTY. 05/28/93: MF RECEIVED COPY OF LETTER FROM GTI TO TOWN OF ORCHARD PARK. IT APPEARS CONDITIONS WORKED OUT WITH TOWN. 08/17/93: MF SITE INSPECTION, SYSTEM IN OPERATION. ONE LEG OF SVES (4 LEGS) HAS HOLE IN FLEX PIPING. SYSTEM SHUT DOWN FOR REPAIR. GROUNDWATER SYSTEM IN OPERATION, APPX 1/3 GALLON/MIN. 09/13/93: MF RECEIVED 4/93 TO 6/93 SITE MONITORING REPORT. SYSTEM IN OPERATION. HIGH BTEX IN RW & TANK PIT. SHEENING AT SOME TEST POINTS. 12/20/93: MF RECEIVED 7/93 TO 9/93 MONITORING REPORT. SVES IN OPERATION ALONG WITH PUMP & TREAT. HI BTEX IN TANK PIT. SHEEN IN TP. 02/08/94: MF AND RNL OFFICE MEETING WITH MOBIL. SYSTEM OPERATING, WILL CONTINUE TO MONITOR. HI BTEX IN TANK AREA. 04/11/94: FG SITE INSPECTION, NO CHANGE IN SITE STATUS. 09/19/94: FG SITE INSPECTION, MET J. BOYD, GTEL SHOWED FG SITE & EXPLAINED HISTORY. SPILL BOXES AROUND FILL PORTS TO BE CHANGED, FOUND TO BE LEAKING CAUSING ELEV READ AT TANK PIT. BLOWER TO BE ON TIMER. 01/09/95: SITE REASSIGNED TO TED. INSPECTION SCHEDULED FOR 2/23/95. 02/23/95: TED & RNL SITE INSPECTION, SYSTEM OPERATING. 12/27/95: TED RECEIVED GT REPORT FOR APRIL THROUGH NOVEMBER, 1995, VIA MOBIL, SAMPLE RESULTS FROM 10/26/95 SHOWED WELLS GT-01, GT-02 AND GT-03 HAD LESS THAN 10 PPB BTEX , REPORTED RECOVERY 345 GALLONS PRODUCT VIA SVES & GW RECOVERY SYSTEMS THIS PERIOD. 08/05/96: TED RECEIVED LETTER FROM MOBIL AGREEING TO CONTINUE REMEDIAL SYSTEM OPERATION AND SAMPLING. 12/16/96: TED RECEIVED FLUOR-DANIEL REPORT FOR DECEMBER 1995 THROUGH APRIL, 1996, VIA MOBIL, SAMPLE RESULTS FROM 04/09/96 SHOWED 902 PPB BTEX IN GT-02 AND 591 PPB BTEX IN GT-03, RECOVERED 25.3 GALLONS OF OIL VIA SVES. RECEIVED SMR FOR MAY 1996 THRU OCT. 1996, REPORTED RECOVERY OF 1,115 LBS. BTEX VIA SVES FOR PERIOD DISSOLVED BTEX & MTBE CONCENTRATIONS DECREASING. 03/05/97: TED RECEIVED LETTER FROM MOBIL REQUESTING PERMISSION TO TERMINATE ACTIVE REMEDIATION BASED ON LAB ANALYSIS OF SVES AIR EFF. WHICH REPORTED CONCENTRATIONS OF BTEX IN AIR NONDECTABLE FORSINCE NOV. 1995. 03/11/97: TED AND RNL MEETING AT DEC BUFFALO OFFICE WITH MIKE LAMARRE OF MOBIL. REQUESTED VERIFICATION VIA ADDITIONAL SAMPLING THAT SITE HAS BEEN REMEDIATED BEFORE

MOBIL OIL CORP SS 454 (Continued) **1000254044**

DISCONTINUING ACTIVE REMEDIATION. 07/29/97: TED RECEIVED LETTER FROM MOBIL THAT REMEDIAL SYSTEM SHUT DOWN ON 7/21/97. SEMIANNUAL SAMPLING TO CONTINUE. 11/13/97: TED & RNL MEETING WITH JEFFREY JOHNSON (MOBIL) & BRIAN CAREY (GES) AT DEC BUFFALO OFFICE. MOBIL AGREED TO CONDUCT SOIL SAMPLING. 01/07/98: TED RECEIVED SMR FOR JUNE - NOV. 1997, NO SIGNIFICANT CHANGES. 05/12/98: TED RECEIEVED REPORT OF GASOLINE SEEPING UP THROUGH PAVEMENT, SPILL # 9801808 ASSIGNED. JFO INSPECTED, NOTED GW COMING UP THROUGH SEAMS IN CONCRETE AND BLACKTOP DRIVEWAY. FIRE DEPT. PUT ABSORBENT PADS AND SPEEDY DRY ALONG STATION DRIVEWAY AND SIDE OF ORCHARD PARK ROAD TO KEEP PRODUCT FROM ENTERING SEWER. JFO SPOKE WITH MOBIL REPRESENTATIVE WHO AGREED TO TEST LINES AND INVESTIGATE SOURCE. JFO TOOK PICTURES, JFO CLOSED SPILL # 9801808 AND REFERED TO TED TO FOLLOWUP UNDER SPILL # 9108573. TED SITE INSPECTION, NOTED PETRO STAIN & SHEEN ON PAVEMENT EXTENDING FROM SVES TRENCH TO STATION ENTRANCE AT ORCHARD PARK ROAD. TED TELECON TO RICHARD CICCOTELLI (MOBIL) HE AGREED TO HAVE LINES TESTED. 06/05/98: TED LETTER SENT TO MOBIL REQUESTING RESULTS OF LINE TEST AND SOIL SAMPLING PLAN. 06/16/98: TED MEETING WITH MOBIL AT DEC BUFFALO OFFICE. MOBIL SAID LINES WERE TESTED AND PASSED. REQUESTED SUBMITTAL OF TEST RESULTS AND SAMPLING PLAN. 08/14/98: TED TELECON WITH BRIAN CAREY (GES), MOBIL DOING CONSTUCTION WORK ON PUMP ISLANDS, GES OVERSEEING REMOVAL OF CONTAMINATED SOILS. RMC TO INSPECT EXCAVATION WORK MONDAY & TUESDAY (8/17 & 8/18). 09/21/98: TED RECEIVED EXCAVATION REPORT AND SOIL SAMPLE RESULTS. CONCRETE PUMP ISLAND PAD REPAIRED. 25 - 30 YARDS SOIL REMOVED AROUND PUMP ISLAND AND UNDERGROUND ELECTRICAL CONDUIT TO THE WEST. END PT. EXCAVATION SOIL SAMPLE RESULTS FROM TWO LOCATIONS TOO HIGH TO MAKE SITE INACTIVE. 10/05/98: TED RECEIVED LINE TEST RESULTS. ALL LINES REPORTED AS PASSING. 11/12/98: TED RECEIVED LETTER FROM MOBIL REQUESTING INACTIVE STATUS FOR SITE. 12/17/98: TED MEETING WITH MARC FALZONE (GES) AT DEC BUFFALO OFFICE. TOLD MARC SAMPLE RESULTS FROM TWO LOCATIONS TOO HIGH TO RECLASSIFY SITE INACTIVE. MAY RESAMPLE THE LOCATIONS TO CONFIRM EARLIER RESULTS. TED SENT LETTER TO MOBIL ON 12/17/98 CONFIRMING MEETING DISCUSSION WITH FALZONE. 02/04/99: TED SITE INSPECTION, MARC FALZONE & TOM (GES) ISTALLING GEOPROBE BORINGS. 02/05/99: TED RECEIVED SOIL DISPOSAL RECEIPTS, 28.3 TONS DISPOSED AT CID LANDFILL. 09/17/99: TED RECEIVED SUBSURFACE SOIL SAMPLING RESULTS AND REMEDIAL ACTION PLAN. SAMPLE RESULTS NORTH OF PUMP ISLAND RELATIVELY CLEAN, SAMPLE RESULTS FROM APPROX. 35' WEST OF PUMP ISLAND HAD 58.5 ppm TOTAL BTEX (DIRECT ANALYSIS), BORING IMMEDIATELY ADJACENT SHOWED ONLY 251 ppb TOTAL BTEX. MOBIL PROPOSES INJECTION OF OXYGEN RELEASING COMPOUND (ORC) IN THIS AREA. 11/09/99: TED MEETING WITH RICHARD CICCOTELLI (MOBIL) & GES AT DEC BUFFALO OFFICE, MOBIL TO PROCEED WITH ORC INJECTION 1ST QUARTER 2000, WILL SUBMIT PLAN WITH SMR. 06/08/00: TED RECEIVED SMR FOR NOV. 1999 - MAY 2000. NO SIGNIFICANT CHANGE IN BTEX CONCENTRATIONS. MOBIL BELIEVES D/O LEVELS 1 - 12 PPM SUFFICIENT TO SUPPORT BIODEGRADATION OF HYDROCARBONS, REQUEST SITE RECLASSIFIED INACTIVE. 06/28/00: TED SENT LETTER TO MOBIL INFORMING THAT REQUEST FOR INACTIVATION UNDER REVIEW. 11/14/00: TED MEETING WITH PJB, DISCUSSED SITE, BASED ON ANALYTICAL RESULTS AND WORK PERFORMED BY MOBIL TO DATE OK TO RECLASSIFY INACTIVE. 11/17/00: TED SENT LETTER INFORMING MOBIL THAT SITE HAS BEEN REMOVED FROM ACTIVE FILES. "

Remarks: "PRODUCT COMING OUT OF THE GROUND. POLICE, FD, & HAZ MAT ON THE SCENE."

All Materials:

Site ID: 240936

Operable Unit ID: 958866

MOBIL OIL CORP SS 454 (Continued) **1000254044**

Operable Unit:	01
Material ID:	572769
Material Code:	1213A
Material Name:	MTBE (methyl-tert-butyl ether)
Case No.:	01634044
Material FA:	Hazardous Material
Quantity:	Not reported
Units:	Not reported
Recovered:	Not reported
Oxygenate:	True

Site ID:	240936
Operable Unit ID:	958866
Operable Unit:	01
Material ID:	420713
Material Code:	0009
Material Name:	gasoline
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	.00
Units:	G
Recovered:	.00
Oxygenate:	True

Facility ID:	9109238
Facility Type:	ER
Spill Number:	9109238
DER Facility ID:	198124
Site ID:	240937
DEC Region:	9
Closed Date:	1991-11-29
Spill Cause:	Unknown
Spill Class:	Not reported
SWIS:	1560
Spill Date:	1991-11-29
Investigator:	MXFRANKS
Referred To:	Not reported
Reported to Dept:	1991-11-29
CID:	Not reported
Water Affected:	Not reported
Spill Source:	Gasoline Station or other PBS Facility
Spill Notifier:	Responsible Party
Cleanup Ceased:	1991-11-29
Cleanup Meets Std:	True
Last Inspection:	Not reported
Recommended Penalty:	False
UST Trust:	True
Remediation Phase:	0
Date Entered In Computer:	1991-11-29
Spill Record Last Update:	1992-10-20
Spiller Name:	Not reported
Spiller Company:	MOBIL OIL
Spiller Address:	187 WOLF ROAD
Spiller Company:	001
Contact Name:	Not reported
DEC Memo:	"Prior to Sept, 2004 data translation this spill Lead_DEC Field was

MOBIL OIL CORP SS 454 (Continued) **1000254044**

MF 11/29/91: MF 11/27/91 SITE OF OPEN SPILL, DIRECTLY RELATED TO THIS SPILL. SPILL # 9108573 WILL REMAIN OPEN. NO FURTHER ACTION NECESSARY ON THIS SPILL. 09/29/95: This is additional information about material spilled from the translation of the old spill file: THICK BLACK LIQUID."

Remarks: "PRODUCT SEEPED INTO RECENT EXCAVATION. SORBENT APPLIED. CONTRACTOR ON THE WAY."

All Materials:

Site ID:	240937
Operable Unit ID:	959402
Operable Unit:	01
Material ID:	417881
Material Code:	0009
Material Name:	gasoline
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	.00
Units:	Not reported
Recovered:	.00
Oxygenate:	Not reported

Facility ID:	9205079
Facility Type:	ER
Spill Number:	9205079
DER Facility ID:	198124
Site ID:	240940
DEC Region:	9
Closed Date:	1992-08-04
Spill Cause:	Other
Spill Class:	B3
SWIS:	1560
Spill Date:	1992-08-03
Investigator:	MXFRANKS
Referred To:	Not reported
Reported to Dept:	1992-08-03
CID:	Not reported
Water Affected:	Not reported
Spill Source:	Gasoline Station or other PBS Facility
Spill Notifier:	Police Department
Cleanup Ceased:	1992-08-04
Cleanup Meets Std:	True
Last Inspection:	Not reported
Recommended Penalty:	False
UST Trust:	True
Remediation Phase:	0
Date Entered In Computer:	1992-08-04
Spill Record Last Update:	1993-03-15
Spiller Name:	Not reported
Spiller Company:	MOBIL OIL
Spiller Address:	187 WOLF ROAD
Spiller Company:	001
Contact Name:	Not reported
DEC Memo:	"Prior to Sept, 2004 data translation this spill Lead_DEC Field was MF 08/04/92: MF 8/4/92 PART OF SPILL #9108573. WILL KEEP 9108573 OPEN & CLOSE THIS SPILL. "
Remarks:	"WATER RUNNING OFF PARKING LOT. STRONG SMELL OF GASOLINE."

MOBIL OIL CORP SS 454 (Continued) **1000254044**

All Materials:

Site ID:	240940
Operable Unit ID:	972593
Operable Unit:	01
Material ID:	409312
Material Code:	0009
Material Name:	gasoline
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	.00
Units:	Not reported
Recovered:	.00
Oxygenate:	Not reported

Facility ID:	9801808
Facility Type:	ER
Spill Number:	9801808
DER Facility ID:	198124
Site ID:	240941
DEC Region:	9
Closed Date:	1998-05-12
Spill Cause:	Equipment Failure
Spill Class:	C3
SWIS:	1560
Spill Date:	1998-05-12
Investigator:	JFOTTO
Referred To:	Not reported
Reported to Dept:	1998-05-12
CID:	195
Water Affected:	Not reported
Spill Source:	Gasoline Station or other PBS Facility
Spill Notifier:	Police Department
Cleanup Ceased:	Not reported
Cleanup Meets Std:	True
Last Inspection:	1998-05-12
Recommended Penalty:	False
UST Trust:	True
Remediation Phase:	0
Date Entered In Computer:	1998-05-12
Spill Record Last Update:	2002-04-17
Spiller Name:	FRANK WEINSTOCK
Spiller Company:	MOBIL OIL
Spiller Address:	187 WOLF ROAD
Spiller Company:	001
Contact Name:	CHIEF BENNING
DEC Memo:	"Prior to Sept, 2004 data translation this spill Lead_DEC Field was JFO 05/12/98 JFO ON SITE 04:30 MET WITH ORCHARD PARK FIRE CHIEF BENNING, SOUTHTOWNS HAZMAT AL NOWAK AND STATION OPERATOR FRANK WEINSTOCK. GROUNDWATER COMING THROUGH SEAMS IN CONCRETE AND BLACKTOP DRIVEWAY. SLIGHT SHEEN AND ODOR. FIRE DEPT PUT BOOMS AND SPEEDY DRY TO KEEP IT OUT OF STORM DRAIN. I SPOKE TO MOBIL REP ON THE PHONE, HE WILL TEST LINES TODAY AND INVESTIGATE SOURCE. THIS IS AN ONGOING SPILL BEING HANDLED BY TIM DIEFFENBACH SPILL # 9108573. REFERRED TO TIM DIEFFENBACH, THIS SPILL CLOSED"
Remarks:	"APPEARS THAT GROUND WATER TABLE IS FORCING GASOLINE UP THROUGH PAVEMENT AT GAS STATION. UNKNOWN AMOUNT OF GASOLINE OR EXACT SOURCE.

MOBIL OIL CORP SS 454 (Continued) **1000254044**

FIRE DEPARTMENT ON SCENE REQUESTING CALL AT CELL PHONE."

All Materials:

Site ID:	240941
Operable Unit ID:	1062336
Operable Unit:	01
Material ID:	323723
Material Code:	0009
Material Name:	gasoline
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	.00
Units:	G
Recovered:	.00
Oxygenate:	Not reported

Facility ID:	0202368
Facility Type:	ER
Spill Number:	0202368
DER Facility ID:	218377
Site ID:	268077
DEC Region:	9
Closed Date:	2003-09-08
Spill Cause:	Equipment Failure
Spill Class:	C3
SWIS:	1560
Spill Date:	2002-06-04
Investigator:	JFOTTO
Referred To:	Not reported
Reported to Dept:	2002-06-04
CID:	390
Water Affected:	Not reported
Spill Source:	Gasoline Station or other PBS Facility
Spill Notifier:	Other
Cleanup Ceased:	Not reported
Cleanup Meets Std:	True
Last Inspection:	2002-06-06
Recommended Penalty:	False
UST Trust:	True
Remediation Phase:	0
Date Entered In Computer:	2002-06-04
Spill Record Last Update:	2003-09-08
Spiller Name:	FRANK WEINSTOCK
Spiller Company:	FRANKS EXXON MOBIL
Spiller Address:	3225 ORCHARD PARK
Spiller Company:	001
Contact Name:	FRANK WEINSTOCK
DEC Memo:	"Prior to Sept, 2004 data translation this spill Lead_DEC Field was JFO 06/06/02 JFO ON SITE MET WITH PAULINE THE STORE MANAGER. THE ORCHARD PARK FD, HAZMAT, AND POLICE DEPT WERE ON THE SCENE WHEN THE SPILL OCCURRED. SPEEDY DRY WAS PLACED ON THE SPILL AND SWEEPT UP AND PLACED IN FOUR 55 GALLON DRUMS FOR DISPOSAL. RECEIPTS TO FOLLOW. 7/10/02:JAA & SAC MEETING W/RICH CICCOTELLI - EXXON MOBIL & DOUG LIDDELL - GES, MR. CICCOTELLI AND MR. LIDDELL WERE NOT NOTIFIED OF THE SPILL AT THE TIME IT HAPPENED AND WERE UNAWARE OF THE STATUS, SAC GAVE MR. LIDDELL A PRINTOUT OF THE SPILL REPORT FORM AND HISTORY NOTES AND INDICATED THERE WERE 4 DRUMS THAT REQUIRED DISPOSAL, MR.

MOBIL OIL CORP SS 454 (Continued) **1000254044**

LIDDELL SAID GES WOULD ARRANGE FOR THE DISPOSAL AND SEND A LETTER WITH THE DISPOSAL RECEIPTS ONCE DISPOSAL WAS COMPLETED. 10/30/02 JFO MEETING WITH RICH CICCOTELLI AND DOUG LIDDELL. THEY WILL FORWARD DISPOSAL RECEIPTS. 06/24/03 MEETING THEY WILL FAX RECEIPTS. 08/14/03 JFO CALL TO DOUG LIDDELL OF GES. HE HAS THE RECEIPTS AND WILL FAX THEM TODAY. 08/18/03 JFO RECEIVED DISPOSAL RECEIPTS FOR 1 DRUM. I WILL CONTACT DOUG LIDDELL. 09/08/03 JFO REC'D THE RECEIPT FOR THE OTHER 2 DRUMS WITH AN EXPLANATION OF WHAT HAPPENED TO THE OTHER DRUM. THE OTHER DRUM WAS NEVER USED. NO FURTHER ACTION REQUIRED. CLOSED "

Remarks: "leaky hose at dispenser caused spill - all material has been cleaned up"

All Materials:

Site ID:	268077
Operable Unit ID:	855460
Operable Unit:	01
Material ID:	520229
Material Code:	0009
Material Name:	gasoline
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	12.00
Units:	G
Recovered:	12.00
Oxygenate:	Not reported

Facility ID:	9001862
Facility Type:	ER
Spill Number:	9001862
DER Facility ID:	218377
Site ID:	268078
DEC Region:	9
Closed Date:	1991-11-21
Spill Cause:	Equipment Failure
Spill Class:	Not reported
SWIS:	1560
Spill Date:	1990-05-17
Investigator:	LEARY
Referred To:	Not reported
Reported to Dept:	1990-05-17
CID:	Not reported
Water Affected:	Not reported
Spill Source:	Gasoline Station or other PBS Facility
Spill Notifier:	Other
Cleanup Ceased:	1991-11-21
Cleanup Meets Std:	True
Last Inspection:	1990-10-31
Recommended Penalty:	False
UST Trust:	True
Remediation Phase:	0
Date Entered In Computer:	1990-05-17
Spill Record Last Update:	1991-12-19
Spiller Name:	Not reported
Spiller Company:	MOBIL OIL CORPORATION
Spiller Address:	675 BROOKS AVENUE
Spiller Company:	001
Contact Name:	Not reported

MOBIL OIL CORP SS 454 (Continued) **1000254044**

DEC Memo: "Prior to Sept, 2004 data translation this spill Lead_DEC Field was RNL 05/17/90: LQR TELCON W/ SPILLER TO VAC OFF MW'S AND PLACE REC. WELL IF NEEDED. 05/18/90: LQR TELCON W/ SPILLER CONTRACTOR REC. WELL BEING PUMED. 05/29/90: LQR TELCON W/ SPILLER CONTRACTOR REC. WELL BEING PUMED,TANK FAILURES REPORTED 5/29/90. 08/28/90: RNL SITE INSP. AND MEETING WITH GROUNDWATER TECHNOLOGY 08/28/90, SHEEN ON GROUNDWATER, THEY WILL CHANGE PUMPING FROM REINJECTION TO DISCHARGE TO DRAIN TANK FIELD, WILL SEND PAGE REPORT. 10/09/90: RNL SITE INSP. 10/05/90, NO CHANGE SINCE LAST INSPECTION, VERY SLIGHT SHEEN ON WATER ON RECHARGE WATER WELL, LETTER TO GROUNDWATER TECHNOLOGY 10/009/90. 10/31/90: RNL SITE INSP. 10/31/90, GROUNDWATER TECH. ON SITE, GROUNDWATER NOW PUMPED THROUGH CARBON TO STORM DITCH, TANK CAVITY BEING EMPTIED OF GROUND, REPORT TO MOBIL, TO US LATER. 11/28/90: MOBIL LETTER 11/21/90 PROPOSES SHUTDOWN OF SYSTEM FOR WINTER; RNL LETTER 11/28/90 CONCURS, SAMPLE AGAIN SPRING 1991, HOLD. 03/14/91: RNL MEETING WITH MOBIL 03/14/91, MOBIL TO SAMPLE GW IN TANK PIT AREA, SYSTEM MAY BE STARTED UP AGAIN. 05/16/91: RNL REC. SAMPLE RESULTS 05/03/91, HIGH LEVELS OF BTX FOUND BUT LOWER THAN LAST SUMMER; RNL LETTER TO MOBIL 05/16/91, REQUESTS FURTHER CLEANUP THIS SUMMER. 10/28/91: MEETING WITH MOBIL 10/28/91, MOBIL WILL CONTACT ME BEFORE NEXT SAMPLING EVENT FOR A JOINT INSPECTION, RECOVERY SYSTEM IN OPERATION. 11/21/91: RNL REVIEW OF FILE 11/21/91 BTX LEVELS ARE LOWER BUT NEW SPILL 9108573 AT STATION DUE TO A LINE FAILURE, CLOSEOUT THIS SPILL, SPILL 9108573 TO REMAIN ACTIVE. "

Remarks: "3 OF PRODUCT IN 3 MW'S"

All Materials:

Site ID:	268078
Operable Unit ID:	940094
Operable Unit:	01
Material ID:	436640
Material Code:	0009
Material Name:	gasoline
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	.00
Units:	G
Recovered:	.00
Oxygenate:	Not reported

Facility ID:	0506876
Facility Type:	ER
Spill Number:	0506876
DER Facility ID:	299441
Site ID:	352146
DEC Region:	9
Closed Date:	2007-01-09
Spill Cause:	Other
Spill Class:	C3
SWIS:	1560
Spill Date:	2005-09-06
Investigator:	FXGALLEG
Referred To:	Not reported
Reported to Dept:	2005-09-06
CID:	406
Water Affected:	Not reported
Spill Source:	Gasoline Station or other PBS Facility

MOBIL OIL CORP SS 454 (Continued) **1000254044**

Spill Notifier:	Other
Cleanup Ceased:	Not reported
Cleanup Meets Std:	False
Last Inspection:	Not reported
Recommended Penalty:	False
UST Trust:	False
Remediation Phase:	0
Date Entered In Computer:	2005-09-06
Spill Record Last Update:	2007-01-09
Spiller Name:	SIDNEY CONKLIN
Spiller Company:	EXXON MOBIL#10656
Spiller Address:	3225 ORCHARD PARK BLVD
Spiller Company:	001
Contact Name:	SIDNEY CONKLIN
DEC Memo:	"9/14/05 FG SPOKE TO SIDNEY CONKLIN WITH GES. SHE SAID THEY COMPLETED BORINGS ON SITE AND WILL BE COLLECTING GW SAMPLES THIS WEEK. THESE SAMPLES WILL BE ANALYZED AND A REPORT OF FINDINGS WILL BE SUBMITTED THE FIRST WEEK IN NOVEMBER 2005. 10/26/05 FG DKK MET WITH MOBIL AND GES. MOBIL INDICATED THAT THE REPORT OF FINDINGS WILL BE SUBMITTED BY THE END OF DECEMBER 2005. 1/4/06 GES SUBMITTED THE SITE DIVESTMENT ASSESSMENT REPORT. 5 WELLS WERE INSTALLED ON THE SITE ON SEPTEMBER 6 AND 7, 2006. SOIL AND GW SAMPLES WERE COLLECTED FOR ANALYSIS. TOTAL VOC STARS LIST SOIL RESULTS PPB: MW1 2-4 18,256, ELEVATED PID READINGS AND PETROLEUM SHEEN AND ODOR ON WATER NOTED AT 4-7 INTERVAL MW2 7-9 45.57 MW3 7-8 24.11 MW4 5-7 145.4 MW5 7-9 67.18 TOTAL VOC STARS LIST GW RESULTS PPB: MW1 824.51 MW2 1995 MW3 1640 MW4 1870 MW5 139 A GPR SURVEY WAS COMPLETED AND TWO ANOMALIES WERE IDENTIFIED. GES WILL CONDUCT QUARTERLY GW MONITORING AND SAMPLING. A WP FOR ADDITIONAL INVESTIGATION IN THE FIRST QUARTER OF 2006 WILL BE SUBMITTED. THE NEXT SAMPLING EVENT IS SCHEDULED FOR THE 1ST QUARTER OF 2006. 03/14/06: MF RECEIVED GES'S 3/10/06 REPORT. MW'S SAMPLED 2/7/06. IN PPB TOTAL 8260 + MTBE. DEPTH TO GW 1.12 - 4.91'. MW#1 - 2372 + 281 MW#2 - 5 MTBE MW#3 - 503 MTBE MW#4 - 470 MTBE MW#5 - 66 MTBE NO SOIL SAMPLING DATA. WORK PLAN TO BE SUBMITTED THE 1ST Q THIS YEAR. 03/24/06: MF RECEIVED SUPPLEMENTAL SUBSURFACE INVESTIGATION PLAN. GES PROPOSES MW INSTALLATION INTO 3 SOIL BORINGS WITH SOIL & GW SAMPLING. REPORT DUE 6/30/06. 06/30/06 RMC/FILE. RECEIVED REPORT. FIVE WELLS SAMPLED. ALL BELOW 1PPM BTEX PLUS MTBE. PREVIOUS SOILS SAMPLES INDICATE REMEDIATION IS REQUIRED. ADDITIONAL ASSESSMENT IS PLANED THIS QUARTER. REPORT DUE 9/30/2006. 12/19/06 IN OCTOBER, MOBIL REMOVED THE UST'S AND ALL ASSOCIATED CONTAMINATION FROM THE SITE. A REPORT OF FINDINGS IS EXPECTED IN JANUARY. GES SUBMITTED THE SITE MONITORING REPORT FOR 5/16/05 TO 9/15/06. GW MONITORING AND SAMPLING WAS COMPLETED ON 9/15/06. THE AVERAGE DEPTH TO WATER ACROSS THE SITE WAS 2.31 FT BELOW TOP OF CASING. SEPARATE PHASE HYDROCRBONS WERE NOT DETECTED IN ANY WELL. THE MAXIMUM BTEX CONCENTRATION WAS 10,368 UG/L AT MW7. THE MAXIMUM MTBE CONCENTRATION WAS 305 UG/L AT MW7. 1/8/07 RECD THE EXCAVATION REPORT FOR THE SITE. A TOTAL OF 5289.36 TONS OF CONTAMINATED MATERIAL WAS EXCAVATED BY ARROW AND TRANSPORTED TO BFI LANDFILL. POST EXCAVATION GW MONITORING AND SAMPLING WAS COMPLETED ON NOVEMBER 16, 2006. POST EXCAVATION SOIL SAMPLES FROM THE SIDEWALLS AND FLOOR OF THE EXCAVATION WERE SUBMITTED FOR ANALYSES FOR 8260 AND 8270 STARS. ALL SOIL SAMPLES WERE BELOW TAGM 4046 8260 LEVELS EXCEPT AT SW15 WHERE TOTAL VOC'S WERE AT 153,902 PPB. SW12 AND SW21 EXCEEDED TAGM 4046 FOR SEMIVOC'S AT A LOW LEVEL. THE GW RESULTS FOR TOTAL BTEX WERE BELOW DL AND MTBE RANGED FROM ND TO 2.84 PPB. GES HAS REQUESTED THAT THE SITE BE MADE INACTIVE. 1/9/07 DKK INDICATED THAT THE SITE

MOBIL OIL CORP SS 454 (Continued) **1000254044**

COULD BE MADE INACTIVE WITH NO FURTHER WORK REQUIRED BASED ON THE CLOSURE REPORT SUBMITTED."

Remarks: "During soil boring . PID gauge read 300ppm No groundwater was affected. Clean up pending the next round of test results from Test America."

All Materials:

Site ID:	352146
Operable Unit ID:	1109657
Operable Unit:	01
Material ID:	2099667
Material Code:	0009
Material Name:	gasoline
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	Not reported
Units:	G
Recovered:	.00
Oxygenate:	Not reported

FINDS:

Registry ID: 110004447581

Environmental Interest/Information System

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:

Envid:	1000254044
Registry ID:	110004447581
DFR URL:	http://echo.epa.gov/detailed-facility-report?fid=110004447581

NY MANIFEST:

Country:	USA
EPA ID:	NYD986902021
Facility Status:	Not reported
Location Address 1:	3225 ORCHARD PARK ROAD
Code:	BP
Location Address 2:	Not reported
Total Tanks:	Not reported
Location City:	WEST SENECA
Location State:	NY
Location Zip:	14127
Location Zip 4:	Not reported

NY MANIFEST:

EPAID:	NYD986902021

MOBIL OIL CORP SS 454 (Continued) **1000254044**

Mailing Name:	MOBIL MART
Mailing Contact:	RICHARD A SELBERT
Mailing Address 1:	3225 ORCHARD PARK ROAD
Mailing Address 2:	Not reported
Mailing City:	WEST SENECA
Mailing State:	NY
Mailing Zip:	14127
Mailing Zip 4:	Not reported
Mailing Country:	USA
Mailing Phone:	7168842883

NY MANIFEST:

Document ID:	NYB9799992
Manifest Status:	Not reported
seq:	01
Year:	2003
Trans1 State ID:	AB32901NY
Trans2 State ID:	Not reported
Generator Ship Date:	06/13/2003
Trans1 Recv Date:	06/13/2003
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	06/16/2003
Part A Recv Date:	Not reported
Part B Recv Date:	Not reported
Generator EPA ID:	NYD986902021
Trans1 EPA ID:	NYD982792814
Trans2 EPA ID:	Not reported
TSDF ID 1:	NYD049836679
TSDF ID 2:	Not reported
Manifest Tracking Number:	Not reported
Import Indicator:	Not reported
Export Indicator:	Not reported
Discr Quantity Indicator:	Not reported
Discr Type Indicator:	Not reported
Discr Residue Indicator:	Not reported
Discr Partial Reject Indicator:	Not reported
Discr Full Reject Indicator:	Not reported
Manifest Ref Number:	Not reported
Alt Facility RCRA ID:	Not reported
Alt Facility Sign Date:	Not reported
MGMT Method Type Code:	Not reported
Waste Code:	D001 - NON-LISTED IGNITABLE WASTES
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Quantity:	00100
Units:	P - Pounds
Number of Containers:	001
Container Type:	DM - Metal drums, barrels
Handling Method:	B Incineration, heat recovery, burning.
Specific Gravity:	01.00

Click this hyperlink while viewing on your computer to access
3 additional NY_MANIFEST: record(s) in the EDR Site Report.

47
ESE
1/4-1/2
0.252 mi.
1330 ft.

QUAKERTOWN APARTMENTS
220 COUNTRYSIDE LANE
ORCHARD PARK, NY 14127

NY LTANKS **1000871539**
RCRA NonGen / NLR **NY0000063248**
FINDS
ECHO
NY MANIFEST

Relative:
Higher

Actual:
782 ft.

LTANKS:

Facility ID:	9309525
Site ID:	167723
Closed Date:	1994-06-17
Spill Number:	9309525
Spill Date:	1993-11-05
Spill Cause:	Tank Failure
Spill Source:	Institutional, Educational, Gov., Other
Spill Class:	B3
Cleanup Ceased:	1994-06-17
SWIS:	1560
Investigator:	FXGALLEG
Referred To:	Not reported
Reported to Dept:	1993-11-05
CID:	Not reported
Water Affected:	Not reported
Spill Notifier:	Other
Last Inspection:	1994-06-09
Recommended Penalty:	False
Meets Standard:	True
UST Involvement:	True
Remediation Phase:	0
Date Entered In Computer:	1993-11-05
Spill Record Last Update:	1999-10-08
Spiller Name:	Not reported
Spiller Company:	QUAKER TOWN APARTMENTS
Spiller Address:	220 COUNTRYSIDE LANE
Spiller County:	001
Spiller Contact:	Not reported
Spiller Phone:	Not reported
Spiller Extention:	Not reported
DEC Region:	9
DER Facility ID:	141300
DEC Memo:	"Prior to Sept, 2004 data translation this spill Lead_DEC Field was FG 11/18/93: MNP 11/17/93 SITE VISIT. 2 UST'S ALREADY REMOVED 500 GAL & 1000GAL CONTAINING GAS & DIESEL. SOIL STOCKPILED & COVERED WITH PLASTIC. EXCAVATION RESULTS SHOW CONTAM BELOW STARS. PRODUCT STORED IN DRUMS. 12/22/93: MNP 12/22/93 SITE VISIT. CONTAMI SOIL REMAINS ON SITE COVERED. EXCAV FILLED IN. DRUMS WITH PRODUCT ALSO ON SITE. MANAGER NOT PRESENT LEFT MY CARD TO CALL. 01/04/94: JACK BEVAS/MANAGER CALLED. SAID EP&S IS SUPPOSED TO REMOVE SOILS & DISPOSE OF DRUMS. MR. BIBAS GAVE AUTHORIZATION FOR REMOVAL. I TOLD HIM TO GIVE UA A DATE IN WRITING WHEN REMED. TO OCCUR. 02/22/94: MNP/SEAN IRWIN, EP & S/TELECON - ADVISED THAT SOIL HAS BEEN DISPOSED. QUAKERTOWN WAITING FOR DRUMS OF PRODUCT/WATER TO MELT BEFORE DISPOSAL CAN TAKE PLACE. 03/03/94: MNP SITE VISIT 3/3/94. SOILS HAVE BEEN REMOVED BUT DRUMS OF PRODUCT REMAIN ON SITE. 04/12/94: MNP SITE VISIT 4/11/94. DRUMS OF PETROLEUM/WATER REMAIN ON SITE. 05/19/94: MNP SITE VISIT 5/18/94. DRUMS OF PETROLEUM/WATER HAVE BEEN REMOVED FROM SITE. 05/23/94: MNP SPOKE TO GAIL ANGELLI W/QUAKERTOWN. ALL WASTE HAS BEEN DISPOSED OF. RECEIPTS WILL BE SUBMITTED NEXT WEEK. 06/09/94: MNP SITE VISIT 6/9/94. SOIL HAS BEEN REMOVED. 06/17/94: SOIL DISPOSAL RECEIPT RECD. HAZ MANIFEST FOR GAS DISPOSAL RECD. SITE CAN BE CLOSED. "

QUAKERTOWN APARTMENTS (Continued) **1000871539**

Remarks: "CONTAMINATED FOUND DURING TANK REMOVAL"

All Materials:
Site ID: 167723
Operable Unit ID: 988608
Operable Unit: 01
Material ID: 392181
Material Code: 0009
Material Name: gasoline
Case No.: Not reported
Material FA: Petroleum
Quantity: .00
Units: L
Recovered: .00
Oxygenate: Not reported

RCRA NonGen / NLR:
Date form received by agency: 01/01/2007
Facility name: QUAKERTOWN APARTMENTS
Facility address: 220 COUNTRYSIDE LANE
ORCHARD PARK, NY 14127
EPA ID: NY0000063248
Mailing address: COUNTRYSIDE LANE
ORCHARD PARK, NY 14127
Contact: Not reported
Contact address: COUNTRYSIDE LANE
ORCHARD PARK, NY 14127
Contact country: US
Contact telephone: Not reported
Contact email: Not reported
EPA Region: 02
Land type: Private
Classification: Non-Generator
Description: Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:
Owner/operator name: QUAKERTOWN APARTMENTS
Owner/operator address: 220 COUNTRYSIDE LANE
ORCHARD PARK, NY 14127
Owner/operator country: US
Owner/operator telephone: 716-668-6616
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Owner/operator name: QUAKERTOWN APARTMENTS
Owner/operator address: 220 COUNTRYSIDE LANE
ORCHARD PARK, NY 14127
Owner/operator country: US
Owner/operator telephone: 716-668-6616
Owner/operator email: Not reported
Owner/operator fax: Not reported

QUAKERTOWN APARTMENTS (Continued) **1000871539**

Owner/operator extension: Not reported
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:
Date form received by agency: 01/01/2006
Site name: QUAKERTOWN APARTMENTS
Classification: Not a generator, verified

Date form received by agency: 07/08/1999
Site name: QUAKERTOWN APARTMENTS
Classification: Not a generator, verified

Date form received by agency: 11/24/1993
Site name: QUAKERTOWN APARTMENTS
Classification: Small Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D018
. Waste name: BENZENE

Violation Status: No violations found

Evaluation Action Summary:
Evaluation date: 02/19/1997
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

FINDS:

Registry ID: 110004309757

Environmental Interest/Information System

QUAKERTOWN APARTMENTS (Continued) **1000871539**

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Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:

Envid:	1000871539
Registry ID:	110004309757
DFR URL:	http://echo.epa.gov/detailed-facility-report?fid=110004309757

NY MANIFEST:

Country:	USA
EPA ID:	NY0000063248
Facility Status:	Not reported
Location Address 1:	220 COUNTRYSIDE LANE
Code:	BP
Location Address 2:	Not reported
Total Tanks:	Not reported
Location City:	ORCHARD PARK
Location State:	NY
Location Zip:	14127
Location Zip 4:	Not reported

NY MANIFEST:

EPAID:	NY0000063248
Mailing Name:	QUAKERTOWN APARTMENTS
Mailing Contact:	GAYLE A ANGELLI
Mailing Address 1:	220 COUNTRYSIDELANE
Mailing Address 2:	Not reported
Mailing City:	ORCHARD PARK
Mailing State:	NY
Mailing Zip:	14127
Mailing Zip 4:	Not reported
Mailing Country:	USA
Mailing Phone:	7166686616

NY MANIFEST:

Document ID:	NYB4561794
Manifest Status:	C
seq:	Not reported
Year:	1994
Trans1 State ID:	80350VNY
Trans2 State ID:	Not reported
Generator Ship Date:	04/18/1994
Trans1 Recv Date:	04/18/1994
Trans2 Recv Date:	/ /
TSD Site Recv Date:	04/18/1994
Part A Recv Date:	04/26/1994
Part B Recv Date:	05/06/1994
Generator EPA ID:	NY0000063248

QUAKERTOWN APARTMENTS (Continued) **1000871539**

Trans1 EPA ID:	NYD982792814
Trans2 EPA ID:	Not reported
TSDF ID 1:	OHD004178612
TSDF ID 2:	Not reported
Manifest Tracking Number:	Not reported
Import Indicator:	Not reported
Export Indicator:	Not reported
Discr Quantity Indicator:	Not reported
Discr Type Indicator:	Not reported
Discr Residue Indicator:	Not reported
Discr Partial Reject Indicator:	Not reported
Discr Full Reject Indicator:	Not reported
Manifest Ref Number:	Not reported
Alt Facility RCRA ID:	Not reported
Alt Facility Sign Date:	Not reported
MGMT Method Type Code:	Not reported
Waste Code:	D001 - NON-LISTED IGNITABLE WASTES
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Waste Code:	Not reported
Quantity:	00400
Units:	G - Gallons (liquids only)* (8.3 pounds)
Number of Containers:	001
Container Type:	TT - Cargo tank, tank trucks
Handling Method:	B Incineration, heat recovery, burning.
Specific Gravity:	100

Click this hyperlink while viewing on your computer to access additional NY_MANIFEST: detail in the EDR Site Report.

48
SSE
1/4-1/2
0.361 mi.
1908 ft.

ORCHARD PARK AIRPORT **NY LTANKS** **S101659334**
ORCHARD PARK ROAD **N/A**
ORCHARD PARK, NY

Relative:
Higher

Actual:
786 ft.

LTANKS:

Facility ID:	9507154
Site ID:	187324
Closed Date:	1995-10-04
Spill Number:	9507154
Spill Date:	1995-09-01
Spill Cause:	Tank Failure
Spill Source:	Commercial/Industrial
Spill Class:	E6
Cleanup Ceased:	1995-10-04
SWIS:	1560
Investigator:	JFOTTO
Referred To:	Not reported
Reported to Dept:	1995-09-11
CID:	Not reported
Water Affected:	Not reported
Spill Notifier:	Citizen
Last Inspection:	1995-10-04
Recommended Penalty:	False

ORCHARD PARK AIRPORT (Continued) **S101659334**

Meets Standard:	True
UST Involvement:	True
Remediation Phase:	0
Date Entered In Computer:	1995-09-18
Spill Record Last Update:	2003-08-05
Spiller Name:	Not reported
Spiller Company:	NONE
Spiller Address:	Not reported
Spiller County:	001
Spiller Contact:	Not reported
Spiller Phone:	Not reported
Spiller Extention:	Not reported
DEC Region:	9
DER Facility ID:	156506
DEC Memo:	"Prior to Sept, 2004 data translation this spill Lead_DEC Field was JFO 09/13/95: FG SITE VISIT 9/13/95. UNABLE TO FIND VENT PIPES. 09/20/95: FG CONTACTED MR. PFEIL. HE WILL SUBMIT SITE ASSESSMENT COMPLETED AS PART OF PROPERTY TRANSFER 2-3 YRS AGO. 10/04/95: FG SITE VISIT. FOUND NO PETROLEUM SPILL. UST'S ON SITE PER RP ROBIN PFEIL. ID'D IN THE SITE ASSESSMENT. NO FURTHER ACTION REQUIRED. SITE CAN BE CLOSED & REFERRED TO PBS. 10/06/95: JFO SITE VISIT MET WITH DON ANDRESS MEMBER OF FLYING CLUB THAT LEASES AIRFIELD DISCOVERED 2 AST'S 1-500 GAS AND 1-275 HEATING OIL. I FOUND NO FILLPORTS AND 1 POSSIBLE VENTPIPE. MR ANDRESS DOESN'T THINK IT'S A VENT. WAIT FOR SITE ASSESSMENT. 10/11/95: JFO SENT LETTER TO MR PFEIL, REMOVE OR REGISTER TANKS ALSO CONTAM SOIL DISCOVERED AROUND W.O. DRUMS MUST BE CLEANED UP. RESPONSE 10/20/95. 10/20/95: JFO TELECON WITH MR PFEIL TO MEET AT AIRPORT 11/1/95 AT 9AM 11/01/95: JFO SITE VISIT, MET MR PFEIL OWNER OF PROPERTY. WE SEARCHED PROPERTY FOR SIGNS OF UST'S AND FOUND NONE. MR. PFEIL SAID HE WOULD CONTACT THE CONSULTANTS THAT DID THE SITE ASSESSMENT FOR A DIAGRAM OF THIS SITE. 11/07/95: JFO RECEIVED LETTER FROM MR. PFEIL STATING THE SPILLAGE AROUND THE WASTE OIL DRUMS WILL BE CLEANED UP BY THE FLYING CLUB. "
Remarks:	"OLD TANKS THAT USED TO SERVICE AIRPORT ARE LEAKING. USED TO HAVE SPILLAGE AROUND TANKS. VENT PIPES STILL IN PLACE."

All Materials:

Site ID:	187324
Operable Unit ID:	1018019
Operable Unit:	01
Material ID:	361581
Material Code:	0011
Material Name:	jet fuel
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	.00
Units:	G
Recovered:	.00
Oxygenate:	Not reported

49
SSW
1/4-1/2
0.370 mi.
1954 ft.

ORCHARD PARK FLYING SVC
3265 ORCHARD PARK ROAD
ORCHARD PARK, NY

NY LTANKS

S104781961
N/A

Relative:
Lower

Actual:
752 ft.

LTANKS:

Facility ID:	0004943
Site ID:	140262
Closed Date:	2001-10-17
Spill Number:	0004943
Spill Date:	2000-07-25
Spill Cause:	Tank Failure
Spill Source:	Commercial/Industrial
Spill Class:	B3
Cleanup Ceased:	2001-10-17
SWIS:	1560
Investigator:	MXFRANKS
Referred To:	Not reported
Reported to Dept:	2000-07-25
CID:	389
Water Affected:	Not reported
Spill Notifier:	Other
Last Inspection:	2000-09-06
Recommended Penalty:	False
Meets Standard:	True
UST Involvement:	True
Remediation Phase:	0
Date Entered In Computer:	2000-07-25
Spill Record Last Update:	2001-10-17
Spiller Name:	ROBIN PFEIHL
Spiller Company:	METRO TRITON REALTY
Spiller Address:	5150 GENESSEE ST
Spiller County:	001
Spiller Contact:	CALLER
Spiller Phone:	Not reported
Spiller Extention:	Not reported
DEC Region:	9
DER Facility ID:	119787
DEC Memo:	"Prior to Sept, 2004 data translation this spill Lead_DEC Field was MF 7/26/00:SAC TELECON ANDY KUCSERIK, BUFFALO DRILLING - SITE IS AN OLD ARMY AIRFORCE, THE OWNER OF THE SITE IS METRO TRITON REALTY AND THE SITE IS LEASED BY ORCHARD PARK FLYING SERVICE, A PHASE I STUDY WAS DONE, TANKS EXISTENCE WAS UNKNOWN SO A MAGNATOMETER STUDY WAS DONE AND ANOMALIES WERE FOUND, SINCE THESE ANOMALIES WERE FOUND IN AN OPEN RURAL AREA EXCAVATION WAS PERFORMED TO FURTHER INVESTIGATE THE AREA, 3 TANKS WERE FOUND TOGETHER AND CONTAMINATED SOIL WAS FOUND THAT REGISTERED 600 ppm ON A PID METER, SAMPLES WERE TAKEN FOR ANALYSIS, MR. KUCSERIK STOPPED THE WORK BECAUSE HE WAS NOT HIRED TO GO FURTHER THAN THIS. 07/26/00: MF S/I NO ONE ON SITE. THERE IS FRESHLY DUG AREA IN BACK OF A SHED THAT IS FALLING DOWN. T/C/RP, ROBIN PFEIHL HE IS OUT OF TOWN. T/C/ANDY KUCSERIK. HE WAS NOT HIRED TO REMOVE TANKS. 07/27/00: MF T/C RP, NOT AVAIL. LEFT MESSAGE. REMOVAL LETTWER SENT, TANKS MUST BE REMOVED WITHIN 30 DAYS. 08/30/00: MF S/I/ROBIN PFEIHL, RP/BUFFALO DRILLING. 3-1K TANKS UNCOVERED FULL OF WATER WITH ODOR. WILL BE PUMPED. REMOVAL DELAYED DUE TO PUMP FAILURE. 09/01/00: MF S/I/BUFFALO DRILLING, 1-1K TANK REMOVED & CLEANED TWO OTHERS IN THE GROUND WAITING FOR HOLDING TANK FOR TANK WATER. NO SHEEN/PRODUCT ON GW. 09/06/00: MF S/I ONE WORKER ON SITE.

ORCHARD PARK FLYING SVC (Continued) **S104781961**

THE TWO TANKS LEFT IN THE GROUND WILL BE REMOVED TODAY. PM TELEPHONE MESSAGE FROM BARRON ASSOIC, ALL TANKS & CONTAMINATED SOIL REMOVED. 10/12/00: MF LETTER FROM RP, SOIL FROM EXCAVTION IN BIOPILE. ONE TREATMENT APPLIED. SOIL TILLED. WAITING FOR EXCAVATION SAMPLE RESULTS. 12/04/00: MF 1ST SAMPLING LETTER, DUE, 12/29/00. 01/10/01: MF 2ND SAMPLING LETTER, DUE 1/31/01. 02/27/01: MF 3RD SAMPLING LETTER, DUE 3/15/01. 04/12/01: MF RECEIVED EXCAVATION SAMPLING RESULTS, 8021 & 8270 BN'S, DIRECT, ALL PARAMETERS BS. 07/23/01: MF LETTER TO RP TO SAMPLE BIOPILE. SCHEDULE BY 7/31/01. 10/04/01: MF RECEIVED REPORT INCLUDING 4 BIOPILE SAMPLE RESULTS. ALL SAMPLES BELOW STARS, 8021 DIRECT. EXCAVATION SAMPLE RESULTS BELOW STARS. NO FURTHER ACTION NECESSARY. 10/17/01: MF CLOSURE LETTER SENT."

Remarks: "caller reporting a spill of matrial from a leaky tank occurring under ground. no clean up and no callback necesary."

All Materials:

Site ID:	140262
Operable Unit ID:	825994
Operable Unit:	01
Material ID:	549679
Material Code:	0009
Material Name:	gasoline
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	.00
Units:	G
Recovered:	.00
Oxygenate:	Not reported

50
SSW
1/4-1/2
0.458 mi.
2418 ft.

Relative:
Lower

Actual:
741 ft.

JOE DIMARCO **NY LTANKS** **S100118987**
3309 ORCHARD PARK ROAD **N/A**
ORCHARD PARK, NY

LTANKS:

Facility ID:	8502156
Site ID:	240056
Closed Date:	1987-12-15
Spill Number:	8502156
Spill Date:	1985-09-23
Spill Cause:	Tank Failure
Spill Source:	Gasoline Station or other PBS Facility
Spill Class:	Not reported
Cleanup Ceased:	1986-12-15
SWIS:	1560
Investigator:	MJHINTON
Referred To:	Not reported
Reported to Dept:	1985-09-23
CID:	Not reported
Water Affected:	Not reported
Spill Notifier:	DEC
Last Inspection:	1986-09-17
Recommended Penalty:	False
Meets Standard:	True
UST Involvement:	True
Remediation Phase:	0

JOE DIMARCO (Continued) **S100118987**

Date Entered In Computer:	1986-06-26
Spill Record Last Update:	2000-07-24
Spiller Name:	Not reported
Spiller Company:	JOE DIMARCO
Spiller Address:	40 HILLSIDE DRIVE
Spiller County:	001
Spiller Contact:	Not reported
Spiller Phone:	Not reported
Spiller Extention:	Not reported
DEC Region:	9
DER Facility ID:	197464
DEC Memo:	"Prior to Sept, 2004 data translation this spill Lead_DEC Field was MJH / / : LETTER 04/23/86, REPLY 05/02/86 - NG. / / : MEETING 02/14/86, OWNERSHIP OF TANKS TO BE DETERMINED. / / : SITE INSPECTION 10/09/85, MEETING WITH UTILITY COMPANIES AND DOT. / / : NO FURTHER WORK PRACTICAL ON THIS SPILL, 2 TANKS MAY BE LEFT, EFFORT REQUIRED DOES IS NOT JUSTIFIED BY EXPECTED RETURN TANKS NOT A PROBLEM. / / : LETTERS 03/03/86 AND 04/23/86, DEMARCO INFORMED ABOUT TANKS 1 AND 2 ARE HIS RESPONSIBILITY. / / : LETTER 10/24/86, REPLY 10/31/86, CLEANUP BY 11/14/86 - NG. / / : DOT REMOVING TANKS IN ROW, TANK REMOVAL PENDING ON DEMARCO PROPERTY, LETTER TO BE SENT TO DEMARCO TO REQUEST WORK PROCEED. / / : LETTER 12/30/86, REPLY IMMEDIATE - OK; LETTER 01/17/86; LIQUIDS REMOVED FORM TANKS 11/15/85. / / : SITE INSPECTION 10/10/86, OWNER AGREES TO REMOVE LIQUIDS FORM TANKS. / / : 8TH TANK FOUND, DOT REMOVED & DISPOSED OF 4 TANKS, 2 TANKS FILLED IN PER LETTER RECIEVED 8/25/86, PENDING REMOVAL OF 2 TANKS BY DEMARCO. / / : LETTER 02/19/86, ERIE COUNTY WILL REMOVE TANKS 3,4,5,6, AND 7 WHICH ARE WITHIN THEIR ROW. "
Remarks:	"UTILITY RELOCATION FOR HIGHWAY RECONSTRUCTION HIT ABANDONED GASOLINE TANKS"

All Materials:

Site ID:	240056
Operable Unit ID:	895345
Operable Unit:	01
Material ID:	565383
Material Code:	0009
Material Name:	gasoline
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	.00
Units:	G
Recovered:	.00
Oxygenate:	Not reported

Count: 1 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
WEST SENECA	S102175352	UNION ROAD ACCIDENT	UNION ROAD		NY Spills

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 10/10/2017
Date Data Arrived at EDR: 11/03/2017
Date Made Active in Reports: 12/15/2017
Number of Days to Update: 42

Source: EPA
Telephone: N/A
Last EDR Contact: 11/03/2017
Next Scheduled EDR Contact: 01/15/2018
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 10/10/2017
Date Data Arrived at EDR: 11/03/2017
Date Made Active in Reports: 12/15/2017
Number of Days to Update: 42

Source: EPA
Telephone: N/A
Last EDR Contact: 11/03/2017
Next Scheduled EDR Contact: 01/15/2018
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal Delisted NPL site list

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 10/10/2017
Date Data Arrived at EDR: 11/03/2017
Date Made Active in Reports: 12/15/2017
Number of Days to Update: 42

Source: EPA
Telephone: N/A
Last EDR Contact: 11/03/2017
Next Scheduled EDR Contact: 01/15/2018
Data Release Frequency: Quarterly

Federal CERCLIS list

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 11/07/2016
Date Data Arrived at EDR: 01/05/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 92

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 10/06/2017
Next Scheduled EDR Contact: 01/15/2018
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 07/11/2017
Date Data Arrived at EDR: 07/21/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 77

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 11/03/2017
Next Scheduled EDR Contact: 01/29/2018
Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 07/11/2017
Date Data Arrived at EDR: 07/28/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 70

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 11/03/2017
Next Scheduled EDR Contact: 01/29/2018
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 09/13/2017
Date Data Arrived at EDR: 09/26/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 10

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 09/13/2017
Date Data Arrived at EDR: 09/26/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 10

Source: Environmental Protection Agency
Telephone: (212) 637-3660
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 09/13/2017
Date Data Arrived at EDR: 09/26/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 10

Source: Environmental Protection Agency
Telephone: (212) 637-3660
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 09/13/2017
Date Data Arrived at EDR: 09/26/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 10

Source: Environmental Protection Agency
Telephone: (212) 637-3660
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 09/13/2017
Date Data Arrived at EDR: 09/26/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 10

Source: Environmental Protection Agency
Telephone: (212) 637-3660
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Quarterly

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 05/22/2017
Date Data Arrived at EDR: 06/13/2017
Date Made Active in Reports: 09/15/2017
Number of Days to Update: 94

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 11/08/2017
Next Scheduled EDR Contact: 02/26/2018
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 08/10/2017
Date Data Arrived at EDR: 08/30/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 11/27/2017
Next Scheduled EDR Contact: 03/12/2018
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 08/10/2017
Date Data Arrived at EDR: 08/30/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 11/27/2017
Next Scheduled EDR Contact: 03/12/2018
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 09/18/2017
Date Data Arrived at EDR: 09/21/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 22

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 09/21/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

SHWS: Inactive Hazardous Waste Disposal Sites in New York State

Referred to as the State Superfund Program, the Inactive Hazardous Waste Disposal Site Remedial Program is the cleanup program for inactive hazardous waste sites and now includes hazardous substance sites

Date of Government Version: 08/15/2017
Date Data Arrived at EDR: 08/17/2017
Date Made Active in Reports: 10/24/2017
Number of Days to Update: 68

Source: Department of Environmental Conservation
Telephone: 518-402-9622
Last EDR Contact: 08/17/2017
Next Scheduled EDR Contact: 11/27/2017
Data Release Frequency: Annually

VAPOR REOPENED: Vapor Intrustion Legacy Site List

New York is currently re-evaluating previous assumptions and decisions regarding the potential for soil vapor intrusion exposures at sites. As a result, all past, current, and future contaminated sites will be evaluated to determine whether these sites have the potential for exposures related to soil vapor intrusion.

Date of Government Version: 05/01/2017
Date Data Arrived at EDR: 05/18/2017
Date Made Active in Reports: 09/22/2017
Number of Days to Update: 127

Source: Department of Environmenal Conservation
Telephone: 518-402-9814
Last EDR Contact: 11/17/2017
Next Scheduled EDR Contact: 02/26/2018
Data Release Frequency: Varies

State and tribal landfill and/or solid waste disposal site lists

SWF/LF: Facility Register

Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 09/25/2017
Date Data Arrived at EDR: 09/26/2017
Date Made Active in Reports: 11/13/2017
Number of Days to Update: 48

Source: Department of Environmental Conservation
Telephone: 518-457-2051
Last EDR Contact: 09/21/2017
Next Scheduled EDR Contact: 01/15/2018
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land

Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 04/26/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 78

Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 10/27/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 04/25/2017
Date Data Arrived at EDR: 11/07/2017
Date Made Active in Reports: 12/08/2017
Number of Days to Update: 31
Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 11/07/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 04/13/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 78
Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 10/27/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 05/01/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 78
Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 10/27/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 04/14/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 71
Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 10/27/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 04/24/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 71
Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 10/27/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 10/14/2016
Date Data Arrived at EDR: 01/27/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 98
Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 10/27/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Semi-Annually

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 04/14/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 71
Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 10/27/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

LTANKS: Spills Information Database

Leaking Storage Tank Incident Reports. These records contain an inventory of reported leaking storage tank incidents reported from 4/1/86 through the most recent update. They can be either leaking underground storage tanks or leaking aboveground storage tanks. The causes of the incidents are tank test failures, tank failures or tank overfills.

Date of Government Version: 10/31/2017
Date Data Arrived at EDR: 10/31/2017
Date Made Active in Reports: 11/02/2017
Number of Days to Update: 2

Source: Department of Environmental Conservation
Telephone: 518-402-9549
Last EDR Contact: 10/31/2017
Next Scheduled EDR Contact: 11/27/2017
Data Release Frequency: Varies

HIST LTANKS: Listing of Leaking Storage Tanks

A listing of leaking underground and aboveground storage tanks. The causes of the incidents are tank test failures, tank failures or tank overfills. In 2002, the Department of Environmental Conservation stopped providing updates to its original Spills Information Database. This database includes fields that are no longer available from the NYDEC as of January 1, 2002. Current information may be found in the NY LTANKS database. Department of Environmental Conservation.

Date of Government Version: 01/01/2002
Date Data Arrived at EDR: 07/08/2005
Date Made Active in Reports: 07/14/2005
Number of Days to Update: 6

Source: Department of Environmental Conservation
Telephone: 518-402-9549
Last EDR Contact: 07/07/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

State and tribal registered storage tank lists

FEMA UST: Underground Storage Tank Listing

A listing of all FEMA owned underground storage tanks.

Date of Government Version: 05/15/2017
Date Data Arrived at EDR: 05/30/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 136

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 10/13/2017
Next Scheduled EDR Contact: 01/22/2018
Data Release Frequency: Varies

UST: Petroleum Bulk Storage (PBS) Database

Facilities that have petroleum storage capacities in excess of 1,100 gallons and less than 400,000 gallons.

Date of Government Version: 11/28/2017
Date Data Arrived at EDR: 11/28/2017
Date Made Active in Reports: 11/29/2017
Number of Days to Update: 1

Source: Department of Environmental Conservation
Telephone: 518-402-9549
Last EDR Contact: 11/28/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: No Update Planned

CBS UST: Chemical Bulk Storage Database

Facilities that store regulated hazardous substances in underground tanks of any size

Date of Government Version: 01/01/2002
Date Data Arrived at EDR: 02/20/2002
Date Made Active in Reports: 03/22/2002
Number of Days to Update: 30

Source: NYSDEC
Telephone: 518-402-9549
Last EDR Contact: 10/24/2005
Next Scheduled EDR Contact: 01/23/2006
Data Release Frequency: No Update Planned

MOSF UST: Major Oil Storage Facilities Database

Facilities that may be onshore facilities or vessels, with petroleum storage capacities of 400,000 gallons or greater.

Date of Government Version: 01/01/2002
Date Data Arrived at EDR: 02/20/2002
Date Made Active in Reports: 03/22/2002
Number of Days to Update: 30

Source: NYSDEC
Telephone: 518-402-9549
Last EDR Contact: 07/25/2005
Next Scheduled EDR Contact: 10/24/2005
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CBS: Chemical Bulk Storage Site Listing

These facilities store regulated hazardous substances in aboveground tanks with capacities of 185 gallons or greater, and/or in underground tanks of any size

Date of Government Version: 11/28/2017
Date Data Arrived at EDR: 11/28/2017
Date Made Active in Reports: 11/29/2017
Number of Days to Update: 1

Source: Department of Environmental Conservation
Telephone: 518-402-9549
Last EDR Contact: 11/28/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Quarterly

MOSF: Major Oil Storage Facility Site Listing

These facilities may be onshore facilities or vessels, with petroleum storage capacities of 400,000 gallons or greater.

Date of Government Version: 11/28/2017
Date Data Arrived at EDR: 11/28/2017
Date Made Active in Reports: 11/29/2017
Number of Days to Update: 1

Source: Department of Environmental Conservation
Telephone: 518-402-9549
Last EDR Contact: 11/28/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Quarterly

AST: Petroleum Bulk Storage

Registered Aboveground Storage Tanks.

Date of Government Version: 11/28/2017
Date Data Arrived at EDR: 11/28/2017
Date Made Active in Reports: 11/29/2017
Number of Days to Update: 1

Source: Department of Environmental Conservation
Telephone: 518-402-9549
Last EDR Contact: 11/28/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: No Update Planned

CBS AST: Chemical Bulk Storage Database

Facilities that store regulated hazardous substances in aboveground tanks with capacities of 185 gallons or greater, and/or in underground tanks of any size.

Date of Government Version: 01/01/2002
Date Data Arrived at EDR: 02/20/2002
Date Made Active in Reports: 03/22/2002
Number of Days to Update: 30

Source: NYSDEC
Telephone: 518-402-9549
Last EDR Contact: 07/25/2005
Next Scheduled EDR Contact: 10/24/2005
Data Release Frequency: No Update Planned

MOSF AST: Major Oil Storage Facilities Database

Facilities that may be onshore facilities or vessels, with petroleum storage capacities of 400,000 gallons or greater.

Date of Government Version: 01/01/2002
Date Data Arrived at EDR: 02/20/2002
Date Made Active in Reports: 03/22/2002
Number of Days to Update: 30

Source: NYSDEC
Telephone: 518-402-9549
Last EDR Contact: 07/25/2005
Next Scheduled EDR Contact: 10/24/2005
Data Release Frequency: No Update Planned

INDIAN UST R10: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 04/25/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 78

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 10/27/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 05/02/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 71

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 10/27/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 04/24/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 12/08/2017
Number of Days to Update: 134

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 10/27/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 05/01/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 78

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 10/27/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 04/13/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 78

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 10/27/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 04/26/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 71

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 10/27/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 10/14/2016
Date Data Arrived at EDR: 01/27/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 98

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 10/27/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Semi-Annually

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 04/14/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 71

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 10/27/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

TANKS: Storage Tank Faciliy Listing

This database contains records of facilities that are or have been regulated under Bulk Storage Program. Tank information for these facilities may not be releasable by the state agency.

Date of Government Version: 11/28/2017
Date Data Arrived at EDR: 11/28/2017
Date Made Active in Reports: 11/29/2017
Number of Days to Update: 1

Source: Department of Environmental Conservation
Telephone: 518-402-9543
Last EDR Contact: 11/28/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Quarterly

State and tribal institutional control / engineering control registries

RES DECL: Restrictive Declarations Listing

A restrictive declaration is a covenant running with the land which binds the present and future owners of the property. As a condition of certain special permits, the City Planning Commission may require an applicant to sign and record a restrictive declaration that places specified conditions on the future use and development of the property. Certain restrictive declarations are indicated by a D on zoning maps.

Date of Government Version: 11/18/2010
Date Data Arrived at EDR: 06/30/2014
Date Made Active in Reports: 07/21/2014
Number of Days to Update: 21

Source: NYC Department of City Planning
Telephone: 212-720-3401
Last EDR Contact: 09/22/2017
Next Scheduled EDR Contact: 01/01/2018
Data Release Frequency: Varies

ENV RES DECL: Environmental Restrictive Declarations

The Environmental Restrictive Declarations (ERD) listed were recorded in connection with a zoning action against the noted Tax Blocks and Tax Lots, or portion thereof, and are available in the property records on file at the Office of the City Register for Bronx, Kings, New York and Queens counties or at the Richmond County Clerk's office. They contain environmental requirements with respect to hazardous materials, air quality and/or noise in accordance with Section 11-15 of this Resolution.

Date of Government Version: 06/27/2017
Date Data Arrived at EDR: 09/21/2017
Date Made Active in Reports: 09/22/2017
Number of Days to Update: 1

Source: New York City Department of City Planning
Telephone: 212-720-3300
Last EDR Contact: 12/18/2017
Next Scheduled EDR Contact: 04/02/2018
Data Release Frequency: Varies

ENG CONTROLS: Registry of Engineering Controls

Environmental Remediation sites that have engineering controls in place.

Date of Government Version: 08/15/2017
Date Data Arrived at EDR: 08/17/2017
Date Made Active in Reports: 10/24/2017
Number of Days to Update: 68

Source: Department of Environmental Conservation
Telephone: 518-402-9553
Last EDR Contact: 08/17/2017
Next Scheduled EDR Contact: 11/27/2017
Data Release Frequency: Quarterly

INST CONTROL: Registry of Institutional Controls

Environmental Remediation sites that have institutional controls in place.

Date of Government Version: 08/15/2017
Date Data Arrived at EDR: 08/17/2017
Date Made Active in Reports: 10/24/2017
Number of Days to Update: 68

Source: Department of Environmental Conservation
Telephone: 518-402-9553
Last EDR Contact: 08/17/2017
Next Scheduled EDR Contact: 11/27/2017
Data Release Frequency: Quarterly

State and tribal voluntary cleanup sites

VCP NYC: Voluntary Cleanup Program Listing NYC

New York City voluntary cleanup program sites.

Date of Government Version: 10/04/2017
Date Data Arrived at EDR: 10/06/2017
Date Made Active in Reports: 11/13/2017
Number of Days to Update: 38

Source: New York City Office of Environmental Protection
Telephone: 212-788-8841
Last EDR Contact: 12/15/2017
Next Scheduled EDR Contact: 04/02/2018
Data Release Frequency: Varies

VCP: Voluntary Cleanup Agreements

New York established its Voluntary Cleanup Program (VCP) to address the environmental, legal and financial barriers that often hinder the redevelopment and reuse of contaminated properties. The Voluntary Cleanup Program was developed to enhance private sector cleanup of brownfields by enabling parties to remediate sites using private rather than public funds and to reduce the development pressures on "greenfield" sites.

Date of Government Version: 08/15/2017
Date Data Arrived at EDR: 08/17/2017
Date Made Active in Reports: 10/24/2017
Number of Days to Update: 68

Source: Department of Environmental Conservation
Telephone: 518-402-9711
Last EDR Contact: 08/17/2017
Next Scheduled EDR Contact: 11/27/2017
Data Release Frequency: Semi-Annually

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

INDIAN VCP R1: Voluntary Cleanup Priority Listing

A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 09/25/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Varies

State and tribal Brownfields sites

BROWNFIELDS: Brownfields Site List

A Brownfield is any real property where redevelopment or re-use may be complicated by the presence or potential presence of a hazardous waste, petroleum, pollutant, or contaminant.

Date of Government Version: 08/15/2017
Date Data Arrived at EDR: 08/17/2017
Date Made Active in Reports: 10/24/2017
Number of Days to Update: 68

Source: Department of Environmental Conservation
Telephone: 518-402-9764
Last EDR Contact: 08/17/2017
Next Scheduled EDR Contact: 11/27/2017
Data Release Frequency: Semi-Annually

ERP: Environmental Restoration Program Listing

In an effort to spur the cleanup and redevelopment of brownfields, New Yorkers approved a $200 million Environmental Restoration or Brownfields Fund as part of the $1.75 billion Clean Water/Clean Air Bond Act of 1996 (1996 Bond Act). Enhancements to the program were enacted on October 7, 2003. Under the Environmental Restoration Program, the State provides grants to municipalities to reimburse up to 90 percent of on-site eligible costs and 100% of off-site eligible costs for site investigation and remediation activities. Once remediated, the property may then be reused for commercial, industrial, residential or public use.

Date of Government Version: 08/15/2017
Date Data Arrived at EDR: 08/17/2017
Date Made Active in Reports: 10/24/2017
Number of Days to Update: 68

Source: Department of Environmental Conservation
Telephone: 518-402-9622
Last EDR Contact: 08/17/2017
Next Scheduled EDR Contact: 11/27/2017
Data Release Frequency: Quarterly

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 08/21/2017
Date Data Arrived at EDR: 09/20/2017
Date Made Active in Reports: 12/08/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 12/19/2017
Next Scheduled EDR Contact: 04/02/2018
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

SWRCY: Registered Recycling Facility List

A listing of recycling facilities.

Date of Government Version: 09/25/2017
Date Data Arrived at EDR: 09/26/2017
Date Made Active in Reports: 11/13/2017
Number of Days to Update: 48

Source: Department of Environmental Conservation
Telephone: 518-402-8705
Last EDR Contact: 09/21/2017
Next Scheduled EDR Contact: 01/15/2018
Data Release Frequency: Quarterly

SWTIRE: Registered Waste Tire Storage & Facility List

A listing of facilities registered to accept waste tires.

Date of Government Version: 06/14/2017
Date Data Arrived at EDR: 06/16/2017
Date Made Active in Reports: 09/22/2017
Number of Days to Update: 98

Source: Department of Environmental Conservation
Telephone: 518-402-8694
Last EDR Contact: 12/11/2017
Next Scheduled EDR Contact: 03/26/2018
Data Release Frequency: Annually

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 10/30/2017
Next Scheduled EDR Contact: 02/12/2018
Data Release Frequency: Varies

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39
Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137
Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 10/20/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land
A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176
Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 11/03/2017
Next Scheduled EDR Contact: 02/12/2018
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register
A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 07/13/2017
Date Data Arrived at EDR: 09/06/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 30
Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 11/28/2017
Next Scheduled EDR Contact: 03/12/2018
Data Release Frequency: No Update Planned

DEL SHWS: Delisted Registry Sites
A database listing of sites delisted from the Registry of Inactive Hazardous Waste Disposal Sites.

Date of Government Version: 08/15/2017
Date Data Arrived at EDR: 08/17/2017
Date Made Active in Reports: 09/22/2017
Number of Days to Update: 36
Source: Department of Environmental Conservation
Telephone: 518-402-9622
Last EDR Contact: 08/17/2017
Next Scheduled EDR Contact: 11/27/2017
Data Release Frequency: Annually

US CDL: Clandestine Drug Labs
A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 07/13/2017
Date Data Arrived at EDR: 09/06/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 30
Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 11/28/2017
Next Scheduled EDR Contact: 03/12/2018
Data Release Frequency: Quarterly

Local Lists of Registered Storage Tanks

HIST UST: Historical Petroleum Bulk Storage Database
These facilities have petroleum storage capacities in excess of 1,100 gallons and less than 400,000 gallons. This database contains detailed information per site. It is no longer updated due to the sensitive nature of the information involved. See UST for more current data.

Date of Government Version: 01/01/2002
Date Data Arrived at EDR: 06/02/2006
Date Made Active in Reports: 07/20/2006
Number of Days to Update: 48
Source: Department of Environmental Conservation
Telephone: 518-402-9549
Last EDR Contact: 10/23/2006
Next Scheduled EDR Contact: 01/22/2007
Data Release Frequency: Varies

HIST AST: Historical Petroleum Bulk Storage Database
These facilities have petroleum storage capabilities in excess of 1,100 gallons and less than 400,000 gallons. This database contains detailed information per site. No longer updated due to the sensitive nature of the information involved. See AST for more current data.

Date of Government Version: 01/01/2002
Date Data Arrived at EDR: 06/02/2006
Date Made Active in Reports: 07/20/2006
Number of Days to Update: 48
Source: Department of Environmental Conservation
Telephone: 518-402-9549
Last EDR Contact: 10/23/2006
Next Scheduled EDR Contact: 01/22/2007
Data Release Frequency: No Update Planned

Local Land Records

LIENS: Spill Liens Information
Lien information from the Oil Spill Fund.

Date of Government Version: 11/06/2017
Date Data Arrived at EDR: 11/07/2017
Date Made Active in Reports: 11/13/2017
Number of Days to Update: 6
Source: Office of the State Comptroller
Telephone: 518-474-9034
Last EDR Contact: 11/06/2017
Next Scheduled EDR Contact: 02/19/2018
Data Release Frequency: Quarterly

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 07/11/2017
Date Data Arrived at EDR: 07/26/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 79
Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 11/03/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System
Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 09/21/2017
Date Data Arrived at EDR: 09/21/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 22
Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 09/21/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Quarterly

SPILLS: Spills Information Database
Data collected on spills reported to NYSDEC as required by one or more of the following: Article 12 of the Navigation Law, 6 NYCRR Section 613.8 (from PBS regs), or 6 NYCRR Section 595.2 (from CBS regs). It includes spills active as of April 1, 1986, as well as spills occurring since this date.

Date of Government Version: 10/31/2017
Date Data Arrived at EDR: 10/31/2017
Date Made Active in Reports: 11/02/2017
Number of Days to Update: 2

Source: Department of Environmental Conservation
Telephone: 518-402-9549
Last EDR Contact: 10/31/2017
Next Scheduled EDR Contact: 11/27/2017
Data Release Frequency: Varies

HIST SPILLS: SPILLS Database

This database contains records of chemical and petroleum spill incidents. Under State law, petroleum and hazardous chemical spills that can impact the waters of the state must be reported by the spiller (and, in some cases, by anyone who has knowledge of the spills). In 2002, the Department of Environmental Conservation stopped providing updates to its original Spills Information Database. This database includes fields that are no longer available from the NYDEC as of January 1, 2002. Current information may be found in the NY SPILLS database. Department of Environmental Conservation.

Date of Government Version: 01/01/2002
Date Data Arrived at EDR: 07/08/2005
Date Made Active in Reports: 07/14/2005
Number of Days to Update: 6

Source: Department of Environmental Conservation
Telephone: 518-402-9549
Last EDR Contact: 07/07/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 12/14/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/12/2013
Number of Days to Update: 40

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SPILLS 80: SPILLS80 data from FirstSearch

Spills 80 includes those spill and release records available from FirstSearch databases prior to 1990. Typically, they may include chemical, oil and/or hazardous substance spills recorded before 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 80.

Date of Government Version: 11/02/2010
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 03/07/2013
Number of Days to Update: 63

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 09/13/2017
Date Data Arrived at EDR: 09/26/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 10

Source: Environmental Protection Agency
Telephone: (212) 637-3660
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 01/31/2015
Date Data Arrived at EDR: 07/08/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 97

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 11/22/2017
Next Scheduled EDR Contact: 03/05/2018
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 10/13/2017
Next Scheduled EDR Contact: 01/22/2018
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 10/11/2017
Next Scheduled EDR Contact: 01/22/2018
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 11/17/2017
Next Scheduled EDR Contact: 02/26/2018
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 10/17/2017
Date Data Arrived at EDR: 11/01/2017
Date Made Active in Reports: 12/08/2017
Number of Days to Update: 37

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 11/01/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 11/06/2017
Next Scheduled EDR Contact: 02/19/2018
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 04/22/2013
Date Data Arrived at EDR: 03/03/2015
Date Made Active in Reports: 03/09/2015
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 11/09/2017
Next Scheduled EDR Contact: 02/19/2018
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 01/15/2015
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 14

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 09/22/2017
Next Scheduled EDR Contact: 01/01/2018
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 11/24/2015
Date Made Active in Reports: 04/05/2016
Number of Days to Update: 133

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 11/20/2017
Next Scheduled EDR Contact: 03/05/2018
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 10/27/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 09/27/2017
Date Data Arrived at EDR: 10/12/2017
Date Made Active in Reports: 10/20/2017
Number of Days to Update: 8

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 12/08/2017
Next Scheduled EDR Contact: 03/19/2018
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 11/02/2017
Date Data Arrived at EDR: 11/17/2017
Date Made Active in Reports: 12/08/2017
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 10/23/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties

A listing of verified Potentially Responsible Parties

Date of Government Version: 10/25/2013
Date Data Arrived at EDR: 10/17/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 3

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 11/03/2017
Next Scheduled EDR Contact: 02/19/2018
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 06/01/2017
Date Data Arrived at EDR: 06/09/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 126

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 10/13/2017
Next Scheduled EDR Contact: 01/22/2018
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 10/11/2017
Next Scheduled EDR Contact: 01/22/2018
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 08/30/2016
Date Data Arrived at EDR: 09/08/2016
Date Made Active in Reports: 10/21/2016
Number of Days to Update: 43
Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 10/16/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 12/05/2017
Next Scheduled EDR Contact: 03/19/2018
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 07/01/2014
Date Data Arrived at EDR: 09/10/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 12/08/2017
Next Scheduled EDR Contact: 03/19/2018
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 05/24/2017
Date Data Arrived at EDR: 11/30/2017
Date Made Active in Reports: 12/15/2017
Number of Days to Update: 15
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 10/26/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 10/02/2017
Date Data Arrived at EDR: 10/05/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 8

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 10/05/2017
Next Scheduled EDR Contact: 01/15/2018
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 07/31/2012
Date Data Arrived at EDR: 08/07/2012
Date Made Active in Reports: 09/18/2012
Number of Days to Update: 42

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 10/31/2017
Next Scheduled EDR Contact: 02/12/2018
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 06/30/2017
Date Data Arrived at EDR: 08/03/2017
Date Made Active in Reports: 10/20/2017
Number of Days to Update: 78

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 12/18/2017
Next Scheduled EDR Contact: 04/02/2018
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 09/28/2017
Number of Days to Update: 218

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 11/20/2017
Next Scheduled EDR Contact: 03/05/2018
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 10/11/2017
Next Scheduled EDR Contact: 01/22/2018
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 12/23/2016
Date Data Arrived at EDR: 12/27/2016
Date Made Active in Reports: 02/17/2017
Number of Days to Update: 52

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 11/02/2017
Next Scheduled EDR Contact: 02/19/2018
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 06/23/2017
Date Data Arrived at EDR: 10/11/2017
Date Made Active in Reports: 11/03/2017
Number of Days to Update: 23

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 11/22/2017
Next Scheduled EDR Contact: 03/05/2018
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 10/10/2017
Date Data Arrived at EDR: 11/03/2017
Date Made Active in Reports: 12/15/2017
Number of Days to Update: 42

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 11/03/2017
Next Scheduled EDR Contact: 01/15/2018
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 07/31/2017
Date Data Arrived at EDR: 08/30/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 44

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 11/28/2017
Next Scheduled EDR Contact: 03/12/2018
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 12/05/2005
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 49

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 12/01/2017
Next Scheduled EDR Contact: 03/12/2018
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 12/01/2017
Next Scheduled EDR Contact: 03/12/2018
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 09/25/2017
Date Data Arrived at EDR: 09/26/2017
Date Made Active in Reports: 10/20/2017
Number of Days to Update: 24

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 12/19/2017
Next Scheduled EDR Contact: 03/26/2018
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 07/23/2017
Date Data Arrived at EDR: 09/06/2017
Date Made Active in Reports: 09/15/2017
Number of Days to Update: 9

Source: EPA
Telephone: (212) 637-3000
Last EDR Contact: 12/05/2017
Next Scheduled EDR Contact: 03/19/2018
Data Release Frequency: Quarterly

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 10/25/2016
Date Data Arrived at EDR: 06/02/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 133

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 10/16/2017
Next Scheduled EDR Contact: 01/29/2018
Data Release Frequency: Varies

DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 02/13/2017
Date Data Arrived at EDR: 02/15/2017
Date Made Active in Reports: 11/03/2017
Number of Days to Update: 261

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 11/21/2017
Next Scheduled EDR Contact: 03/12/2018
Data Release Frequency: Varies

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 09/02/2017
Date Data Arrived at EDR: 09/06/2017
Date Made Active in Reports: 10/20/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 12/05/2017
Next Scheduled EDR Contact: 03/19/2018
Data Release Frequency: Quarterly

FUELS PROGRAM: EPA Fuels Program Registered Listing

This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 08/17/2017
Date Data Arrived at EDR: 08/17/2017
Date Made Active in Reports: 09/15/2017
Number of Days to Update: 29

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 11/20/2017
Next Scheduled EDR Contact: 03/05/2018
Data Release Frequency: Quarterly

AIRS: Air Emissions Data

Point source emissions inventory data.

Date of Government Version: 11/06/2017
Date Data Arrived at EDR: 11/07/2017
Date Made Active in Reports: 11/13/2017
Number of Days to Update: 6

Source: Department of Environmental Conservation
Telephone: 518-402-8452
Last EDR Contact: 10/23/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Annually

COAL ASH: Coal Ash Disposal Site Listing
A listing of coal ash disposal site locations.

Date of Government Version: 09/25/2017
Date Data Arrived at EDR: 09/26/2017
Date Made Active in Reports: 10/12/2017
Number of Days to Update: 16

Source: Department of Environmental Conservation
Telephone: 518-402-8660
Last EDR Contact: 09/21/2017
Next Scheduled EDR Contact: 01/15/2018
Data Release Frequency: Quarterly

DRYCLEANERS: Registered Drycleaners
A listing of all registered drycleaning facilities.

Date of Government Version: 10/27/2016
Date Data Arrived at EDR: 01/10/2017
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 31

Source: Department of Environmental Conservation
Telephone: 518-402-8403
Last EDR Contact: 12/08/2017
Next Scheduled EDR Contact: 03/26/2018
Data Release Frequency: Varies

E DESIGNATION: E DESIGNATION SITE LISTING
The (E (Environmental)) designation would ensure that sampling and remediation take place on the subject properties, and would avoid any significant impacts related to hazardous materials at these locations. The (E) designations would require that the fee owner of the sites conduct a testing and sampling protocol, and remediation where appropriate, to the satisfaction of the NYCDEP before the issuance of a building permit by the Department of Buildings pursuant to the provisions of Section 11-15 of the Zoning Resolution (Environmental Requirements). The (E) designations also include a mandatory construction-related health and safety plan which must be approved by NYCDEP.

Date of Government Version: 08/22/2017
Date Data Arrived at EDR: 09/21/2017
Date Made Active in Reports: 09/22/2017
Number of Days to Update: 1

Source: New York City Department of City Planning
Telephone: 718-595-6658
Last EDR Contact: 12/18/2017
Next Scheduled EDR Contact: 04/02/2018
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing
Financial assurance information.

Date of Government Version: 09/07/2017
Date Data Arrived at EDR: 10/02/2017
Date Made Active in Reports: 10/12/2017
Number of Days to Update: 10

Source: Department of Environmental Conservation
Telephone: 518-402-8660
Last EDR Contact: 09/21/2017
Next Scheduled EDR Contact: 01/15/2018
Data Release Frequency: Quarterly

Financial Assurance 2: Financial Assurance Information Listing
A listing of financial assurance information for hazardous waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 03/09/2017
Date Data Arrived at EDR: 04/12/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 184

Source: Department of Environmental Conservation
Telephone: 518-402-8712
Last EDR Contact: 12/08/2017
Next Scheduled EDR Contact: 03/26/2018
Data Release Frequency: Varies

HSWDS: Hazardous Substance Waste Disposal Site Inventory
The list includes any known or suspected hazardous substance waste disposal sites. Also included are sites delisted from the Registry of Inactive Hazardous Waste Disposal Sites and non-Registry sites that U.S. EPA Preliminary Assessment (PA) reports or Site Investigation (SI) reports were prepared. Hazardous Substance Waste Disposal Sites are eligible to be Superfund sites now that the New York State Superfund has been refinanced and changed. This means that the study inventory has served its purpose and will no longer be maintained as a separate entity. The last version of the study inventory is frozen in time. The sites on the study will not automatically be made Superfund sites, rather each site will be further evaluated for listing on the Registry. So overtime they will be added to the registry or not.

Date of Government Version: 01/01/2003
Date Data Arrived at EDR: 10/20/2006
Date Made Active in Reports: 11/30/2006
Number of Days to Update: 41

Source: Department of Environmental Conservation
Telephone: 518-402-9564
Last EDR Contact: 05/26/2009
Next Scheduled EDR Contact: 08/24/2009
Data Release Frequency: No Update Planned

NY MANIFEST: Facility and Manifest Data

Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 10/01/2017
Date Data Arrived at EDR: 11/01/2017
Date Made Active in Reports: 11/13/2017
Number of Days to Update: 12

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 11/01/2017
Next Scheduled EDR Contact: 02/12/2018
Data Release Frequency: Quarterly

SPDES: State Pollutant Discharge Elimination System

New York State has a state program which has been approved by the United States Environmental Protection Agency for the control of wastewater and stormwater discharges in accordance with the Clean Water Act. Under New York State law the program is known as the State Pollutant Discharge Elimination System (SPDES) and is broader in scope than that required by the Clean Water Act in that it controls point source discharges to groundwaters as well as surface waters.

Date of Government Version: 10/25/2017
Date Data Arrived at EDR: 10/27/2017
Date Made Active in Reports: 11/28/2017
Number of Days to Update: 32

Source: Department of Environmental Conservation
Telephone: 518-402-8233
Last EDR Contact: 10/23/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: No Update Planned

UIC: Underground Injection Control Wells

A listing of enhanced oil recovery underground injection wells.

Date of Government Version: 09/05/2017
Date Data Arrived at EDR: 09/08/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 35

Source: Department of Environmental Conservation
Telephone: 518-402-8056
Last EDR Contact: 12/06/2017
Next Scheduled EDR Contact: 03/19/2018
Data Release Frequency: Quarterly

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA HWS: Recovered Government Archive State Hazardous Waste Facilities List

The EDR Recovered Government Archive State Hazardous Waste database provides a list of SHWS incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Environmental Conservation in New York.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/30/2013
Number of Days to Update: 182

Source: Department of Environmental Conservation
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Environmental Conservation in New York.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/10/2014
Number of Days to Update: 193

Source: Department of Environmental Conservation
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

CORTLAND COUNTY:

Cortland County Storage Tank Listing

A listing of aboveground storage tank sites located in Cortland County.

Date of Government Version: 09/26/2017
Date Data Arrived at EDR: 11/20/2017
Date Made Active in Reports: 11/29/2017
Number of Days to Update: 9

Source: Cortland County Health Department
Telephone: 607-753-5035
Last EDR Contact: 10/30/2017
Next Scheduled EDR Contact: 02/12/2018
Data Release Frequency: Quarterly

Cortland County Storage Tank Listing
A listing of underground storage tank sites located in Cortland County.

Date of Government Version: 09/26/2017
Date Data Arrived at EDR: 11/20/2017
Date Made Active in Reports: 11/29/2017
Number of Days to Update: 9

Source: Cortland County Health Department
Telephone: 607-753-5035
Last EDR Contact: 10/30/2017
Next Scheduled EDR Contact: 02/12/2018
Data Release Frequency: Quarterly

NASSAU COUNTY:

Registered Tank Database
A listing of aboveground storage tank sites located in Nassau County.

Date of Government Version: 01/09/2017
Date Data Arrived at EDR: 01/11/2017
Date Made Active in Reports: 02/15/2017
Number of Days to Update: 35

Source: Nassau County Health Department
Telephone: 516-571-3314
Last EDR Contact: 11/27/2017
Next Scheduled EDR Contact: 02/12/2018
Data Release Frequency: No Update Planned

Storage Tank Database
A listing of aboveground storage tank sites located in Nassau County.

Date of Government Version: 02/15/2011
Date Data Arrived at EDR: 02/23/2011
Date Made Active in Reports: 03/29/2011
Number of Days to Update: 34

Source: Nassau County Office of the Fire Marshal
Telephone: 516-572-1000
Last EDR Contact: 10/26/2017
Next Scheduled EDR Contact: 02/12/2018
Data Release Frequency: Varies

Registered Tank Database in Nassau County
A listing of facilities in Nassau County with storage tanks.

Date of Government Version: 01/09/2017
Date Data Arrived at EDR: 01/11/2017
Date Made Active in Reports: 02/15/2017
Number of Days to Update: 35

Source: Nassau County Department of Health
Telephone: 516-227-9691
Last EDR Contact: 11/27/2017
Next Scheduled EDR Contact: 02/12/2018
Data Release Frequency: Varies

Registered Tank Database
A listing of underground storage tank sites located in Nassau County.

Date of Government Version: 01/09/2017
Date Data Arrived at EDR: 01/11/2017
Date Made Active in Reports: 02/15/2017
Number of Days to Update: 35

Source: Nassau County Health Department
Telephone: 516-571-3314
Last EDR Contact: 11/27/2017
Next Scheduled EDR Contact: 02/12/2018
Data Release Frequency: No Update Planned

Storage Tank Database
A listing of underground storage tank sites located in Nassau County.

Date of Government Version: 02/15/2011
Date Data Arrived at EDR: 02/23/2011
Date Made Active in Reports: 03/29/2011
Number of Days to Update: 34

Source: Nassau County Office of the Fire Marshal
Telephone: 516-572-1000
Last EDR Contact: 10/26/2017
Next Scheduled EDR Contact: 02/12/2018
Data Release Frequency: Varies

ROCKLAND COUNTY:

Petroleum Bulk Storage Database
A listing of aboveground storage tank sites located in Rockland County.

Date of Government Version: 02/02/2017
Date Data Arrived at EDR: 03/17/2017
Date Made Active in Reports: 09/22/2017
Number of Days to Update: 189
Source: Rockland County Health Department
Telephone: 914-364-2605
Last EDR Contact: 12/04/2017
Next Scheduled EDR Contact: 03/19/2018
Data Release Frequency: Quarterly

Petroleum Bulk Storage Database
A listing of underground storage tank sites located in Rockland County.

Date of Government Version: 02/02/2017
Date Data Arrived at EDR: 03/17/2017
Date Made Active in Reports: 09/22/2017
Number of Days to Update: 189
Source: Rockland County Health Department
Telephone: 914-364-2605
Last EDR Contact: 12/04/2017
Next Scheduled EDR Contact: 03/19/2018
Data Release Frequency: Quarterly

SUFFOLK COUNTY:

Storage Tank Database
A listing of aboveground storage tank sites located in Suffolk County.

Date of Government Version: 03/03/2015
Date Data Arrived at EDR: 03/10/2015
Date Made Active in Reports: 03/23/2015
Number of Days to Update: 13
Source: Suffolk County Department of Health Services
Telephone: 631-854-2521
Last EDR Contact: 10/30/2017
Next Scheduled EDR Contact: 02/12/2018
Data Release Frequency: No Update Planned

Storage Tank Database
A listing of underground storage tank sites located in Suffolk County.

Date of Government Version: 03/03/2015
Date Data Arrived at EDR: 03/10/2015
Date Made Active in Reports: 03/23/2015
Number of Days to Update: 13
Source: Suffolk County Department of Health Services
Telephone: 631-854-2521
Last EDR Contact: 10/30/2017
Next Scheduled EDR Contact: 02/12/2018
Data Release Frequency: No Update Planned

WESTCHESTER COUNTY:

Listing of Storage Tanks
A listing of aboveground storage tank sites located in Westchester County.

Date of Government Version: 10/19/2017
Date Data Arrived at EDR: 11/21/2017
Date Made Active in Reports: 11/29/2017
Number of Days to Update: 8
Source: Westchester County Department of Health
Telephone: 914-813-5161
Last EDR Contact: 10/26/2017
Next Scheduled EDR Contact: 02/12/2018
Data Release Frequency: Semi-Annually

Listing of Storage Tanks
A listing of underground storage tank sites located in Westchester County.

Date of Government Version: 10/19/2017
Date Data Arrived at EDR: 11/21/2017
Date Made Active in Reports: 11/29/2017
Number of Days to Update: 8
Source: Westchester County Department of Health
Telephone: 914-813-5161
Last EDR Contact: 10/26/2017
Next Scheduled EDR Contact: 02/12/2018
Data Release Frequency: Semi-Annually

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 11/11/2017
Date Data Arrived at EDR: 11/14/2017
Date Made Active in Reports: 12/18/2017
Number of Days to Update: 34

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 11/14/2017
Next Scheduled EDR Contact: 02/26/2018
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 04/11/2017
Date Made Active in Reports: 07/27/2017
Number of Days to Update: 107

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 10/05/2017
Next Scheduled EDR Contact: 01/22/2018
Data Release Frequency: Annually

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 07/25/2017
Date Made Active in Reports: 09/25/2017
Number of Days to Update: 62

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 10/16/2017
Next Scheduled EDR Contact: 01/29/2018
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2013
Date Data Arrived at EDR: 06/19/2015
Date Made Active in Reports: 07/15/2015
Number of Days to Update: 26

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 11/16/2017
Next Scheduled EDR Contact: 03/05/2018
Data Release Frequency: Annually

VT MANIFEST: Hazardous Waste Manifest Data
Hazardous waste manifest information.

Date of Government Version: 08/29/2017
Date Data Arrived at EDR: 09/08/2017
Date Made Active in Reports: 11/10/2017
Number of Days to Update: 63

Source: Department of Environmental Conservation
Telephone: 802-241-3443
Last EDR Contact: 10/16/2017
Next Scheduled EDR Contact: 01/29/2018
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 04/13/2017
Date Made Active in Reports: 07/14/2017
Number of Days to Update: 92

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 12/11/2017
Next Scheduled EDR Contact: 03/26/2018
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: PennWell Corporation
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Electric Power Transmission Line Data
Source: PennWell Corporation
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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Day Care Providers
Source: Department of Health
Telephone: 212-676-2444

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Freshwater Wetlands
Source: Department of Environmental Conservation
Telephone: 518-402-8961

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

3077-3091 UNION ROAD
3077-3091 UNION ROAD
ORCHARD PARK, NY 14127

TARGET PROPERTY COORDINATES

Latitude (North):	42.801367 - 42° 48' 4.92''
Longitude (West):	78.746129 - 78° 44' 46.06''
Universal Tranverse Mercator:	Zone 17
UTM X (Meters):	684308.9
UTM Y (Meters):	4741006.5
Elevation:	762 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5937979 ORCHARD PARK, NY
Version Date:	2013
West Map:	5937941 BUFFALO SE, NY
Version Date:	2013

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principal investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

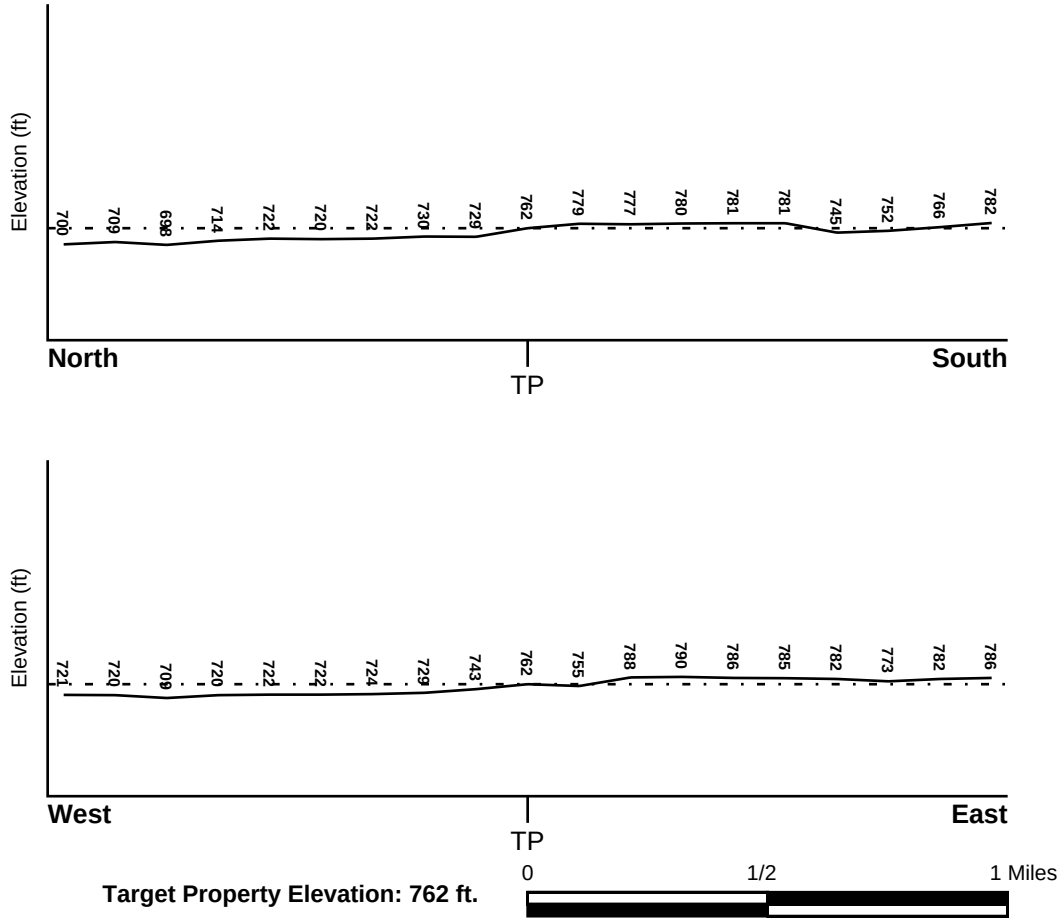
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General NW

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
3602550004B	FEMA Q3 Flood data

Additional Panels in search area:	FEMA Source Type
3602620003B	FEMA Q3 Flood data
3602620004B	FEMA Q3 Flood data
3602550001B	FEMA Q3 Flood data
3602550003B	FEMA Q3 Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
ORCHARD PARK	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

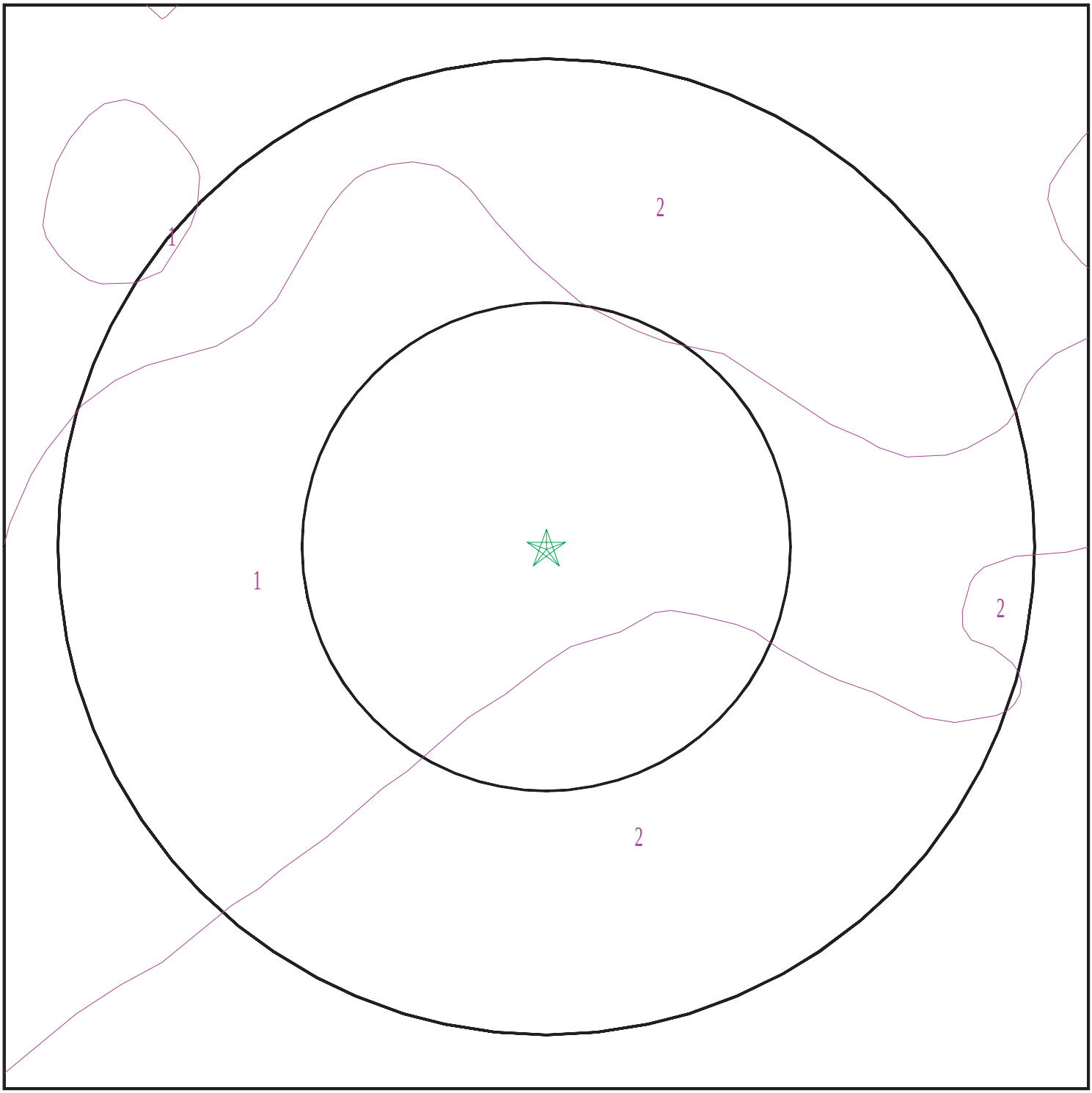
Era:	Paleozoic
System:	Devonian
Series:	Middle Devonian
Code:	D2 *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratified Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 5142649.2s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	3077-3091 Union Road	CLIENT:	TurnKey Environmental Restoration, LLC.
ADDRESS:	3077-3091 Union Road Orchard Park NY 14127	CONTACT:	Chad Schuster
		INQUIRY #:	5142649.2s
LAT/LONG:	42.801367 / 78.746129	DATE:	December 20, 2017 5:26 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: Remsen

Soil Surface Texture: silty clay loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Somewhat poorly drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 31 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	9 inches	silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 14 Min: 4	Max: 6.5 Min: 5.1
2	9 inches	35 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 0 Min: 0	Max: 7.8 Min: 5.6
3	35 inches	59 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 0 Min: 0	Max: 8.4 Min: 7.4

Soil Map ID: 2

Soil Component Name: Remsen

Soil Surface Texture: silty clay loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Somewhat poorly drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 31 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	9 inches	silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 14 Min: 4	Max: 6.5 Min: 5.1
2	9 inches	35 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 0 Min: 0	Max: 7.8 Min: 5.6
3	35 inches	59 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 0 Min: 0	Max: 8.4 Min: 7.4

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	USGS40000862736	1/2 - 1 Mile NE

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

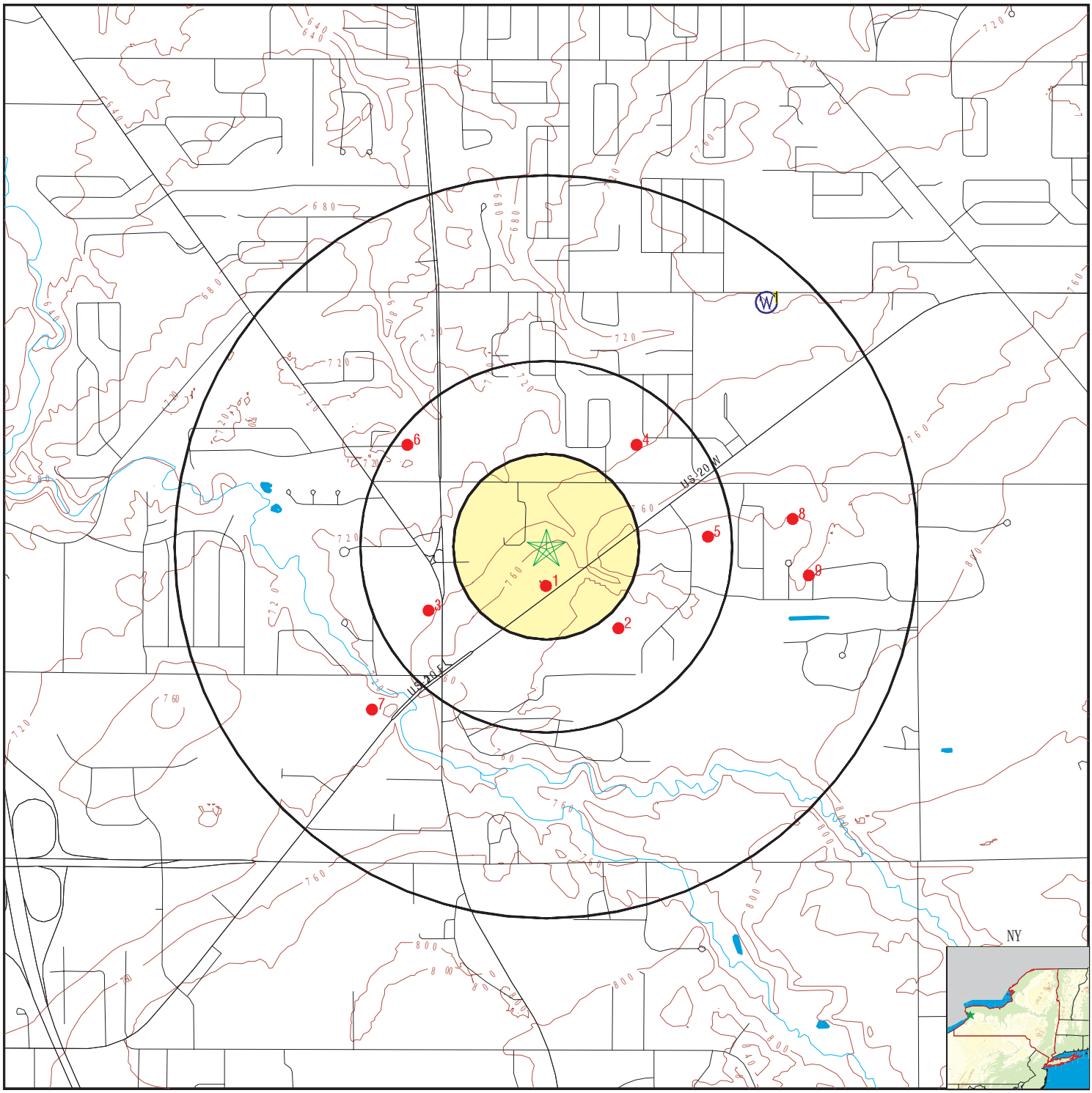
MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

OTHER STATE DATABASE INFORMATION

STATE OIL/GAS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	NYOG80000031658	0 - 1/8 Mile South
2	NYOG80000031312	1/4 - 1/2 Mile SE
3	NYOG80000031310	1/4 - 1/2 Mile WSW
4	NYOG80000031361	1/4 - 1/2 Mile NE
5	NYOG80000031626	1/4 - 1/2 Mile East
6	NYOG80000031003	1/4 - 1/2 Mile NW
7	NYOG80000031047	1/2 - 1 Mile SW
8	NYOG80000033815	1/2 - 1 Mile East
9	NYOG80000031308	1/2 - 1 Mile East

PHYSICAL SETTING SOURCE MAP - 5142649.2s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME:	3077-3091 Union Road	CLIENT:	TurnKey Environmental Restoration, LLC.
ADDRESS:	3077-3091 Union Road Orchard Park NY 14127	CONTACT:	Chad Schuster
		INQUIRY #:	5142649.2s
LAT/LONG:	42.801367 / 78.746129	DATE:	December 20, 2017 5:26 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

	Database	EDR ID Number
1 **NE** **1/2 - 1 Mile** **Lower**	**FED USGS**	**USGS40000862736**

Org. Identifier:	USGS-NY		
Formal name:	USGS New York Water Science Center		
Monloc Identifier:	USGS-424839078440501		
Monloc name:	E1161		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	Not Reported	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	42.8108924
Longitude:	-78.7344744	Sourcemap scale:	62500
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	740
Vert measure units:	feet	Vertacc measure val:	10
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Bedrock		
Aquifer type:	Not Reported		
Construction date:	1959	Welldepth:	19.7
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-07-26	8.5	

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance

Database EDR ID Number

1
South **OIL_GAS** **NYOG80000031658**
0 - 1/8 Mile

Api wellno:	31029081550000	Cnty:	29
Hole:	8155	Sidetrck:	0
Completion:	0	Well name:	Buerger(Full Gospel997-I
Company na:	Seneca Resources Corporation	Operator n:	826
Well type:	GD	Map symbol:	GW
Well statu:	AC	Date statu:	Not Reported
Date permi:	Not Reported	Permit iss:	Not Reported
Date spudd:	Not Reported	Date total:	Not Reported
Date well :	Not Reported	Date wel00:	Not Reported
Date wel01:	Not Reported	Confid:	No
Town:	Orchard Park	Quad:	Orchard Park
Quadsec:	D	Producing :	Orchard Park-Hamburg
Producin00:	Medina	Financial :	Not Reported
Slant:	Vertical	County:	Erie
Region:	9	State leas:	NA
Proposed d:	0	Surface lo:	SURF
Surface 00:	-78.74615		
Surface la:	42.79984		
Bottom hol:	BH		
Bottom h00:	-78.74615		
Bottom h01:	42.79984		
True verti:	0	Measured d:	0
Kickoff:	0	Drilleddep:	0
Elevation:	0	Original w:	NL
Permit fee:	0	Objective :	Not Applicable
Depth fee:	-100	Spacing:	Not Reported
Spacing ac:	Not Reported	Integratio:	Not Reported
Dt hearing:	Not Reported	Dt mod:	2004-01-05 10:40:32.717000000
Link:	http://www.dec.ny.gov/cfmx/extapps/GasOil/search/wells/index.cfm?api=31029081550000		
Site id:	NYOG80000031658		

2
SE **OIL_GAS** **NYOG80000031312**
1/4 - 1/2 Mile

Api wellno:	31029037700000	Cnty:	29
Hole:	3770	Sidetrck:	0
Completion:	0	Well name:	Buerger Paul T 1
Company na:	Iroquois Gas Corp.	Operator n:	16
Well type:	GD	Map symbol:	GWP
Well statu:	PA	Date statu:	Not Reported
Date permi:	Not Reported	Permit iss:	Not Reported
Date spudd:	Not Reported	Date total:	Not Reported
Date well :	1912-10-25 00:00:00	Date wel00:	1952-11-06 00:00:00
Date wel01:	Not Reported	Confid:	No
Town:	Orchard Park	Quad:	Orchard Park
Quadsec:	D	Producing :	West Seneca
Producin00:	Medina	Financial :	Not Reported
Slant:	Vertical	County:	Erie
Region:	9	State leas:	NA
Proposed d:	0	Surface lo:	SURF
Surface 00:	-78.74231		
Surface la:	42.79819		
Bottom hol:	BH		
Bottom h00:	-78.74231		

Bottom h01:	42.79819		
True verti:	1882	Measured d:	1882
Kickoff:	0	Drilleddep:	1882
Elevation:	785	Original w:	NL
Permit fee:	0	Objective :	Not Applicable
Depth fee:	-100	Spacing:	Not Reported
Spacing ac:	Not Reported	Integratio:	Not Reported
Dt hearing:	Not Reported	Dt mod:	2012-06-19 15:52:57.110000000
Link:	http://www.dec.ny.gov/cfmx/extapps/GasOil/search/wells/index.cfm?api=31029037700000		
Site id:	NYOG80000031312		

3
WSW **OIL_GAS** **NYOG80000031310**
1/4 - 1/2 Mile

Api wellno:	31029037680000	Cnty:	29
Hole:	3768	Sidetrck:	0
Completion:	0	Well name:	Weiss John 1
Company na:	Iroquois Gas Corp.	Operator n:	16
Well type:	GD	Map symbol:	GWP
Well statu:	PA	Date statu:	Not Reported
Date permi:	Not Reported	Permit iss:	Not Reported
Date spudd:	Not Reported	Date total:	Not Reported
Date well :	1913-05-02 00:00:00	Date wel00:	1924-01-02 00:00:00
Date wel01:	Not Reported	Confid:	No
Town:	Orchard Park	Quad:	Buffalo SE
Quadsec:	F	Producing :	West Seneca
Producin00:	Medina	Financial :	Not Reported
Slant:	Vertical	County:	Erie
Region:	9	State leas:	NA
Proposed d:	0	Surface lo:	SURF
Surface 00:	-78.75236		
Surface la:	42.79888		
Bottom hol:	BH		
Bottom h00:	-78.75236		
Bottom h01:	42.79888		
True verti:	1860	Measured d:	1860
Kickoff:	0	Drilleddep:	1860
Elevation:	750	Original w:	NL
Permit fee:	0	Objective :	Not Applicable
Depth fee:	-100	Spacing:	Not Reported
Spacing ac:	Not Reported	Integratio:	Not Reported
Dt hearing:	Not Reported	Dt mod:	2012-06-14 14:37:34.557000000
Link:	http://www.dec.ny.gov/cfmx/extapps/GasOil/search/wells/index.cfm?api=31029037680000		
Site id:	NYOG80000031310		

4
NE **OIL_GAS** **NYOG80000031361**
1/4 - 1/2 Mile

Api wellno:	31029038210000	Cnty:	29
Hole:	3821	Sidetrck:	0
Completion:	0	Well name:	Grotke IGC-112
Company na:	Iroquois Gas Corp.	Operator n:	16
Well type:	GD	Map symbol:	GWP
Well statu:	PA	Date statu:	1917-12-08 00:00:00
Date permi:	Not Reported	Permit iss:	Not Reported
Date spudd:	1894-10-03 00:00:00	Date total:	Not Reported
Date well :	1894-11-04 00:00:00	Date wel00:	1917-12-08 00:00:00
Date wel01:	Not Reported	Confid:	No
Town:	West Seneca	Quad:	Orchard Park
Quadsec:	D	Producing :	West Seneca
Producin00:	Medina	Financial :	Not Reported
Slant:	Vertical	County:	Erie
Region:	9	State leas:	NA
Proposed d:	0	Surface lo:	SURF
Surface 00:	-78.74135		
Surface la:	42.80534		
Bottom hol:	BH		
Bottom h00:	-78.74135		
Bottom h01:	42.80534		
True verti:	1414	Measured d:	1414
Kickoff:	0	Drilleddep:	1414
Elevation:	750	Original w:	NL
Permit fee:	0	Objective :	Not Applicable
Depth fee:	-100	Spacing:	Not Reported
Spacing ac:	Not Reported	Integratio:	Not Reported
Dt hearing:	Not Reported	Dt mod:	2003-01-24 15:54:21.500000000
Link:	http://www.dec.ny.gov/cfmx/extapps/GasOil/search/wells/index.cfm?api=31029038210000		
Site id:	NYOG80000031361		

5
East
1/4 - 1/2 Mile

OIL_GAS **NYOG80000031626**

Api wellno:	31029069210000	Cnty:	29
Hole:	6921	Sidetrck:	0
Completion:	0	Well name:	Groth 153
Company na:	Iroquois Gas Corp.	Operator n:	16
Well type:	NL	Map symbol:	OP
Well statu:	PA	Date statu:	1969-09-29 00:00:00
Date permi:	Not Reported	Permit iss:	Not Reported
Date spudd:	Not Reported	Date total:	Not Reported
Date well :	Not Reported	Date wel00:	1969-09-29 00:00:00
Date wel01:	Not Reported	Confid:	No
Town:	Orchard Park	Quad:	Orchard Park
Quadsec:	D	Producing :	West Seneca
Producin00:	Medina	Financial :	Not Reported
Slant:	Vertical	County:	Erie
Region:	9	State leas:	NA
Proposed d:	0	Surface lo:	SURF
Surface 00:	-78.73757		
Surface la:	42.80176		
Bottom hol:	BH		
Bottom h00:	-78.73757		

Bottom h01:	42.80176		
True verti:	0	Measured d:	0
Kickoff:	0	Drilleddep:	0
Elevation:	780	Original w:	NL
Permit fee:	0	Objective :	Not Applicable
Depth fee:	-100	Spacing:	Not Reported
Spacing ac:	Not Reported	Integratio:	Not Reported
Dt hearing:	Not Reported	Dt mod:	1998-10-29 00:00:00
Link:	http://www.dec.ny.gov/cfmx/extapps/GasOil/search/wells/index.cfm?api=31029069210000		
Site id:	NYOG80000031626		

6
NW
1/4 - 1/2 Mile

OIL_GAS **NYOG80000031003**

Api wellno:	31029034440000	Cnty:	29
Hole:	3444	Sidetrck:	0
Completion:	0	Well name:	Breitkruz W 1 IGC-143
Company na:	Iroquois Gas Corp.	Operator n:	16
Well type:	GD	Map symbol:	GWP
Well statu:	PA	Date statu:	1915-10-18 00:00:00
Date permi:	Not Reported	Permit iss:	Not Reported
Date spudd:	1907-06-13 00:00:00	Date total:	Not Reported
Date well :	1907-07-06 00:00:00	Date wel00:	1915-10-18 00:00:00
Date wel01:	Not Reported	Confid:	No
Town:	West Seneca	Quad:	Buffalo SE
Quadsec:	F	Producing :	West Seneca
Producin00:	Medina	Financial :	Not Reported
Slant:	Vertical	County:	Erie
Region:	9	State leas:	NA
Proposed d:	0	Surface lo:	SURF
Surface 00:	-78.75348		
Surface la:	42.80534		
Bottom hol:	BH		
Bottom h00:	-78.75348		
Bottom h01:	42.80534		
True verti:	1452	Measured d:	1452
Kickoff:	0	Drilleddep:	1452
Elevation:	705	Original w:	NL
Permit fee:	0	Objective :	Not Applicable
Depth fee:	-100	Spacing:	Not Reported
Spacing ac:	Not Reported	Integratio:	Not Reported
Dt hearing:	Not Reported	Dt mod:	2003-01-24 15:54:20.983000000
Link:	http://www.dec.ny.gov/cfmx/extapps/GasOil/search/wells/index.cfm?api=31029034440000		
Site id:	NYOG80000031003		

7
SW
1/2 - 1 Mile

OIL_GAS **NYOG80000031047**

Api wellno:	31029034880000	Cnty:	29
Hole:	3488	Sidetrck:	0
Completion:	0	Well name:	Boldt 2 IGC-108
Company na:	Iroquois Gas Corp.	Operator n:	16
Well type:	GD	Map symbol:	GWP
Well statu:	PA	Date statu:	1922-02-07 00:00:00
Date permi:	Not Reported	Permit iss:	Not Reported
Date spudd:	Not Reported	Date total:	Not Reported
Date well :	Not Reported	Date wel00:	1922-02-07 00:00:00
Date wel01:	Not Reported	Confid:	No
Town:	Orchard Park	Quad:	Buffalo SE
Quadsec:	F	Producing :	West Seneca
Producin00:	Medina	Financial :	Not Reported
Slant:	Vertical	County:	Erie
Region:	9	State leas:	NA
Proposed d:	0	Surface lo:	SURF
Surface 00:	-78.75535		
Surface la:	42.79502		
Bottom hol:	BH		
Bottom h00:	-78.75535		
Bottom h01:	42.79502		
True verti:	1376	Measured d:	1376
Kickoff:	0	Drilleddep:	1376
Elevation:	740	Original w:	NL
Permit fee:	0	Objective :	Not Applicable
Depth fee:	-100	Spacing:	Not Reported
Spacing ac:	Not Reported	Integratio:	Not Reported
Dt hearing:	Not Reported	Dt mod:	2003-01-24 15:54:21.030000000
Link:	http://www.dec.ny.gov/cfmx/extapps/GasOil/search/wells/index.cfm?api=31029034880000		
Site id:	NYOG80000031047		

8
East
1/2 - 1 Mile

OIL_GAS **NYOG80000033815**

Api wellno:	31029603160000	Cnty:	29
Hole:	60316	Sidetrck:	0
Completion:	0	Well name:	Becher(Deenfrund)993-I
Company na:	Seneca Resources Corporation	Operator n:	826
Well type:	GD	Map symbol:	GW
Well statu:	AC	Date statu:	Not Reported
Date permi:	Not Reported	Permit iss:	Not Reported
Date spudd:	Not Reported	Date total:	Not Reported
Date well :	1914-11-06 00:00:00	Date wel00:	Not Reported
Date wel01:	Not Reported	Confid:	No
Town:	Orchard Park	Quad:	Orchard Park
Quadsec:	D	Producing :	Orchard Park-Hamburg
Producin00:	Medina	Financial :	Not Reported
Slant:	Vertical	County:	Erie
Region:	9	State leas:	NA
Proposed d:	0	Surface lo:	SURF
Surface 00:	-78.73309		
Surface la:	42.80245		
Bottom hol:	BH		
Bottom h00:	-78.73309		

Bottom h01:	42.80245		
True verti:	1454	Measured d:	1454
Kickoff:	0	Drilleddep:	1454
Elevation:	0	Original w:	NL
Permit fee:	0	Objective :	Not Applicable
Depth fee:	-100	Spacing:	Not Reported
Spacing ac:	Not Reported	Integratio:	Not Reported
Dt hearing:	Not Reported	Dt mod:	2004-01-05 10:40:38.717000000
Link:	http://www.dec.ny.gov/cfmx/extapps/GasOil/search/wells/index.cfm?api=31029603160000		
Site id:	NYOG80000033815		

9
East **OIL_GAS** **NYOG80000031308**
1/2 - 1 Mile

Api wellno:	31029037660000	Cnty:	29
Hole:	3766	Sidetrck:	0
Completion:	0	Well name:	Deenfreund L 1
Company na:	Iroquois Gas Corp.	Operator n:	16
Well type:	GD	Map symbol:	GW
Well statu:	IN	Date statu:	Not Reported
Date permi:	Not Reported	Permit iss:	Not Reported
Date spudd:	Not Reported	Date total:	Not Reported
Date well :	1914-11-06 00:00:00	Date wel00:	Not Reported
Date wel01:	Not Reported	Confid:	No
Town:	Orchard Park	Quad:	Orchard Park
Quadsec:	D	Producing :	West Seneca
Producin00:	Medina	Financial :	Not Reported
Slant:	Vertical	County:	Erie
Region:	9	State leas:	NA
Proposed d:	0	Surface lo:	SURF
Surface 00:	-78.73224		
Surface la:	42.80025		
Bottom hol:	BH		
Bottom h00:	-78.73224		
Bottom h01:	42.80025		
True verti:	1874	Measured d:	1874
Kickoff:	0	Drilleddep:	1874
Elevation:	780	Original w:	NL
Permit fee:	0	Objective :	Not Applicable
Depth fee:	-100	Spacing:	Not Reported
Spacing ac:	Not Reported	Integratio:	Not Reported
Dt hearing:	Not Reported	Dt mod:	2015-02-27 13:07:10.257000000
Link:	http://www.dec.ny.gov/cfmx/extapps/GasOil/search/wells/index.cfm?api=31029037660000		
Site id:	NYOG80000031308		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: NY Radon

Radon Test Results

County	Town	Num Tests	Avg Result	Geo Mean	Max Result
ERIE	ALDEN	123	5.69	1.93	185.3
ERIE	AMHERST	864	2.57	1.15	115.6
ERIE	AURORA	436	10.94	4.46	215.6
ERIE	BOSTON	101	9.51	4.47	49.9
ERIE	BRANT	9	12.9	4.13	78.7
ERIE	BUFFALO	936	1.18	0.62	63.2
ERIE	CHEEKTOWAGA	444	1.03	0.71	30.8
ERIE	CLARENCE	244	6.79	2.37	207.8
ERIE	COLDEN	45	5.4	3.44	38
ERIE	COLLINS	48	11.83	4.76	115.1
ERIE	CONCORD	180	15.75	7.87	163
ERIE	EDEN	163	6.74	3.33	206.7
ERIE	ELMA	282	8.17	3.15	213.6
ERIE	EVANS	121	5.77	2.92	92.3
ERIE	GRAND ISLAND	85	1.41	1.03	7.5
ERIE	HAMBURG	753	4.9	2.2	136.8
ERIE	HOLLAND	55	8.09	3.57	122.9
ERIE	KENMORE	146	0.75	0.56	4.8
ERIE	LACKAWANNA	42	1.45	0.83	11.4
ERIE	LANCASTER	177	2.76	1.17	155.1
ERIE	MARILLA	239	28.88	9.31	371.9
ERIE	NEWSTEAD	88	3.44	2.35	18
ERIE	NO. COLLINS	28	7.97	3.88	75.6
ERIE	ORCHARD PARK	490	4.8	2.37	116.9
ERIE	SARDINIA	25	22.28	8.33	121.2
ERIE	TONAWANDA	392	1.04	0.72	18.9
ERIE	W. SENECA	266	2.51	1.35	55.8
ERIE	WALES	44	11.97	4.35	181.7

Federal EPA Radon Zone for ERIE County: 1

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for ERIE COUNTY, NY

Number of sites tested: 622

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area	1.000 pCi/L	89%	11%	0%
Basement	1.150 pCi/L	87%	11%	2%

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Freshwater Wetlands
Source: Department of Environmental Conservation
Telephone: 518-402-8961

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

New York Public Water Wells
Source: New York Department of Health
Telephone: 518-458-6731

OTHER STATE DATABASE INFORMATION

Oil and Gas Well Database
Department of Environmental Conservation
Telephone: 518-402-8072
These files contain records, in the database, of wells that have been drilled.

RADON

State Database: NY Radon
Source: Department of Health
Telephone: 518-402-7556
Radon Test Results

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary faultlines, prepared in 1975 by the United State Geological Survey

PHYSICAL SETTING SOURCE RECORDS SEARCHED

STREET AND ADDRESS INFORMATION

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APPENDIX B

ENVIRONMENTAL/GOVERNMENT AGENCY INFORMATION

Chad Schuster

From: New York DEC Support <newyorkdec@mycusthelp.net>
Sent: Thursday, January 04, 2018 4:38 PM
To: Chad Schuster
Subject: Freedom of Information Law Request :: W030641-121917

--- Please respond above this line ---



Region 9 - Buffalo
P: 716 851-7220 | F:
www.dec.ny.gov

Hello Chad,

Your request was sent to 9 divisions in DEC. Eight divisions have looked at your FOIL and haven't found any records. There is still one division that hasn't had a chance to look at this FOIL request yet. With vacations, meetings, etc. I can't give an updated response time, other than the original completion date: 1/22.

Have a good day,
Region 9 FOIL Coordinator



APPENDIX C

HISTORIC AERIAL PHOTOGRAPHS

3077-3091 Union Road

3077-3091 Union Road

Orchard Park, NY 14127

Inquiry Number: 5142649.9

December 20, 2017

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

12/20/17

Site Name:

3077-3091 Union Road
3077-3091 Union Road
Orchard Park, NY 14127
EDR Inquiry # 5142649.9

Client Name:

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike Suite 300
Buffalo, NY 14218
Contact: Chad Schuster

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

Search Results:

Year	Scale	Details	Source
2011	1"=500'	Flight Year: 2011	USDA/NAIP
2009	1"=500'	Flight Year: 2009	USDA/NAIP
2008	1"=500'	Flight Year: 2008	USDA/NAIP
2006	1"=500'	Flight Year: 2006	USDA/NAIP
1995	1"=500'	Acquisition Date: March 28, 1995	USGS/DOQQ
1983	1"=500'	Flight Date: March 17, 1983	USDA
1978	1"=500'	Flight Date: October 21, 1978	USDA
1970	1"=500'	Flight Date: June 23, 1970	USGS
1966	1"=500'	Flight Date: June 12, 1966	USDA
1958	1"=500'	Flight Date: October 06, 1958	USDA
1951	1"=500'	Flight Date: October 18, 1951	USDA
1938	1"=500'	Flight Date: January 01, 1938	FirstSearch

When delivered electronically by EDR, the aerial photo images included with this report are for ONE TIME USE ONLY. Further reproduction of these aerial photo images is prohibited without permission from EDR. For more information contact your EDR Account Executive.

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INQUIRY #: 5142649.9
YEAR: 2011
= 500'
N
EDR



INQUIRY #: 5142649.9

YEAR: 2009

= 500'

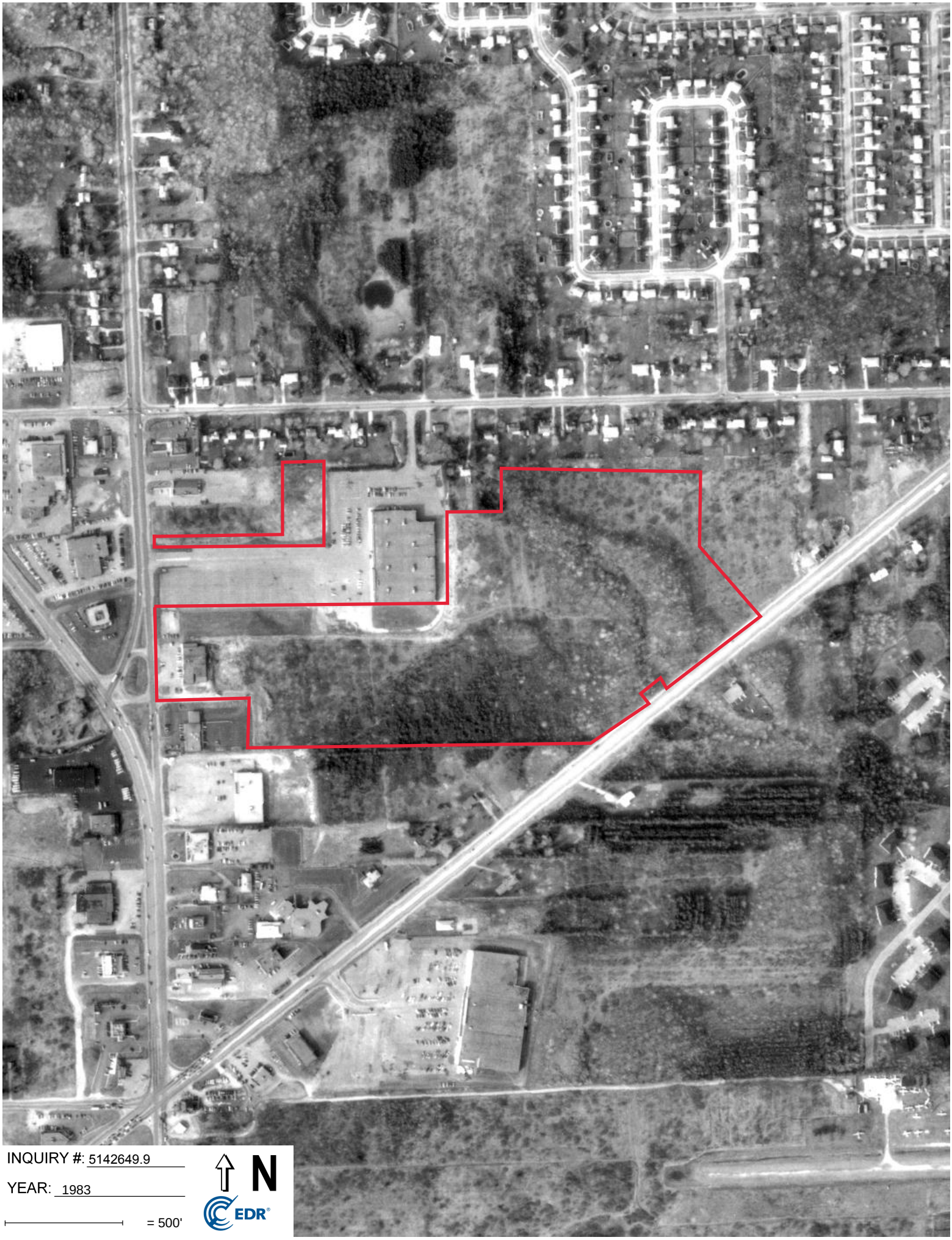
N

EDR


INQUIRY #: 5142649.9
YEAR: 2008
= 500'
N
EDR


INQUIRY #: 5142649.9
YEAR: 2006
= 500'
N
EDR


INQUIRY #: 5142649.9
YEAR: 1995
= 500'
N
EDR



INQUIRY #: 5142649.9

YEAR: 1983

= 500'

N

EDR


INQUIRY #: 5142649.9
YEAR: 1978
= 500'
N
EDR



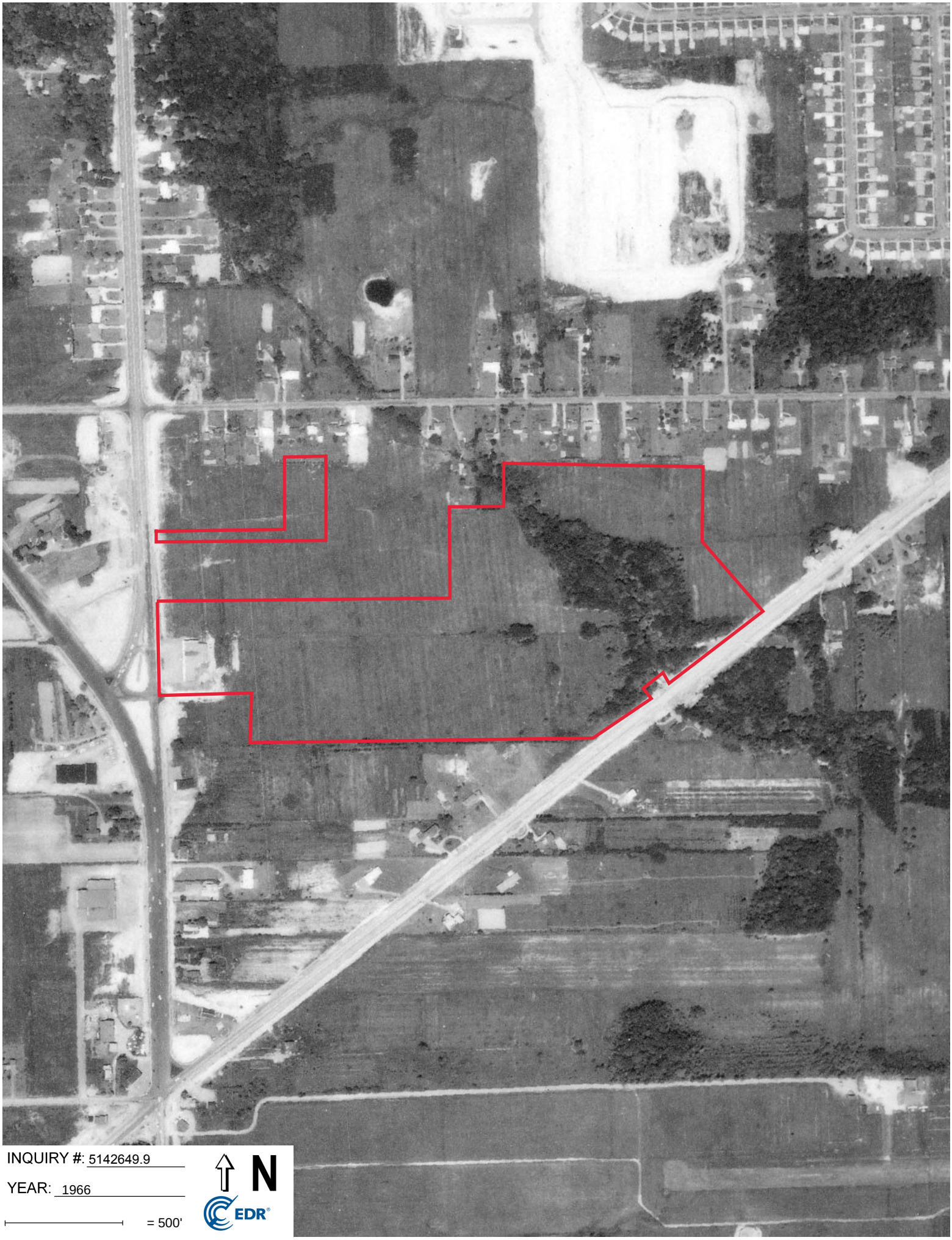
INQUIRY #: 5142649.9

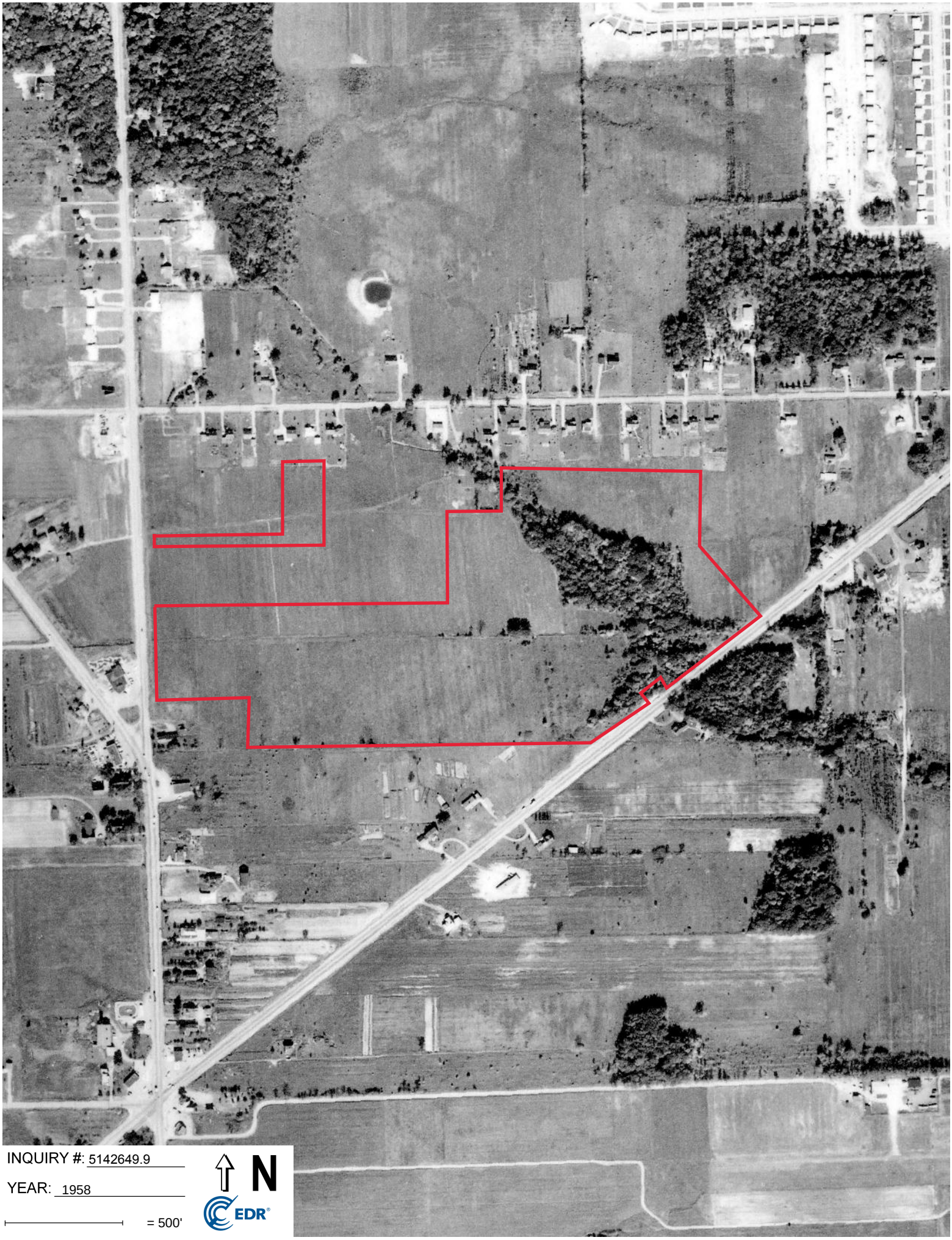
YEAR: 1970

= 500'

N

EDR


INQUIRY #: 5142649.9
YEAR: 1966
= 500'
N
EDR



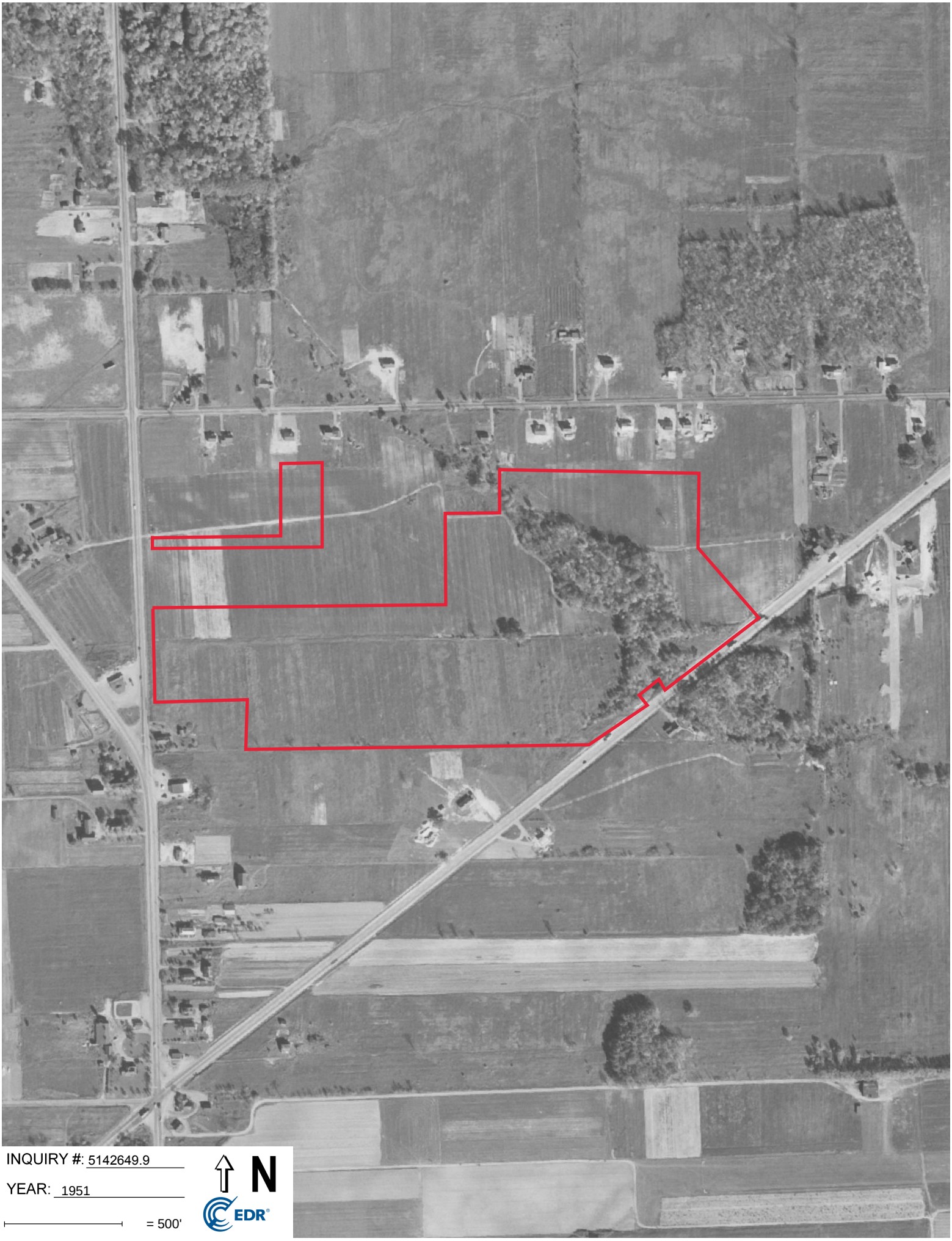
INQUIRY #: 5142649.9

YEAR: 1958

= 500'

N

EDR


INQUIRY #: 5142649.9
YEAR: 1951
= 500'
N
EDR



INQUIRY #: 5142649.9

YEAR: 1938

= 500'

N

EDR

APPENDIX D

HISTORIC SANBORN MAPS

3077-3091 Union Road

3077-3091 Union Road

Orchard Park, NY 14127

Inquiry Number: 5142649.3

December 20, 2017

Certified Sanborn® Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

12/20/17

Site Name:

3077-3091 Union Road
3077-3091 Union Road
Orchard Park, NY 14127
EDR Inquiry # 5142649.3

Client Name:

TurnKey Environmental Restoration, LLC.
2558 Hamburg Turnpike Suite 300
Buffalo, NY 14218
Contact: Chad Schuster

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by TurnKey Environmental Restoration, LLC. were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow, and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting www.edrnet.com/sanborn.

The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

Certified Sanborn Results:

Certification # 27D2-4D77-9A7B

PO # T0105-017-010

Project NA

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

Sanborn® Library search results

Certification #: 27D2-4D77-9A7B

The Sanborn Library includes more than 1.2 million fire insurance maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow and others which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

The Sanborn Library LLC Since 1866™

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APPENDIX E

HISTORIC CITY DIRECTORIES

3077-3091 Union Road
3077-3091 Union Road
Orchard Park, NY 14127

Inquiry Number: 5142649.5
January 04, 2018

The EDR-City Directory Image Report

EDR® Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

TABLE OF CONTENTS

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Executive Summary

Findings

City Directory Images

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Report is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Report includes a search of available city directory data at 5 year intervals.

RECORD SOURCES

EDR's Digital Archive combines historical directory listings from sources such as Cole Information and Dun & Bradstreet. These standard sources of property information complement and enhance each other to provide a more comprehensive report.

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Data by
infoUSA®
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RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. A check mark indicates where information was identified in the source and provided in this report.

Year	Target Street	Cross Street	Source
2014	☑	☐	EDR Digital Archive
2010	☑	☐	EDR Digital Archive
2005	☑	☐	EDR Digital Archive
2000	☑	☐	EDR Digital Archive
1995	☑	☐	EDR Digital Archive
1992	☑	☐	EDR Digital Archive
1985	☑	☐	Haines Criss-Cross Directory
1981	☐	☐	Haines Criss-Cross Directory
1976	☐	☐	Haines Criss-Cross Directory
1972	☐	☐	Polk's City Directory
1968	☐	☐	Haines Criss-Cross Directory
1962	☐	☐	Polk's City Directory
1959	☐	☐	Polk's City Directory
1956	☐	☐	Polk's City Directory
1953	☐	☐	Polk's City Directory
1942	☐	☐	Polk's City Directory
1938	☐	☐	Polk's City Directory

EXECUTIVE SUMMARY

Year	***Target Street***	***Cross Street***	***Source***

FINDINGS

TARGET PROPERTY STREET

3077-3091 Union Road
Orchard Park, NY 14127

Year	*CD Image*	*Source*	
UNION RD			
2014	pg A1	EDR Digital Archive	
2010	pg A2	EDR Digital Archive	
2005	pg A3	EDR Digital Archive	
2000	pg A4	EDR Digital Archive	
1995	pg A5	EDR Digital Archive	
1992	pg A6	EDR Digital Archive	
1985	pg A7	Haines Criss-Cross Directory	
1981	-	Haines Criss-Cross Directory	Target and Adjoining not listed in Source
1976	-	Haines Criss-Cross Directory	Street not listed in Source
1972	-	Polk's City Directory	Street not listed in Source
1968	-	Haines Criss-Cross Directory	Street not listed in Source
1962	-	Polk's City Directory	Street not listed in Source
1959	-	Polk's City Directory	Street not listed in Source
1956	-	Polk's City Directory	Street not listed in Source
1953	-	Polk's City Directory	Street not listed in Source
1942	-	Polk's City Directory	Street not listed in Source
1938	-	Polk's City Directory	Street not listed in Source

FINDINGS

CROSS STREETS

No Cross Streets Identified

City Directory Images

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

UNION RD 2014

3008	WALGREEN EASTERN CO INC
3009	FAMILY VIDEO MOVIE CLUB INC
	LITTLE CAESARS PIZZA
	OCCUPANT UNKNOWN,
3014	LAGOS, KAROLINA M
3019	ORIGINAL PANCAKE HOUSE
3030	KEYBANK NATIONAL ASSOCIATION
3033	GANTZER, HAROLD L
3050	RITE AID PENNSYLVANIA INC
3065	ERIE COUNTY PISTOL PERMITS
3077	MICHAEL SEIBOLD
3081	CUSTOM RADIO
3089	JACOBS SHOE REPAIR
3097	WEST SENECA MASONRY INC
3111	INSURANCE AGENCY OF WESTERN NY
	LAKE SHORE SAVINGS BANK

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

UNION RD 2010

3009	FAMILY VIDEO MOVIE CLUB INC
	LITTLE CAESARS PIZZA
	OCCUPANT UNKNOWN,
3014	LAGOS, KAROLINA
3019	ORIGINAL PANCAKE HOUSE
3025	ORCHARD PARK ANTIQUE MALL
3029	LH HAXTON INC
3033	GANTZER, HAROLD L
3035	BUFFALO ATHC CLB SOUTHTOWN LLC
3050	RITE AID PHARMACY
3065	ERIE COUNTY PISTOL PERMITS
	PENTAGROUP FINANCIAL LLC
3071	PLATO SERVICES INC
3077	DAMICO
	L J DAMICO HOME IMPROVEMENT
3081	BOEHM WILLIAM J
	CUSTOM RADIO
3085	COUNTRY HAM STORE INC
3087	RUSSS BARBER SHOP
3089	JACOBS SHOE REPAIR
3091	ROZS PIZZERIA
3095	CENTURY HOUSEWARES INC
3097	WEST SEN MASONARY INC
3111	INSURANCE AGENCY OF WESTERN NY
	LAKE SHORE SAVINGS BANK

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

UNION RD 2005

1711	QUAKER TAXI INC
3008	OCCUPANT UNKNOWN,
	RUSSS BARBER SHOP
	WALKER RANDY
3009	CARROLS CORPORATION
3014	LAGOS, KAROLINA
3018	GUTOWSKIS KENPO KARATE
3019	ORIGINAL PANCAKE HOUSE
3020	MOLINO BRUNO
3025	ORCHARD PARK ANTIQUE MALL
3029	CARUBBA COLLISION INC
	HAXTON L H INC
3030	CERTO BROTHERS RESTAURANT INC
3035	BUFFALO ATHC CLB SOUTHTOWN LLC
3050	RITE AID OF NEW YORK INC
3071	PLATO SERVICES INC
3081	BOEHM WILLIAM J
3083	LIBBYS FISH & SEAFOOD INC
3085	COUNTRY HAM STORE INC
3089	JACOBS SHOE REPAIR
3091	ROZS PIZZERIA
3093	AMY LYNNS DANCE STUDIO
3097	WEST SEN MASONARY INC
3111	INSURANCE AGENCY OF WESTERN NY
	LAKE SHORE SAVINGS AND LN ASSN
	PRINCIPAL FINANCIAL INC

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

UNION RD 2000

1299	GREENLEAF DISTRIBUTORS INC
3008	RUSSS BARBER SHOP
	WALKER SERVICE STATION
3009	CARROLS CORPORATION
3016	BOEHM WILLIAM J
3018	GUTOWSKIS KENPO KARATE
3019	METROMEDIA STEAKHOUSES CO LP
	ORIGINAL PANCAKE HOUSE
	SZKUTAK MARY
3020	MOLINO BRUNO
3029	HAXTON L H INC
3030	CB RESTAURANT INC
3035	BUFFALO ATHC CLB SOUTHTOWN LLC
3050	RITE AID CORPORATION
3071	PIZZA HUT INC
3077	NAILS BY CATHY LE
	TIME ZONE GIFT
3081	KEVIN DID IT SIGNS AND BANNERS
3083	SCHENK C P FISH & SEAFOOD
3085	COUNTRY HAM STORE INC
3087	LOUGHLIN FRANCIS X INSUR AGCY
3089	JACOBS SHOE REPAIR
3093	AMY LYNNS DANCE STUDIO
3111	INSURANCE AGENCY OF WESTERN NY

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

UNION RD 1995

3008	RUSSS BARBER SHOP
	WALKER SERVICE STATION
3009	BURGER KING RESTRNTS
3018	UNION TECH ELECTRONICS INC
3019	METROMEDIA STEAKHOUSES CO LP
3020	PIZZA BY MOLINOS
3029	HAXTON L H INC
3050	AUSTIN PONTIAC INC
3071	PIZZA HUT INC
3077	FANTASTIC SAMS HAIR CARE CTR
	SCINTA LTD
3081	GIFFORD MARYANN E
3083	SCHENK C P FISH & SEAFOOD
3085	COUNTRY HAM STORE INC
3087	STATE FARM INSURANCE
3089	JACOBS GEORGE SHOE & REPAIR

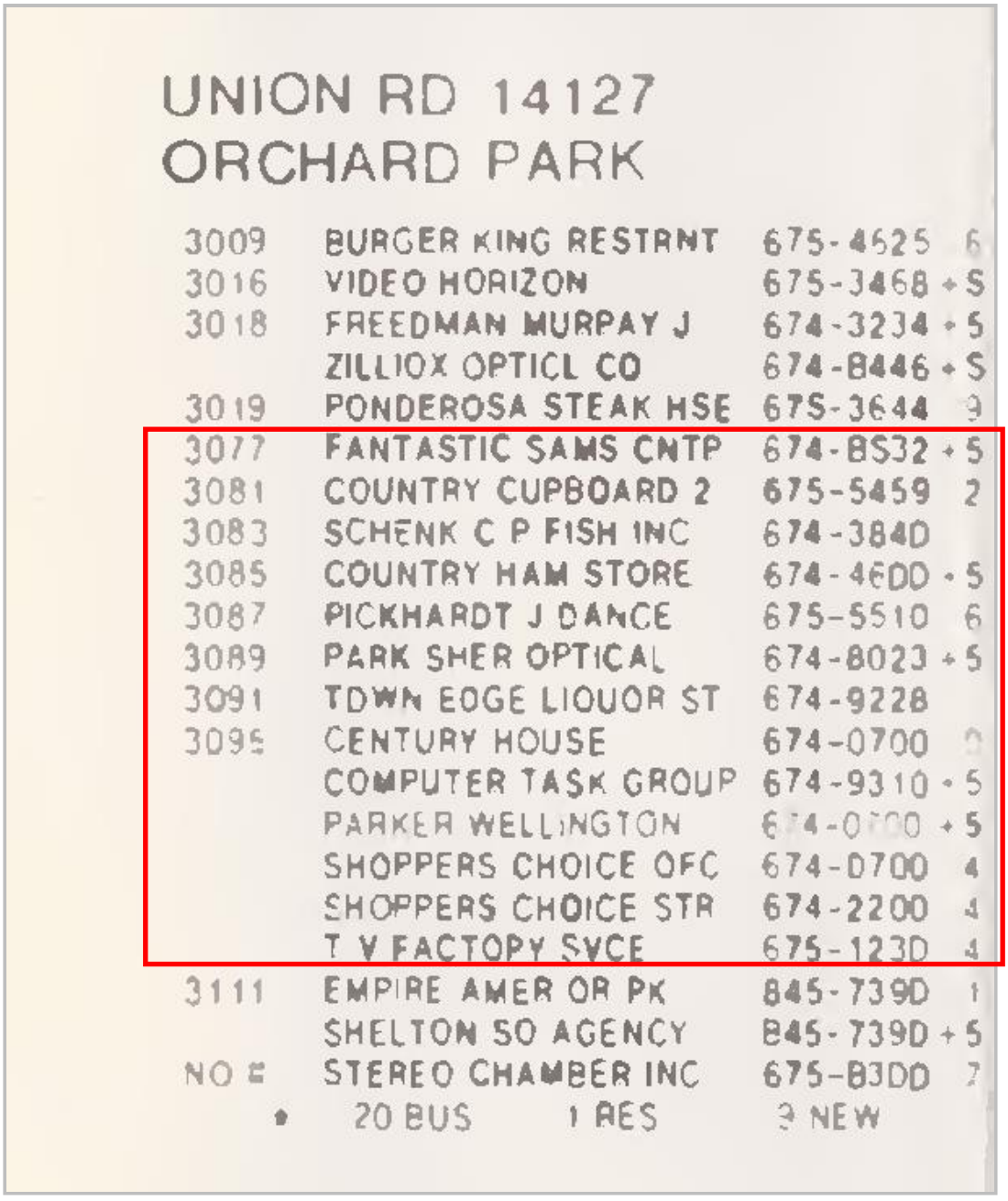
Target Street	Cross Street	Source
✓	-	EDR Digital Archive

UNION RD 1992

3008	RUSSS BARBER SHOP
	WALKER SERVICE STATION
3009	855 ORCHARD PARK FOOD CO
3019	METROMEDIA STEAKHOUSES INC
3020	PIZZA BY MOLINOS
3050	AUSTIN PONTIAC INC
3071	SOUTHERN TIER PIZZA HUT I
3083	SCHENK C P FISH & SEAFOOD
3085	COUNTRY HAM STORE INC
3087	BUFFALO CLINICAL SERVICES
3089	JACOBS GEORGE SHOE & REPAIR

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

UNION RD 1985



UNION RD 14127
ORCHARD PARK

3009	BURGER KING RESTRNT	675-4525	6
3016	VIDEO HORIZON	675-3468	+S
3018	FREEDMAN MURPAY J	674-3234	+5
	ZILLIOX OPTICL CO	674-8446	+S
3019	PONDEROSA STEAK HSE	675-3644	9
3077	FANTASTIC SAMS CNTP	674-8532	+5
3081	COUNTRY CUPBOARD 2	675-5459	2
3083	SCHENK C P FISH INC	674-384D	
3085	COUNTRY HAM STORE	674-46DD	+5
3087	PICKHARDT J DANCE	675-5510	6
3089	PARK SHER OPTICAL	674-8023	+5
3091	TDWN EDGE LIQUOR ST	674-9228	
3095	CENTURY HOUSE	674-0700	
	COMPUTER TASK GROUP	674-9310	+5
	PARKER WELLINGTON	674-0700	+5
	SHOPPERS CHOICE OFC	674-D700	4
	SHOPPERS CHOICE STR	674-2200	4
	T V FACTORY SVCE	675-123D	4
3111	EMPIRE AMER OR PK	845-739D	1
	SHELTON SO AGENCY	845-739D	+5
NO E	STEREO CHAMBER INC	675-83DD	7

20 BUS 1 RES 3 NEW

APPENDIX F

HISTORIC TOPOGRAPHIC MAPS

3077-3091 Union Road

3077-3091 Union Road

Orchard Park, NY 14127

Inquiry Number: 5142649.4

December 20, 2017

EDR Historical Topo Map Report

with QuadMatch™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topo Map Report

12/20/17

Site Name:

3077-3091 Union Road
3077-3091 Union Road
Orchard Park, NY 14127
EDR Inquiry # 5142649.4

Client Name:

TurnKey Environmental Restoration, LLC.
2558 Hamburg Turnpike Suite 300
Buffalo, NY 14218
Contact: Chad Schuster

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by TurnKey Environmental Restoration, LLC. were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

Search Results:

P.O.# T0105-017-010
Project: NA

Coordinates:

Latitude:	42.801367 42° 48' 5" North
Longitude:	-78.746129 -78° 44' 46" West
UTM Zone:	Zone 17 North
UTM X Meters:	684303.69
UTM Y Meters:	4741221.04
Elevation:	761.72' above sea level

Maps Provided:

2013
1965
1950
1948
1901, 1905
1894

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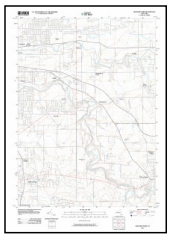
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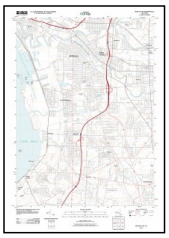
Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

2013 Source Sheets

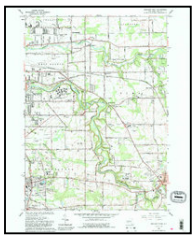


Orchard Park
2013
7.5-minute, 24000

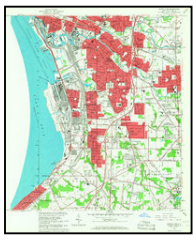


Buffalo SE
2013
7.5-minute, 24000

1965 Source Sheets



Orchard Park
1965
7.5-minute, 24000
Aerial Photo Revised 1942



Buffalo SE
1965
7.5-minute, 24000
Aerial Photo Revised 1942

1950 Source Sheets



Buffalo SE
1950
7.5-minute, 24000
Aerial Photo Revised 1942



Orchard Park
1950
7.5-minute, 24000
Aerial Photo Revised 1942

1948 Source Sheets



Buffalo SE
1948
7.5-minute, 24000
Aerial Photo Revised 1942

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1901, 1905 Source Sheets



Buffalo
1901
15-minute, 62500

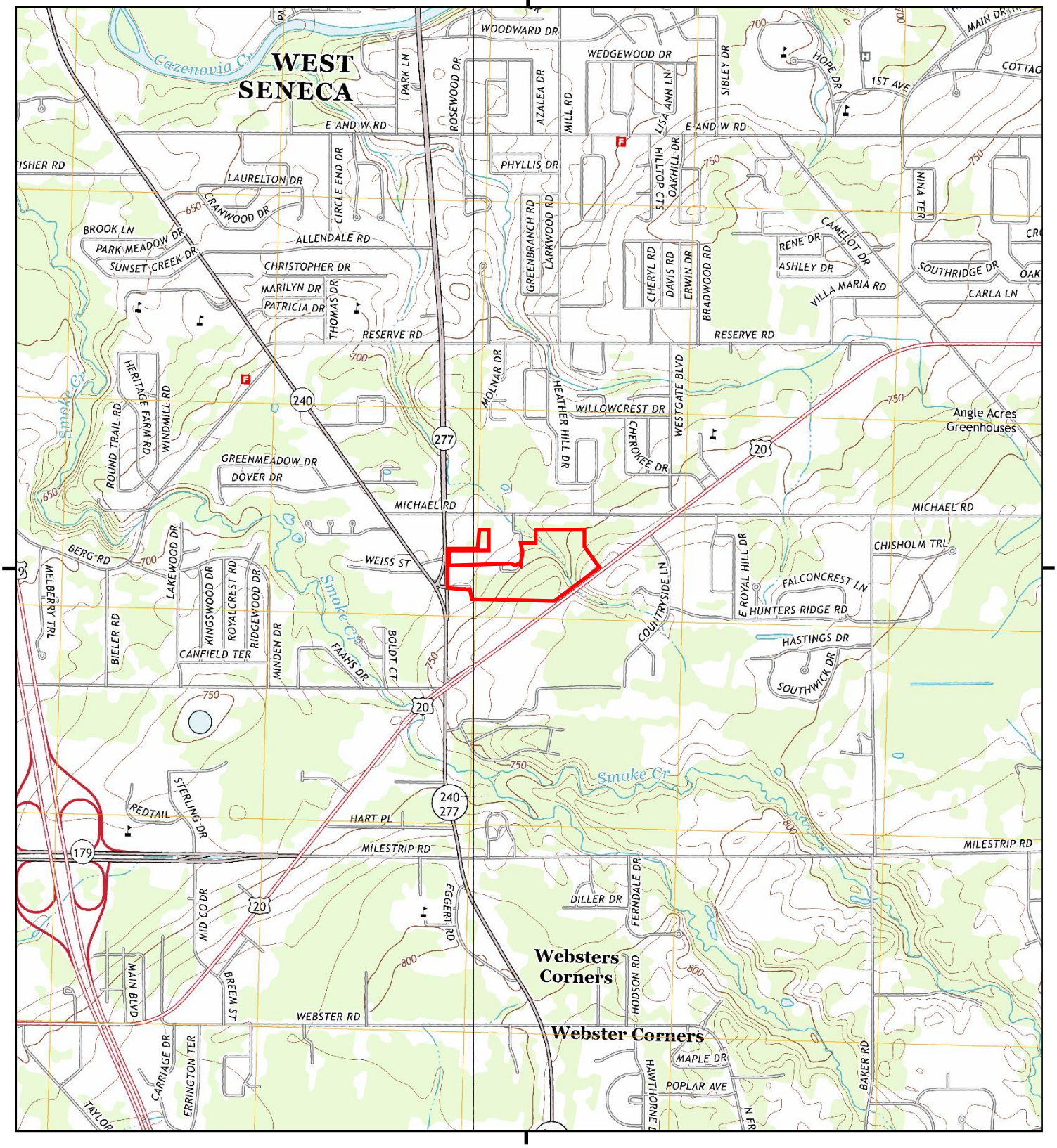


Depew
1905
15-minute, 62500

1894 Source Sheets



Buffalo
1894
15-minute, 62500



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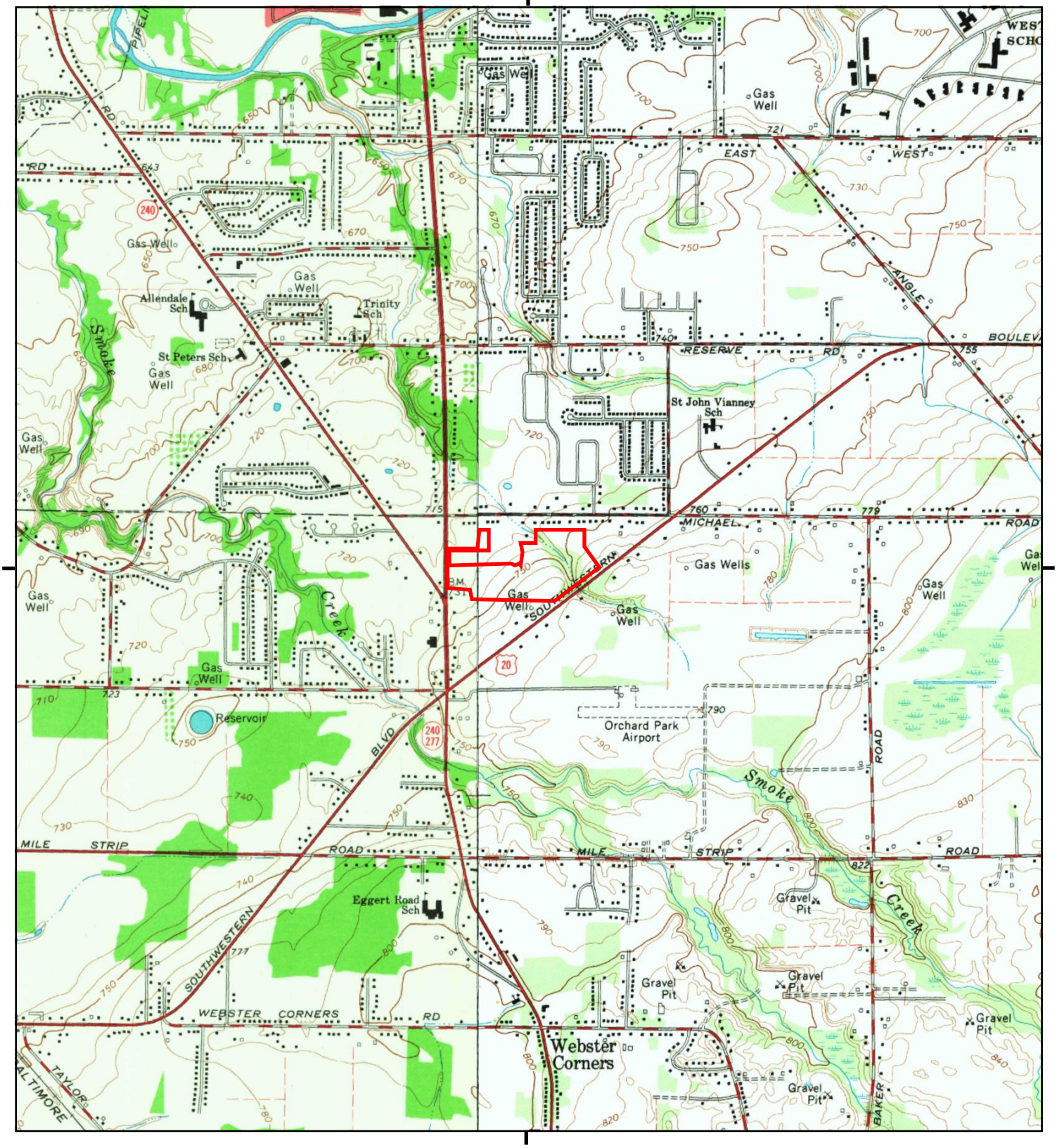
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Orchard Park, 2013, 7.5-minute
W, Buffalo SE, 2013, 7.5-minute

SITE NAME: 3077-3091 Union Road
ADDRESS: 3077-3091 Union Road
Orchard Park, NY 14127
CLIENT: TurnKey Environmental Restoration, LLC

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

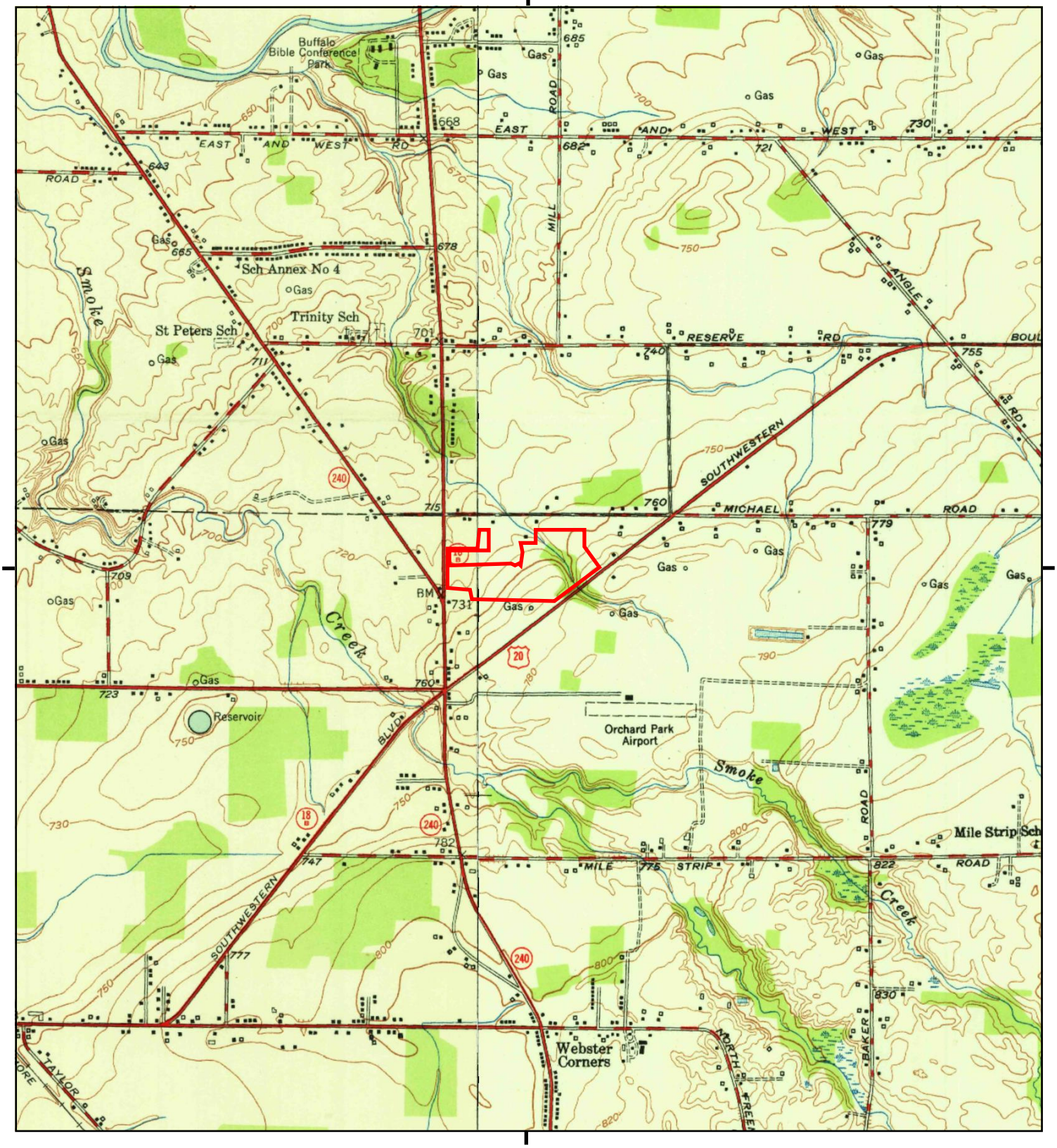
TP, Orchard Park, 1965, 7.5-minute
W, Buffalo SE, 1965, 7.5-minute

SITE NAME: 3077-3091 Union Road
ADDRESS: 3077-3091 Union Road
Orchard Park, NY 14127
CLIENT: TurnKey Environmental Restoration, LLC

N

Historical Topo Map

1950



This report includes information from the following map sheet(s).

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NW N NE
W E
SW S SE

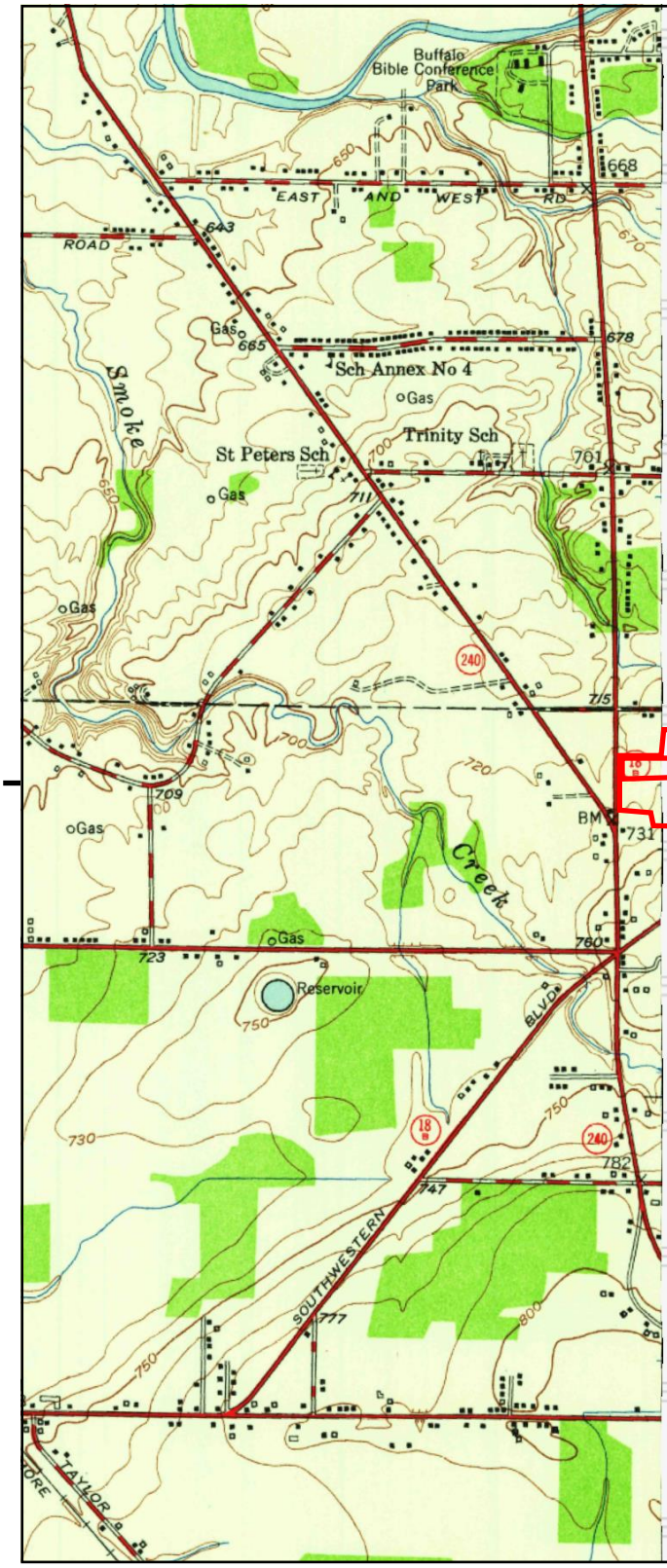
TP, Orchard Park, 1950, 7.5-minute
W, Buffalo SE, 1950, 7.5-minute

SITE NAME: 3077-3091 Union Road
ADDRESS: 3077-3091 Union Road
Orchard Park, NY 14127
CLIENT: TurnKey Environmental Restoration, LLC

N

Historical Topo Map

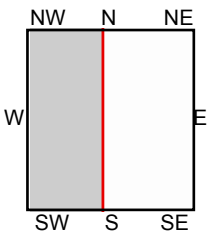
1948



UNMAPPED

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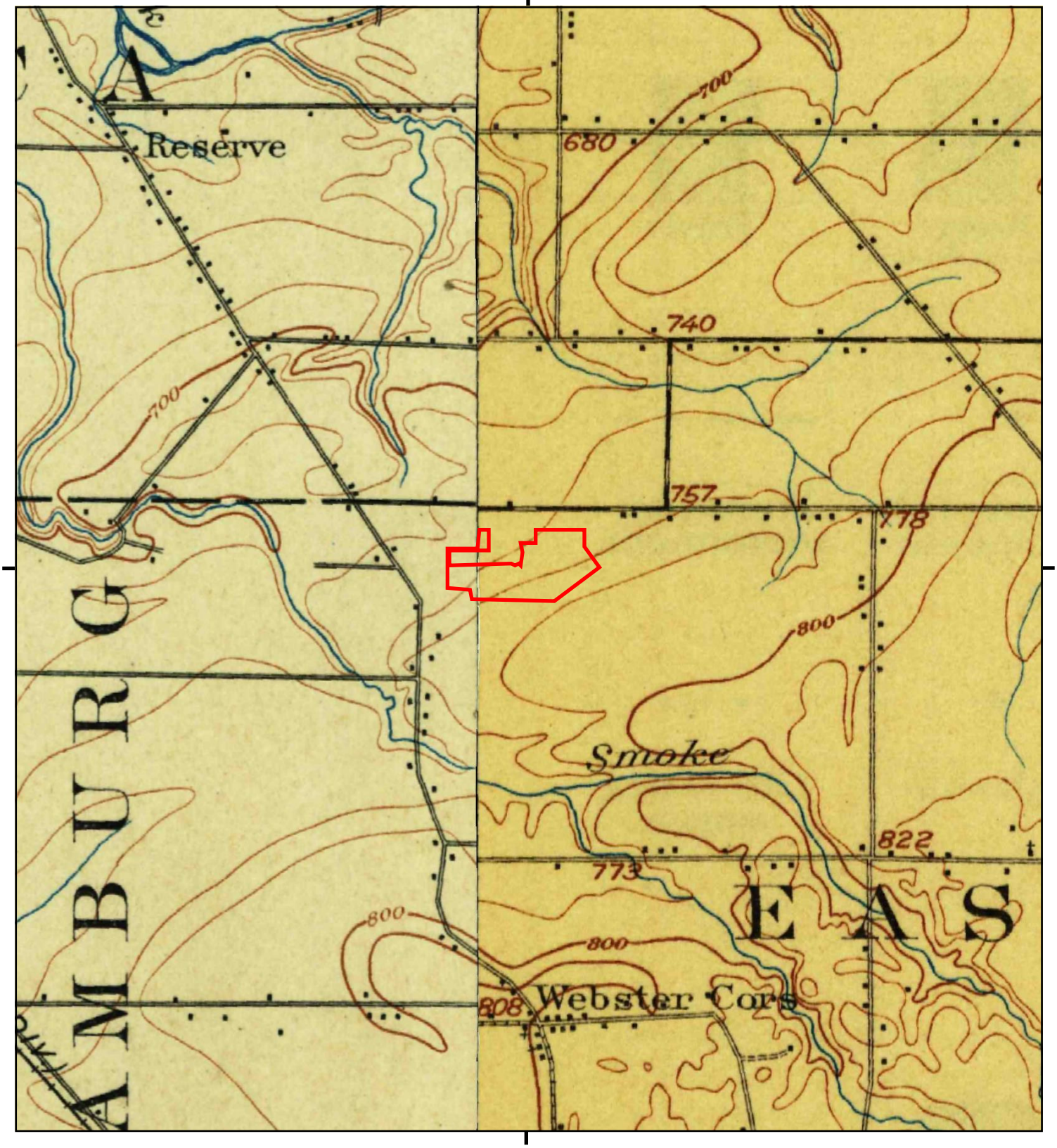
0 Miles 0.25 0.5 1 1.5



W, Buffalo SE, 1948, 7.5-minute

SITE NAME: 3077-3091 Union Road
ADDRESS: 3077-3091 Union Road
Orchard Park, NY 14127
CLIENT: TurnKey Environmental Restoration, LLC

N



This report includes information from the following map sheet(s).

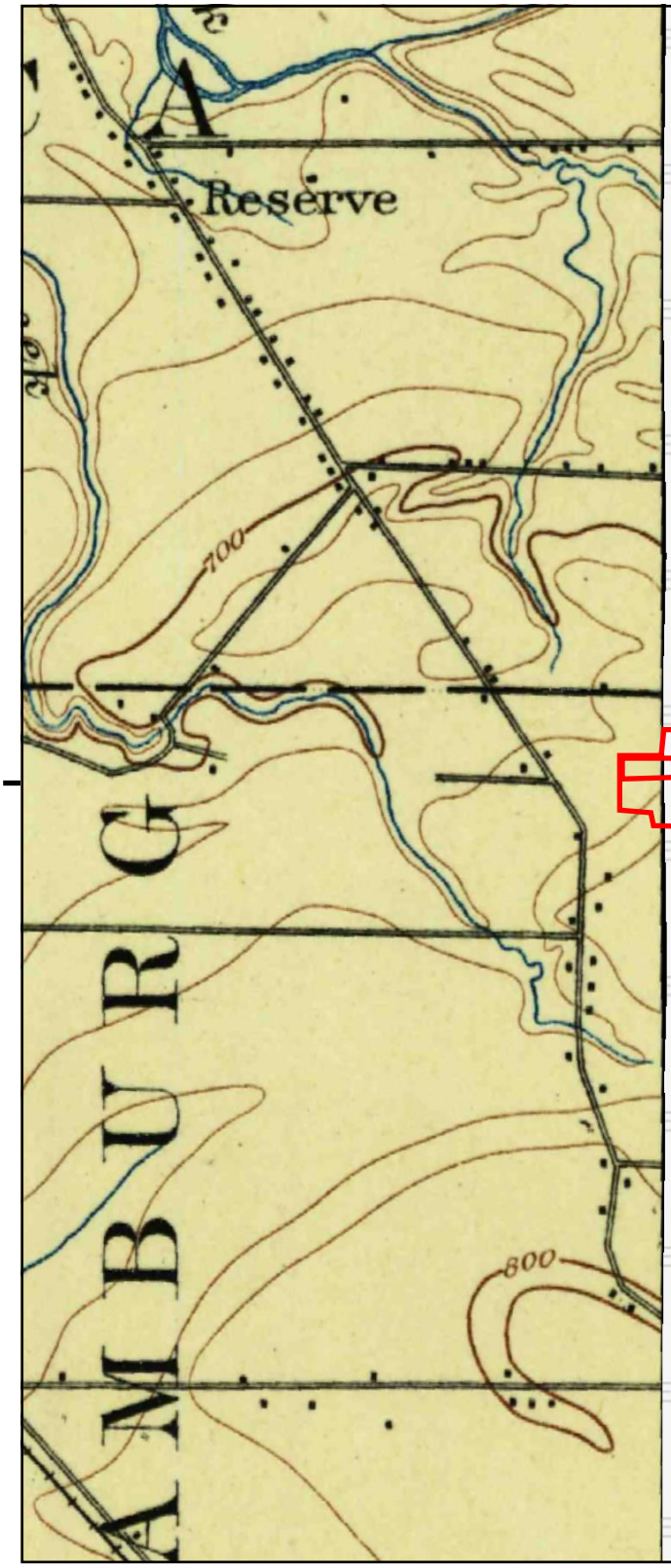
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Depew, 1905, 15-minute
NW, Buffalo, 1901, 15-minute

SITE NAME: 3077-3091 Union Road
ADDRESS: 3077-3091 Union Road
Orchard Park, NY 14127
CLIENT: TurnKey Environmental Restoration, LLC

N



UNMAPPED

This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

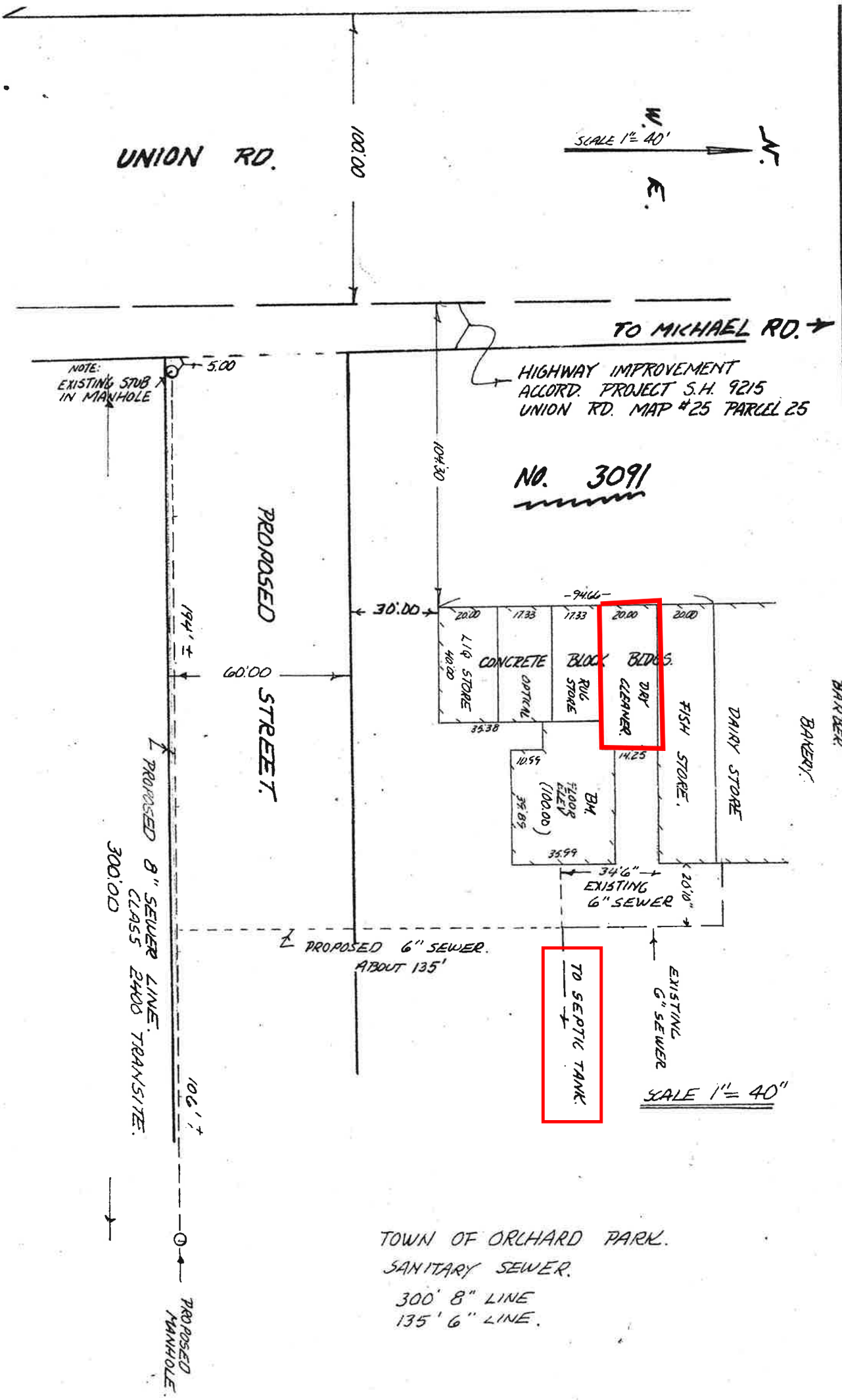
NW, Buffalo, 1894, 15-minute

SITE NAME: 3077-3091 Union Road
ADDRESS: 3077-3091 Union Road
Orchard Park, NY 14127
CLIENT: TurnKey Environmental Restoration, LLC

N

APPENDIX G

MUNICIPAL RECORDS



TOWN OF ORCHARD PARK.
SANITARY SEWER.
300' 8" LINE
135' 6" LINE.

REVISED AUG. 5. 1968

Feet	Inches
0.08	1 Inch
0.17	2 "
0.25	3 "
0.33	4 "
0.42	5 "
0.50	6 "
0.58	7 "
0.67	8 "
0.75	9 "
0.83	10 "
0.92	11 "
1.00	12 "

Date of DEC. 17, 1967

Harold L. Gantzer
Signature

KRAUSE & GANTZER
CIVIL ENGINEERS & LAND SURVEYORS
ANDREWS BUILDING
COURT & PEARL STS.
BUFFALO, N. Y.

SANITARY SEWER PLAN L/ 7042

TOWN OF ORCHARD PARK

COPY file

BUILDING INSPECTOR'S OFFICE

S 4295 South Buffalo Street Orchard Park, New York 14127-2609

Phone: *(716) 662-6430*
Fax: *(716) 662-6419*
Email: *opbuilding@orchardparkny.org*

BUILDING INSPECTOR
Andrew Geist

May 4, 2006

Harold Gantzer
1828 Liberty Building
420 Main Street
Buffalo New York 14202

Attention: Harold

Re: Property Maintenance Union Road:

Town of Orchard Park property records shows that you are the owner of vacant property on Union Road just north of your Plaza location. SBL # 152.12-4-5 This property has large amounts of papers, cans, tall grass and other items that need your attention in a timely manner. Also be advised that your property at the rear of the plaza that is rented by West Seneca Masonry Inc. has exterior storage that needs to be removed and cleaned up. The company that is renting has dumped loads of brick on the property and now has spread them on the ground. This must be clean up and if a parking area needs to be made, the plans and drainage needs to comply with the Town of Orchard Park Codes.
The Plaza area needs to be clean up once again. It should not be my responsibility to have to contact you when this area becomes an eye sore.

PROPERTY MIANTENANCE CODE OF NEW YORK STATE
SECTION 301.3 Vacant structures and land. All vacant structures and premises thereof or vacant shall be maintained in a clean, safe secure and sanitary condition as provided herein so as not to cause a blighting problem or adversely affect the public health or safety.

Sight inspection of your complete property, please note the following.

a.) exterior of this building, behind building, the materials by gas meters needs to be cleared away.
b.) back of building and north end has tall grass/weeds, this must be cut down and maintained each month.
c.) tar buckets from roofing or roofing repair have been put on the north end of building in the field, remove these.
d.) back door to Stereo Chamber, has broken doorknob been repaired, metal bars been removed per Fire Code of New York State. Be advised that this door must operate and is used for an exit door from the rear are of Stereo Chamber.

702.3 Locked doors. All means of egress doors shall be readily open able from the side from which egress is to be made without the need for keys, special knowledge or effort, except where the door hardware conforms to that permitted by the Fire Code of New York State.

TOWN OF ORCHARD PARK

BUILDING INSPECTOR'S OFFICE

S 4295 South Buffalo Street Orchard Park, New York 14127-2609

Phone: *(716) 662-6430*
Fax: *(716) 662-6419*
Email: *opbuilding@orchardparkny.org*

BUILDING INSPECTOR
Andrew Geist

COPY

November 12, 2004

Jerry Aronseno
3079 Union Road
Orchard Park New York 14127

Re: Fire Inspection
Rear Garage Union Road
Orchard Park New York

Attention: Mr. Jerry Aroneno

On November 4, 2004 Town of Orchard Park Asst. Code Enforcement Officer David Jensen inspected the above location. Please note the following.

Fire extinguishers: need to install two in this garage area. (3A:40B:C) this garage has all empty cardboard in it.

This garage is filled with cardboard boxes that have mold on them from water leaking in building.

No heat in this building, cold storage only.

Roof on North West end has rusted roof framing and has started to fall in; water is coming in by heat unit from back wall and along west side top wall area. This must be corrected to remove the roof from falling in on back corner. When the roof is repaired then the mold problem would be stopped.

Thank you for your cooperation.

David K. Jensen
Asst. Code Enforcement Officer

cc Harold Gantzer

TOWN OF ORCHARD PARK

BUILDING INSPECTOR'S OFFICE

S 4295 South Buffalo Street Orchard Park, New York 14127-2609

Phone: *(716) 662-6430*
Fax: *(716) 662-6419*
Email: *opbuilding@orchardparkny.org*

BUILDING INSPECTOR
Andrew Geist

December 20, 2004

Country Ham Store
3085 Union Road
Orchard Park, NY 14127

Attention: Mrs. Barb Rosinski

Re: Fire Inspection

On December 15, 2004 Town of Orchard Park Asst. Code Enforcement Officer David Jensen inspected the above location. Please note the following.

Copy of fire extinguisher inspection of all extinguishers in the building, required each year.

Extension cords: cords or used to operate small equipment in this building, this should be corrected by installing new electrical receptacles on the walls and then remove the cords. This must be installed to National Electrical Codes.

Exit signs: all signs should illuminate, check bulbs or replace units.

Items not in this building:

a.) emergency lighting
b.) smoke or heat detectors
c.) exterior lighting of rear exit door

Propane: rear of building for use on inside at hood area, the tank on the exterior of the building should be protected by Vehicle Impact Protection. (see attached sheet)

Please fill out the **Hazardous Materials Report Form (209-U)** and return to this office.

Thank you for your Cooperation

David K Jensen
Asst. Code Enforcement Officer

Streets/3085Union/FI/04

COPY

TOWN OF ORCHARD PARK

file

BUILDING INSPECTOR'S OFFICE

S 4295 South Buffalo Street Orchard Park, New York 14127-2609

Phone: *(716) 662-6430*
Fax: *(716) 662-6419*
Email: *opbuilding@orchardparkny.org*

BUILDING INSPECTOR
Andrew Geist

May 25, 2006

Jacob's Shoe Repair
3089 Union Road
Orchard Park New York 14127

Re: Fire Inspection #076
SBL # 152.12-4-6

On April 19, 2006 Town of Orchard Park Asst. Code Enforcement Officer David Jensen inspected the above location. Please note the following.

Test certification needed for the following.

a.) fire extinguishers for building NFPA-10
b.) emergency lighting for building. NFPA-101

Fire extinguishers:

a.) very old units, need to have certified each year, might be more cost effective to purchase new extinguishers for your building. Size 3A-40B:C

Flammable materials: should keep these items in a fireproof cabinet.

Heating unit for building:

a.) looks like no shut off value for heater in the store area,

FUEL GAS CODE OF NEW YORK STATE
SECTION 409.5 Equipment shut off valve. Each appliance shall be provided with a shutoff valve separate from the appliance. The shutoff valve shall be in the same room as the appliance, not further than 6 feet from the appliance, and shall be installed upstream from the union, connector or quick disconnect device it serves. Shutoff valves shall be provided with ready access.

Combustible storage:

a.) remove all unwanted items in your building.

I can be reached in the office Monday – Friday at 662-6430

Thank you for your Cooperation

David K. Jensen
Asst. Code Enforcement Officer

cc Harold Gantzer

Streets/3089 Union Rd/Fire Insp/06

THE NEW YORK BOARD OF FIRE UNDERWRITERS

5105012

BUREAU OF ELECTRICITY
40 FULTON STREET, NEW YORK, NY 10038

Date DECEMBER 27,2000 *Application No. on file* 53340998/98 B 069949

THIS CERTIFIES THAT

only the electrical equipment as described below and introduced by the applicant named on the above application number is in the premises of

BENDERSON DEVELOPMENT, 3095 UNION ROAD, ORCHARD PARK, NY

in the following location; ☐ ***Basement*** ☐ ***1st Fl.*** ☐ ***2nd Fl.*** OUT ***Section*** ***Block*** ***Lot***

was examined on DECEMBER 19,2000 ***and found to be in compliance with the National Electrical Code.***

FIXTURE OUTLETS	RECEPTACLES	SWITCHES	FIXTURES			RANGES		COOKING DECKS		OVENS		DISH WASHERS		EXHAUST FANS	
			INCANDESCENT	FLUORESCENT	OTHER	AMT.	K.W.	AMT.	K.W.	AMT.	K.W.	AMT.	K.W.	AMT.	H.P.
26					26										

DRYERS		FURNACE MOTORS				FUTURE APPLIANCE FEEDERS			SPECIAL REC'PT.		TIME CLOCKS		BELL TRANS.	UNIT HEATERS		MULTI-OUTLET SYSTEMS NO. OF FEET	DIMMERS	
AMT.	K.W.	OIL	H.P.	GAS	H.P.	AMT.	NO.	A. W. G.	AMT.	AMP.	AMT.	AMPS.		AMT.	H.P.		AMT.	WATTS

SERVICE DISCONNECT			NO. OF METER EQUIP.	SERVICE											
AMT.	AMP.	TYPE		1 ϕ 2W	1 ϕ 3W	3 ϕ 3W	3 ϕ 4W	NO. OF CC COND. PER ϕ	A. W. G. OF CC. COND.	NO. OF HI-LEG	A. W. G. OF HI-LEG	NO. OF NEUTRALS	A. W. G. OF NEUTRAL

OTHER APPARATUS:

LIGHT POLES-8
PANELBOARDS:1-20 CIR.
TRANSFORMER:1-5 KVA

#13800
5-5-98

RECEIVED
DEC 29 2000
TOWN OF ORCHARD PARK
BUILDING INSPECTOR

JMR ELECTRICAL & A/C INC.
PO BOX 431
HOLLAND, NY, 14080-0431



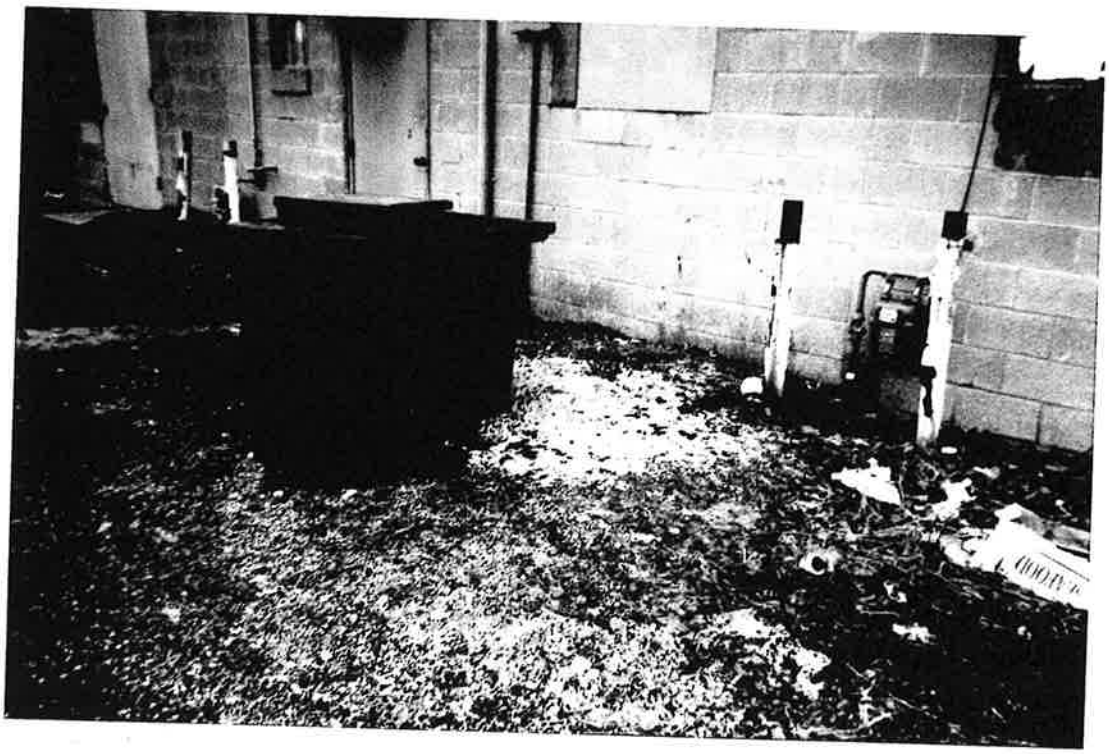
GENERAL MANAGER

Per 530

This certificate must not be altered in any manner; return to the office of the Board if incorrect. Inspectors may be identified by their credentials.

COPY FOR BUILDING DEPARTMENT. THIS COPY OF CERTIFICATE MUST NOT BE ALTERED IN ANY MANNER.





RPS version 4 - [Commercial Building Update ; Group - Administrator, Name - mm]

File Edit View Toolbar Window Help

152.12-4-6.1
Gantzer (Estate), Harold L
3077-3093 Union Rd

146089 Orchard Park
Roll Year: 2018 Curr Yr
Land Size: 17.91 acres

Active
Nbh shop ctr

R/S: 1

School: Orchard Park C
Land AV: 500,000
Total AV: 680,000



- Parcel 152.12-4-6.1
  - Notes
  - History
  - Assessment
    - Spec Dist(s)
  - Description
  - Owner(s)
  - Images
  - Gis
  - Site (1) Com
    - Land(s)
    - Imprvmt(s)
    - Bldg 1 Sec 1
    - Bldg 2 Sec 1
    - Com Use
    - Valuation

Commercial Building | Component

Site No: 1
Bldg No: 1 Section: 1
No. Identical Bldgs: 1
MS/B Model No: 0325 Shopping ctr/strip loa
Actual Yr Built: 1970
Eff Yr Built: 1970
Constr. Quality: 2.0 Average
Condition: 3 Normal
Bldg. Perimeter: 536
Gross Floor Area: 14220
No. of Stories: 1
Story Height: 12
Run RPS440 Edits: ☑

Wall A Pct:
Wall B Pct:
Wall C Pct: 100
Air Cond Pct:
Sprinkler Pct:
Alarm Pct:
No. of Elevators:
Bsmt. Type:
Bsmt. Perimeter:
Bsmt. Sq. Ft:
Functional Obs:
Physical Deprec:
Deprec Adj:
RCN: 1,127,770
RCNLD: 620,274

Note- Bldg 1 Sec 1 (Max 255 Char)

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RPS version 4 - [Commercial Building Update , Group - Administrator, Name - mlm]

File Edit View Toolbar Window Help

152.12-4-6.1
Gantzer (Estate), Harold L
3077-3093 Union Rd

146089 Orchard Park
Roll Year: 2018 Curr Yr
Land Size: 17.91 acres

Active R/S: 1
Nbh shop ctr

School: Orchard Park C
Land AV: 500,000
Total AV: 680,000



- Parcel 152.12-4-6.1
  - Notes
  - History
  - Assessment
    - Spec Dist(s)
  - Description
  - Owner(s)
  - Images
  - Gis
  - Site (1) Com
    - Land(s)
    - Imprvmt(s)
    - Bldg 1 Sec 1
    - Bldg 2 Sec 1
    - Com Use
    - Valuation

Commercial Building | Component

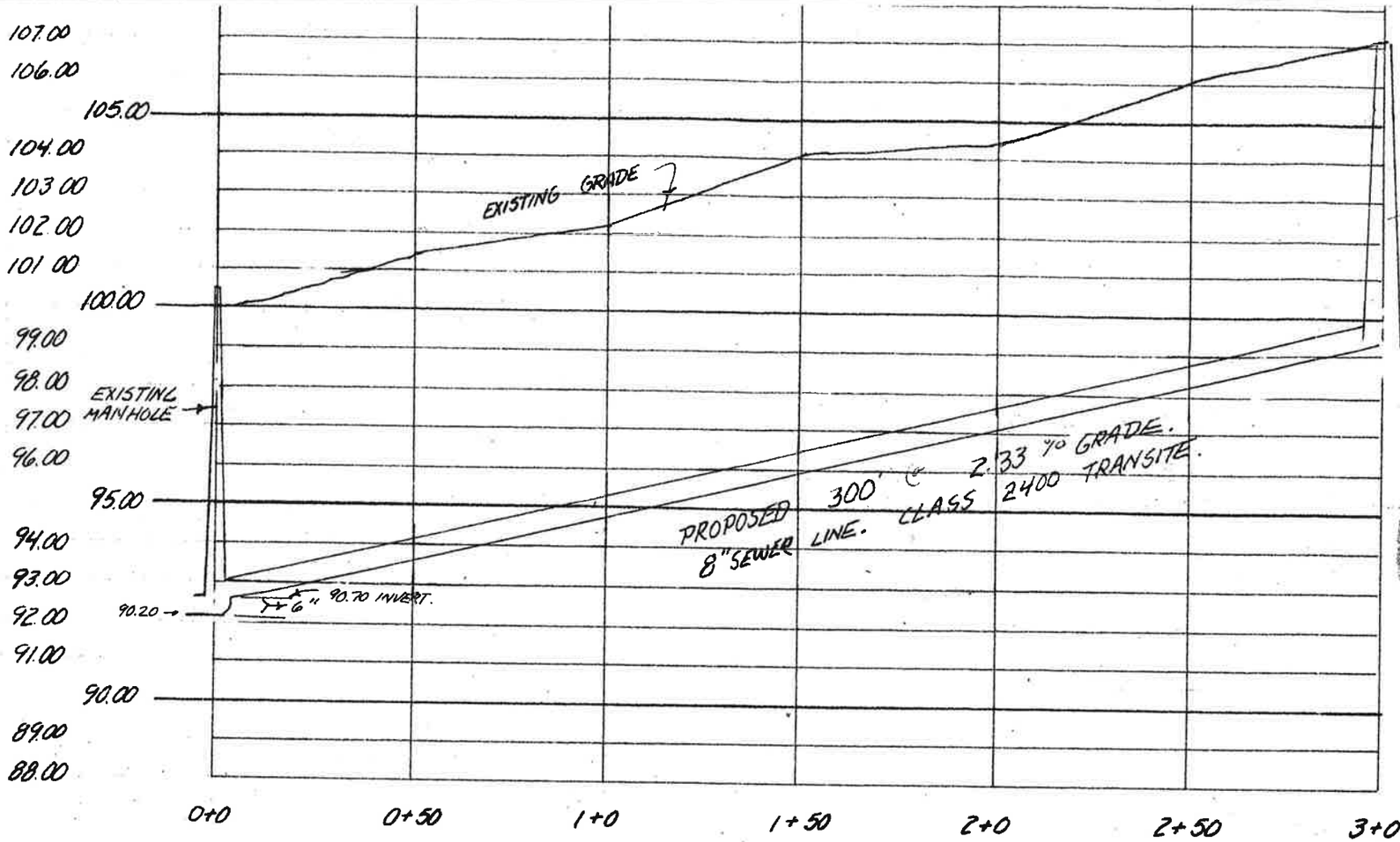
Site No: 1

Bldg No:	2	Section: 1	Wall A Pct:
No. Identical Bldgs:	1		Wall B Pct: 100
MS/B Model No:	0855 - Utility bldg load sup		Wall C Pct:
Actual Yr Built:	1972		Air Cond Pct:
Eff Yr Built:	1972		Sprinkler Pct:
Constr. Quality:	2.0 Average		Alarm Pct:
Condition:	3 Normal		No. of Elevators:
Bldg. Perimeter:	192		Bsmt. Type: 0
Gross Floor Area:	2108		Bsmt. Perimeter:
No. of Stories:	1		Bsmt. Sq. Ft:
Story Height:	15		Functional Obs:
			Physical Deprec:
Run RPS440 Edits:	☑		Deprec Adj:
			RCN: 159,550
			RCNLD: 87,753

Note- Bldg 2 Sec 1 (Max 255 Char)

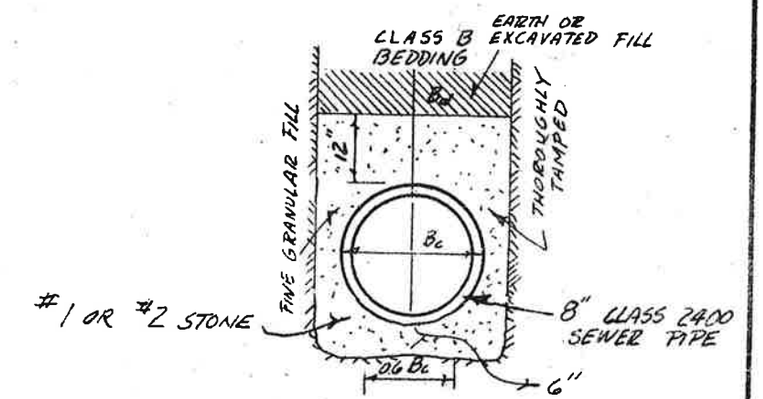
Prints the screen

Type here to search



HAROLD L. CANTZER
State of New York
University Professional Engineer
No. 21278

DIAGRAM OF TRENCH CONDUIT BEDDING



APPENDIX H

SITE RECONNAISSANCE PHOTOS

SITE PHOTOGRAPHS

Photo 1:



Photo 2:



Photo 3:



Photo 4:



Photo 1: View of the western façade of Building 1 facing north.

Photo 2: View of vacant interior space within Building 1.

Photo 3: View of the southeast corner of Building 1 facing northwest. Pictured is the location of historic automotive operations.

Photo 4: View of interior space within historic automotive portion of Building 1.

SITE PHOTOGRAPHS

Photo 5:



Photo 6:



Photo 7:

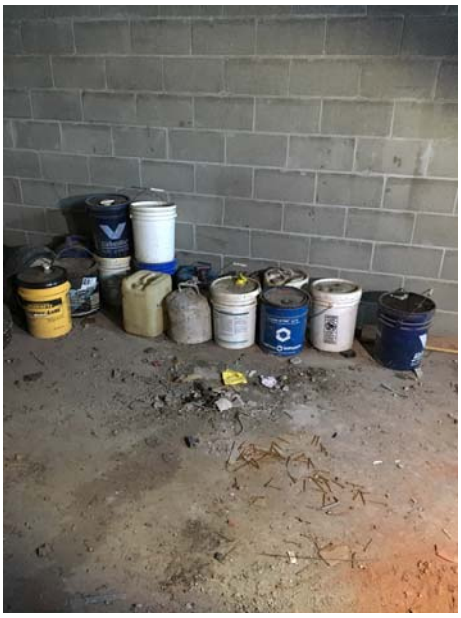


Photo 8:

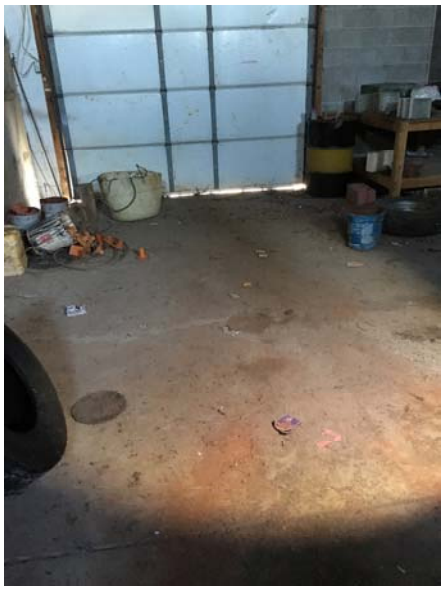


Photo 5: View of a remaining vehicle engine (one of four) within Building 2.

Photo 6: View of the southern façade of Building 2 facing north.

Photo 7: View of remaining hazardous/regulated materials within Building 2.

Photo 8: View of the eastern interior portion of Building 2 showing floor drain and stored materials (note the 55-gallon drum).

SITE PHOTOGRAPHS

Photo 9:



Photo 10:



Photo 9: View of a 55-gallon drum located east of Building 2.

Photo 10: View of a soil stockpile located east of the endpoint of Harold Square.

APPENDIX I

QUESTIONNAIRE

Phase I Environmental Site Assessment
Environmental Questionnaire

1) **Site Information**

Site Name: 3077-3091 Union Road and Associated Parcels

Address: 3077-3091 Union Road and Associated Parcels, Orchard Park, NY

Business Owner/Operator: Estate of Harold L. Gantzer

Title: Years in Position: since date of death 04.26.2008

2) **Size & Nature of Operation**

Number of Buildings: 1 Total Sq. Ft.: approx. 15000 Property Size (acres): approx. 40 acres

Description of Operations: executor continued to lease premises to small businesses in order to support the property until closing.

Current Tenants: See Annex "A"

What is the intended use of the subject property and/or structures located on the subject property?
9 unit plaza intended for commercial use.

3) **What are the past uses/occupants of this facility/property & dates of occupancy?**

1) See Annex "B"
2)
3)

4) **Utilities**

Floor Drains: unknown Discharge Point: unknown

Sump Pumps: unknown Discharge Point: unknown

Storm Drains: unknown Discharge Point: unknown

Other:

On-site utilities: unknown. Tenants pay their own utilities

When was subject property connected to municipal sewer, if currently connected? unknown

5) **List and describe the stormwater and wastewater discharges from the facility, including the sources, discharge points, and receiving waters or facility.**

unknown

6) **What is the nature of the wastes generated on-site (including hazardous/ regulated wastes, the disposal methods and waste disposal vendors)?**

unknown

How is it stored on-site?

Who collects the waste?

7) **Has the refuse service ever refuse to collect the waste?**

☐ No ☐ Yes Explain: unknown

8) Have there ever been any complaints or notices of violations about your facility?
☑ No ☐ Yes Nature: Answer: No to the best of executor's knowledge.

9) What type of HVAC (Heating, Ventilation & Air Conditioning) system does this facility have (ex; natural gas, electric, heating oil, propane, etc. /forced air, radiant, HVAC, etc.)?
Unknown

10) Was this facility ever heated with oil?
☐ No ☐ Yes When? Unknown
Method of Storage:

11) Was this facility ever a car repair shop, paint shop, or gas station?
☐ No ☑ Yes ~~When?~~ yes ~~Owner:~~ unknown there is "After Hours Auto Repair" at 3093 Union Road. This has been leased to a Jim Ivon since at least 03.05.2013.

12) Are there any aboveground or underground storage tanks?
☑ No ☐ Yes Answer: No to the best of executor's knowledge

Tank ID#:
☐ UST ☐ AST Capacity: Product:
Location:
Notable Information:

Tank ID#:
☐ UST ☐ AST Capacity: Product:
Location:
Notable Information:

Tank ID#:
☐ UST ☐ AST Capacity: Product:
Location:
Notable Information:

Do the tanks comply with December 1998 EPA requirements (including overfill protection, monitoring systems, cathodic protection/double walled tank & piping, etc.)?
☐ No ☐ Yes
When were the tanks leak tested?
Are the tanks registered?
Leak detection devices in place? ☐ No ☐ Yes Type of system?

Monitoring reports available? ☐ No ☐ Yes Please supply reports.

13) Were there ever, to your knowledge, any underground or aboveground tanks located on-site previously?
☐ No ☐ Yes Unknown When?

Are closure reports available? ☐ No ☐ Yes

14) What type of chemicals are used in the operations (attach list)?
List hazardous waste/material storage locations:
It is unknown to the executor what materials the tenants use in connection with their operations.

15) List the environmental or safety reports to be submitted to regulatory agencies, the frequency of such reports, and the agencies to which they are submitted.
None.

16) Do you have any federal, state, or local permits for the following? No.
SPDES: ☐ No ☐ Yes ID #:
RCRA: ☐ No ☐ Yes ID #:
EPA ID: ☐ No ☐ Yes ID #:
Title V Air Emissions: ☐ No ☐ Yes ID #:

17) Have you ever transported Hazardous waste from this site? ☑ No ☐ Yes manifests available? ☐ No ☐ Yes Again, executor has no knowledge of materials used by tenants.

18) Are PCBs or PCB-containing equipment present on the subject property, including light ballasts or other equipment? Unknown
☐ No ☐ Yes
Location: Type of Equipment:
Location: Type of Equipment:
Location: Type of Equipment:

19) Are there any transformers located on-site? Unknown
☐ No ☐ Yes Are they utility owned? ☐ No ☐ Yes Utility Company or owner:

20) Do you treat or dispose of any waste materials on-site including incineration, neutralization, or landfilling? Answer: No to best of executor's knowledge. Executor has no knowledge of tenant activities in this regard.
☑ No ☐ Yes Type:

21) Do you store any hazardous/regulated wastes on-site for transfer to a disposal facility? Answer: No to best of executor's knowledge.
☐ No ☐ Yes Waste recipient: Permit #: Executor has no knowledge of tenant activities in this regard.

22) Have you ever been the subject of an enforcement action by any federal, date, or local agency regarding environmental issues?
☑ No ☐ Yes Nature of action:

23) Have there ever been any spills, unpermitted discharges, or releases of hazardous or contaminated materials at or near this facility? Unknown
☐ No ☐ Yes Nature of release:

24) Are there any stained, stressed or dead vegetation surfaces on-site?
☑ No ☐ Yes Suspected cause: Answer: No to the best of executor's knowledge.

25) Are you presently under any federal, state, or local consent orders, decrees or causes of action?
☑ No ☐ Yes Are they pending? ☐ No ☐ Yes

26) Have you ever allowed or permitted any other entity to dump, store, dispose, transport, bury, incinerate, or landfill any materials at the site?
☑ No ☐ Yes Who? When?

27) Does anyone other than your operations utilize this site presently?
☐ No ☑ Yes Who? The estate does not make use of the premises, but obviously the tenants do.
Nature of their operations:

28) Have you ever experienced any problems from odors, drainage, storage practices, or operations from your neighbors?
☑ No ☐ Yes Answer: No to best of executor's knowledge.
Nature of the problem:
Actions taken to correct the problem:

29) Are you aware of any environmental liens on the property?
☑ No ☐ Yes Nature: Answer: No to the best of executor's knowledge.

30) Was there ever a septic tank, leach field injection well, or dry well located on the property?
☐ No ☐ Yes When? Unknown

31) Are there, or were there ever any water wells located on-site? Answer: To best of executor's
☐ No ☐ Yes When? Knowledge there are no wells on the property.
Executor has no knowledge of pre-existing wells.

32) Are there any dry cleaning operations conducted on-site?
☐ No ☐ Yes How long has dry cleaning been conducted on-site? Unknown
What is the current generation of machine used on-site?
How old is the current machine?
Was there a previous machine used on-site?

33) Is there currently any X-ray developing or film developing conducted on-site? Answer: no to the
☐ No ☐ Yes Is there a silver recovery system in use? ☐ No ☐ Yes best of executor's knowledge.

34) Do you have any specialized knowledge that would provide information regarding previous ownership or uses of the property that may be material to identifying recognized environmental conditions regarding the site?
☑ No ☐ Yes Nature:

35) What are the past and present uses of the properties adjacent to you (please include dates of occupancy)? Unknown. The estate cannot speak for what the neighbors do.

Direction	Current Use/ Occupant	Past Use/Occupants
North		
South		
East		
West		

36) Are there any pending, threatened or past litigation relevant to hazardous substances or petroleum products in, on or from the subject property?
☑ No ☐ Yes Nature: Answer: No to the best of the executor's knowledge

37) Are there any pending, threatened or past administrative proceedings relevant to hazardous substances or petroleum products in, on or from the subject property?

☑ No ☐ Yes Nature: Answer: No to the best of the executor's knowledge.

38) Are there any notices from any governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products related to this site?

☑ No ☐ Yes Nature: Answer: No to the best of the executor's knowledge

CERTIFICATION OF RESPONSES

I, Dorothy G. Mill, Executor, the owner/operator and/or responsible person for this facility, do hereby attest and certify that to the best of my knowledge, the answers and information provided in this questionnaire, are true and accurate. I have not willfully withheld information that may be pertinent to the questions contained herein and have not distorted or misrepresented the facts regarding the content of this questionnaire.

Signature: Dorothy G. Mill, Exec. Date: JAN. 8, 2018

Title: Executor, Estate of Harold L. Gantzer

PHASE I Environmental Site Assessment
Environmental Questionnaire

Annex "A"

Response to question 2) Current Tenants:

3079 Union Road:	Stereo Chamber c/o Gerald Aroneseno [Note: this tenant was served w/ notice to vacate by 02/01/2018]
3085 Union Road:	Big Pig Goden Ham Corp. c/o Jason D. Scime
3087 Union Road:	Barber Shop c/o Adam Ferraro
3093 Union Road:	After Hours Auto Repair c/o Jim Ivon [Note: this tenant was served w/ notice to vacate by 02/01/2018]

PHASE I Environmental Site Assessment
Environmental Questionnaire

Annex "B"

Response to question 3) what are the past uses/occupants of this facility/property & dates of occupancy:

The executor has no knowledge of uses or tenants prior to the late owner's date of death which was 04/26/2008.

Exhibit "A" pages 1 and 2 is a list of tenants prepared by the late owner's secretary dated 06/20/2011. To the best of the executor's knowledge the tenants listed therein were the same tenants that occupied the premises as of the date of the late owner's death (04/26/2008).

Exhibit "B" pages 1 and 2 is a list of tenants prepared by the late owner's secretary dated 03/05/2013.

Current tenants are listed in Annex "A".

June 20, 2011

TOWN EDGE PLAZA

UNION ROAD

ORCHARD PARK, NEW YORK

The following is a list of the current Tenants and the status of their lease and their Monthly rental.

3077 UNION ROAD

Leak Master
Michael Seibold
29 Barnett Drive
West Seneca, New York 14224
Cell- 913-4592
674-6401

currently on a month to month lease $550.00

3079 UNION ROAD

Stereo Chamber
Jerry Aroneseno,Pres.

currently on a month to month lease $1,515.00

675-8300

3081 – 3083 UNION ROAD

Michlyn Marketing,Inc.
D/b/a Custom Radio
Michael J. Gutillo,Pres.
4155 Transit Road
Williamsville, New York 14221
634-6700

Lease runs through December 31,2011
$1,200.00

3085 UNION ROAD

Jason D. Scime
D/b/a Big Pig Golden Ham Corp.
192 Bryant Street
North Tonawanda, New York 14120
674- 4600

Lease runs through December 31,2011
$765.00

3087 UNION ROAD

Barber Shop
Adam Ferraro
99 Francis Avenue
Sloan, New York 14212
895- 1704
675-4425

No Lease
month to month
$500.00

3089 UNION ROAD

Jacobs Shoes
George Jacobs,Jr.
674- 0777

month to month
$690.00

3091 UNION ROAD

Robert John Redfearn
D/b/a R-Jay's Hand Tossed Brick Oven Pizza
1410 East River Road
Grand Island, New York 14072
677-5678

month to month
$900.00

3097 UNION ROAD

James Daly
West Seneca Masonry
3782 Harvard
Hamburg, New York 14072
481- 6223

month to month
$500.00

March 5, 2013

TOWN EDGE PLAZA

UNION ROAD

ORCHARD PARK, NEW YORK

The following is a list of the current Tenants and the status of their lease and their monthly rental.

3077 UNION ROAD

Leak Master
Michael Seibold
29 Barnett Drive
West Seneca, New York 14224
Cell- 913-4592
674-6401

currently month to month $550.00

3079 UNION ROAD

Stereo Chamber
Jerry Aroneseno,Pres.

currently month to month $1,515.00

675-8300

3081 – 3083 UNION ROAD

Michlyn Marketing,Inc.
D/b/a Custom Radio
Michael J. Gutillo,Pres.
4155 Transit Road
Williamsville, New York 14221
634-6700

Lease ran through December 31,2011
Now month to month $1,300.00

3085 UNION ROAD

Jason D. Scime
D/b/a Big Pig Golden Ham Corp.
192 Bryant Street
North Tonawanda, New York 14120
674- 4600

Month to month $765.00

3087 UNION ROAD

Barber Shop
Adam Ferraro
99 Francis Avenue
Sloan, New York 14212
895- 1704
675-4425

No Lease $500.00

3089 UNION ROAD

Jacobs Shoes
George Jacobs,Jr.
674- 0777

month to month $690.00

3091 UNION ROAD

VACANT -

The store is currently vacant
There is a possibilty of leasing these premises in a month or so with a 1 year lease but nothing signed at this point

3093 UNION ROAD

After Hours Auto Repairs

month to month $300.00

3097 UNION ROAD

James Daly
West Seneca Masonry
3782 Harvard
Hamburg, New York 14072
481- 6223

month to month $500.00

Phase II Environmental Investigation Report

3077-3097 UNION ROAD and 20-26 HAROLD SQUARE
ORCHARD PARK, NEW YORK

February 2018 T0105-017-010

Prepared For:

BENDERSON DEVELOPMENT



Prepared By:

TurnKey Environmental Restoration, LLC

2558 Hamburg Turnpike, Suite 300, Buffalo, New York | phone: (716) 856-0635 | fax: (716) 856-0583

PHASE II ENVIRONMENTAL INVESTIGATION REPORT

3077-3097 Union Road and 20-26 Harold Square
Orchard Park, New York

February 2018 0105-017-010

Prepared for:

Benderson Development Company, LLC
570 Delaware Avenue
Buffalo, New York, 14202

Prepared by:

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, New York 14218

PHASE II ENVIRONMENTAL INVESTIGATION REPORT

3077-3097 Union Road and 20-26 Harold Square
Orchard Park, New York

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Appendix B	Photo Log
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1.0 INTRODUCTION

1.1 Background and Site Description

TurnKey Environmental Restoration, LLC (TurnKey) performed a Phase II Environmental Investigation on behalf of Benderson Development Company, LLC at 3077-3097 Union Road and 20-26 Harold Square, Town of Orchard Park, Erie County, New York (Site).

The Site is located in a moderately developed residential and commercial area (see Figure 1). As shown on Figure 2, two structures are present on the Site. Building 1 (3077-3097 Union Road) is a plaza with vacant tenant spaces and two current occupants, Adam's Barber Shop (barber shop) and Gold N Ham (pawnshop and butcher shop). Building 2 (20-26 Harold Square) reportedly has a history of being used for storage and use by a contractor/masonry company. A portion of Building 2 is presumed by TurnKey to have been used for equipment repair/maintenance.

The Site consists of one 17.9 acre parcel municipally addressed as 3077 Union Road. The Site is currently supplied with municipal sanitary sewer, electric, natural-gas and public water.

The scope of work for the Phase II investigation was devised based on recognized environmental conditions (RECs) identified for the Site by TurnKey through completion of a Phase I Environmental Site Assessment, dated September 2017; see Section 1.2 below for additional information. Note that TurnKey's Phase I was completed on a greater property of which the Site, subject to this Phase II assessment, was a part.

1.2 Previous Study

The following summarizes the findings of TurnKey's September 2017 Phase I Environmental Site Assessment provided under separate cover.

A dry cleaner and septic were identified on a 1967 Survey that was reviewed by TurnKey in the Town of Orchard Park municipal records. The former dry cleaner appears to have formerly been located in the current Gold N Ham tenant space, which was inaccessible at the time of the site visit.

A tenant space in the southeastern portion of the plaza (Building 1) was historically used for automotive repair. No floor drains or lifts were observed by TurnKey at the time of the site reconnaissance; however, TurnKey observed the presence of remaining automotive fluids and vehicle components such as engines. TurnKey also noted the presence of black staining to concrete ground surfaces within historic automotive repair area of Building 1.

Only the eastern portion of Building 2 was accessible at the time of the site visit. This space was reportedly used for minor equipment repair/maintenance for a masonry business. TurnKey observed the presence of remaining hazardous/regulated materials (hydraulic oil, muriatic acid, clean strip, insulite, latex bending mixture, roof cement, etc.) and a floor drain within the center of the bay. The floor drain reportedly discharges into the municipal sanitary sewer system.

TurnKey identified the following RECs in connection with the Site as part of the Phase I:

- The dry cleaner and septic system identified the 1967 survey due to the anticipated use of solvents and the potential for subsurface soil and/or groundwater impacts.
- Historic automotive repair at Building 1 and equipment repair/maintenance with a floor drain at Building 2.
- The remaining hazardous/regulated materials and vehicle components (engines, etc.) remaining at the Site as such will require proper off-site disposal if not intended for future use.

Due to the history of dry cleaning with use of a private septic system, automotive repair and the equipment repair/maintenance, TurnKey recommended completion of a Phase II Environmental Investigation to assess subsurface soil and groundwater conditions.

2.0 SITE INVESTIGATION ACTIVITIES

2.1 Soil Boring Investigation

On January 22, 2018, TurnKey's subcontractor, TREC Environmental, Inc. (TREC), mobilized a track-mounted Geoprobe 6620DT direct-push drill rig equipped with a 1.5-inch diameter, 48 inch long macro-core sampler to the Site to assess subsurface conditions at the Site. As shown on Figure 2, 16 soil borings designated as SB-1 through SB-16 were completed at the Site with five borings converted into one-inch diameter piezometers. The rationale for the specific boring investigation locations is provided below in Section 3.2. The soil borings were advanced to equipment refusal (suspected bedrock) at depths ranging between 4 and 12 feet below ground surface (fbgs).

The sample cores were retrieved from the boring locations in clear PVC sleeves to allow for field characterization of the subsurface lithology and collection of soil samples by TurnKey's Environmental Scientist. The physical characteristics of all soil borings were classified using the ASTM D2488 Visual-Manual Procedure Description. Soils from each boring were screened via headspace screening using a MiniRae 3000 Photoionization Detector (PID). All field observations, including lithology, depths, PID scan results, etc., at each investigation location are summarized in the Soil Boring Log sheets provided in Appendix A. Photographs taken during the work are included in Appendix B.

Seven soil samples selected for laboratory analysis were transported under chain-of custody command to Test America Laboratories, Inc. (Test America) in Amherst, New York for analysis of New York State Department of Environmental Conservation (NYSDEC) Target Compound List (TCL) plus Commissioners Policy-51 (CP-51) volatile organic compounds (VOCs) and/or polycyclic aromatic hydrocarbons (PAHs). One soil sample was also analyzed for VOCs by Toxicity Characteristic Leaching Procedure (TCLP). All samples were collected in laboratory provided sample bottles and were cooled to 4^0 C prior to transport.

2.2 Groundwater Sampling

Five soil borings, SB-1, SB-6, SB-7, SB-8 and SB-10, were converted into one-inch diameter piezometers (PZ-1 through PZ-5). PZ-1 was installed west of the former dry cleaner at Building 1 and the other wells were installed east of the former dry cleaner. The piezometers were installed using one-inch diameter Schedule 40 PVC well screen and riser. Groundwater grab samples were collected from the piezometers using dedicated and disposable 0.5" polyethylene bailers subsequent to purging a minimum of three well volumes from each well.

Five groundwater samples were placed in pre-cleaned laboratory provided sample bottles, cooled to 4 °C in the field, and transported under chain-of-custody to Test America for analysis of TCL plus CP-51 VOCs.

3.0 INVESTIGATION FINDINGS

3.1 Site Geology/Hydrogeology

The overburden geology observed during the soil boring investigation is generally described as mixtures of sand, silt, clay and/or gravel overlying bedrock noted at depths ranging between 4 and 12 fbgs (see Soil Boring Logs in Appendix A). Suspected non-native fill materials overlying native soils were observed at SB-1, SB-2 and SB-4. Fill materials were noted to include fine sand, gravel and red brick fragments.

Groundwater levels measured in piezometers prior to sampling ranged between 2 and 8.25 fbgs. Groundwater flow is likely in a northerly direction consistent with topography in the area of the Site. Local groundwater flow, however, may be influenced by subsurface features, such as excavations, utilities, and localized fill-conditions.

3.2 Field Observations

Soil samples from the soil boring investigation were observed and scanned via headspace screening for volatile organics using a PID. A description of the field observations during the boring investigation is presented below:

Investigation Location ID	Environmental Concern Assessed	Highest PID reading (parts per million, ppm) and depth (fbgs)	Other Observations
SB/1/PZ-1	West of former dry cleaner.	1.1 ppm at 10 fbgs.	Bedrock refusal at 12 fbgs.
SB-2		0.4 ppm at 1 fbgs.	
SB-3	East of former dry cleaner.	1.4 ppm at 4 fbgs.	Bedrock refusal at 4.5 fbgs.
SB-4	South of automotive repair operation at Building 1.	1.7 ppm at 5 fbgs.	Bedrock refusal at 5.5 fbgs.
SB-5		0.0 ppm throughout boring.	Bedrock refusal at 4 fbgs.
SB-6/PZ-2	East of former dry cleaner.	0.0 ppm throughout boring.	Bedrock refusal at 5.5 fbgs.
SB-7/PZ-3		2,200 ppm at 5 fbgs decreasing to 150 ppm from 6 to 7 fbgs.	Bedrock refusal at 8 fbgs.
SB-8/PZ-4		0.5 ppm at 2 and 6 fbgs.	Bedrock refusal at 8 fbgs.
SB-9		1.4 ppm at 4 fbgs.	Bedrock refusal at 4 fbgs.
SB-10/PZ-5		0.0 ppm throughout boring.	Bedrock refusal at 7 fbgs.

Investigation Location ID	Environmental Concern Assessed	Highest PID reading (parts per million, ppm) and depth (fbgs)	Other Observations
SB-11	Proximate to former septic system, east of former dry cleaner.	1.0 ppm at 3 fbgs.	Bedrock refusal at 4 fbgs.
SB-12		0.1 ppm at 3 fbgs.	Bedrock refusal at 4 fbgs.
SB-13		0.0 ppm throughout boring.	Bedrock refusal at 9 fbgs.
SB-14		0.0 ppm throughout boring.	Bedrock refusal at 8 fbgs.
SB-15	South of Building 2 equipment repair/maintenance area with floor drain.	0.0 ppm throughout boring.	Bedrock refusal at 9.5 fbgs.
SB-16	Northwest of former dry cleaner.	0.0 ppm throughout boring.	Bedrock refusal at 12 fbgs.

3.3 Soil Analytical Results

Table 1 presents a summary of the detected analytes for each of the laboratory analyzed soil samples. For comparative purposes, Table 1 includes 6NYCRR Part 375 Unrestricted and Residential Use Soil Cleanup Objectives (USCOs and RSCOs, respectively). Based on the groundwater analytical results further described below, Part 375 Protection of Groundwater SCOs apply to the specific VOCs identified at concentrations above Class GA Groundwater Quality Standards (GWQS, see Table 3). Appendix C contains a copy of the laboratory analytical data package.

As summarized on Table 1, chlorinated VOCs (cVOCs) were detected at concentrations exceeding Part 375 USCOs, RSCOs and/or Protection of Groundwater SCOs. Specifically, tetrachloroethene (PCE) was identified at concentrations exceeding its respective RSCO of 5.5 milligrams per kilogram (mg/kg) at SB-3 (44 mg/kg at 4-4.5' interval), SB-7 (120 mg/kg at 4-6' interval and 19 mg/kg at 6-8' interval) and SB-11 (13 mg/kg at 2-4' interval). PCE degradation compounds trichloroethene (TCE) and cis-1,2-dichloroethene (cis-1,2 DCE) exceed USCOs and Protection of Groundwater SCOs at SB-7 and SB-8. In addition, TCE exceeds its respective USCO and Protection of Groundwater SCO at SB-3. Methylene chloride exceeds its respective USCO and Protection of Groundwater SCO in all samples.

Based on field observations and the highest PCE concentration of 120 mg/kg at SB-7 (4-6'), this sample was also analyzed by the laboratory for VOCs by TCLP to assess whether cVOC concentrations above the characteristic hazardous waste threshold. As

(4-6') exceeds its respective characteristic hazardous waste threshold of 0.7 mg/L. Note that PCE was identified within the laboratory method blank; however, according to the laboratory, "the detection in the method blank was just slightly above the Method Detection Limit (MDL) and wouldn't have any significant impact on the sample results at that level." TCE was identified at an estimated concentration of 0.0081 mg/L, which is below its respective characteristic hazardous waste threshold of 0.5 mg/L.

3.4 Groundwater Analytical Results

Groundwater sample results are summarized on Table 3 with comparison to Class GA Groundwater Quality Standards (GWQS) per NYSDEC Technical and Operational Guidance Series (T.O.G.S 1.1.1). A copy of the complete laboratory analytical data package is included in Appendix C. Note that in the laboratory report, wells TMW-1 through TMW-5 refers to piezometers PZ-1 through PZ-5, respectively.

As summarized on Table 3, cVOCs exceed their respective GWQS at PZ-2, PZ-3 and PZ-4 with the most significant cVOC concentrations identified at PZ-3 located east of the former dry cleaner. Specifically, PCE exceeds its respective GWQS of 5 micrograms per liter (ug/L) at PZ-3 (51,000 ug/L) and PZ-4 (61 ug/L). Degradation products of PCE, including TCE, cis-1,2 DCE and/or vinyl chloride (VC) exceed their respective GWQS at PZ2 and PZ-4. Total xylenes at a concentration of 30 ug/L at PZ-2 exceeds its respective GWQS of 5 ug/L.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the Phase II investigation at the Site, TurnKey offers the following conclusions and recommendations:

- The highest PID reading identified during the work was 2,200 ppm at SB-7 (4-6'). PID readings decreased to 150 ppm at SB-7 at the deeper 6 to 7' interval, which is just above bedrock.
- Laboratory analytical results revealed the presence of cVOC-impacted soil and groundwater east of the former dry cleaner at Building 1. The highest cVOC concentrations in soil and groundwater were identified at SB-7/PZ-3, located approximately five feet off the east wall of Building 1. Additional information relative to soil and groundwater impacts identified at the Site is provided below:
    - Soil – PCE and its degradation compounds TCE and cis-1,2-DCE exceeded Part 375 USCOs, RSCOs and/or Protection of Groundwater SCOs in soil samples collected from four soil borings (SB-3, SB-7, SB-8 and SB-11). PCE in soil at SB-7 (4-6') was identified at a concentration exceeding its respective characteristic hazardous waste threshold.
    - Groundwater – PCE and/or its degradation compounds TCE, cis-1,2 DCE and VC exceeded GWQS at PZ-2, PZ-3 and PZ-4. In addition, total xylenes exceeded its respective GWQS at PZ-2.
- The source of the cVOC-impacted soil and groundwater is reasonably attributable to the historic dry cleaner formerly located within the current Gold N Ham tenant space. Xylenes in water may be attributed to the dry cleaner if a Stoddard/petroleum-based solvent was used.
- Based on the proximity of the existing building to the cVOC impacts, there is the potential for cVOC-impacted soil and groundwater beneath the existing building slab.
- The elevated cVOC concentrations represent a potential vapor encroachment condition (VEC) whereby subslab soil vapor and/or indoor air with elevated concentrations of cVOCs may be present within the existing and future buildings if left unremediated.
- In conclusion, cVOC-impacted soil and groundwater is present on-Site and will require remediation and/or proper soil/groundwater management either prior to or during redevelopment of the Site. Further work, including additional soil borings and installation of monitoring wells, would be required to assess the extent of cVOC soil and groundwater impacts at the Site. A soil vapor intrusion assessment should be completed to assess whether a VEC exists at the Site. Installation of an active subslab depressurization (ASD) system may be required to address cVOC-impacted subslab vapor and/or indoor air within the existing building. The presence of elevated cVOC concentrations on-Site should be considered as part of any redevelopment project.

5.0 LIMITATIONS

This report has been prepared for the exclusive use of Benderson Development Company, LLC. The contents of this report are limited to information available at the time of the Site investigation activities and to data referenced herein, and assume all referenced historic information sources to be true and accurate. The findings herein may be relied upon only at the discretion of Benderson Development Company, LLC. Use of or reliance on this report or its findings by any other person or entity is prohibited without written permission of TurnKey Environmental Restoration, LLC.

TABLES

TABLE 1

SUMMARY OF SUBSURFACE SOIL ANALYTICAL RESULTS
PHASE II ENVIRONMENTAL INVESTIGATION
3077-3097 UNION ROAD & 20-26 HAROLD SQUARE
ORACHARD PARK, NY

PARAMETER[1]	Protection of Groundwater SCOs[2]	Unrestricted Use SCOs[2]	Residential Use SCOs [2]	Sample ID (Depth, Highest PID reading in ppm)						
				SB-1 (10-12', 1.1)	SB-3 (4-4.5', 1.4)	SB-4 (2-4', 1.4)	SB-7 (4-6', 2,200)	SB-7 (6-8', 150)	SB-8 (4-6', 0.5)	SB-11 (2-4', 1.0)
				1/22/2018						
Volatile Organic Compounds (VOCs) - mg/Kg [3]										
cis-1,2-Dichloroethene	**0.25**	**0.25**	**59**	ND	0.17 J	--	ND	**0.28**	**0.26**	ND
Methylene chloride	**0.05**	**0.05**	**51**	**0.1 J,B**	**0.33 J,B**	--	**2 J,B**	**0.19 J,B**	**0.11 J,B**	**0.2 J,B**
Tetrachloroethene	**1.3**	**1.3**	**5.5**	1	**44**	--	**120**	**19**	1.1	**13**
Trichloroethene	**0.47**	**0.47**	**10**	ND	**1.5**	--	ND	**0.94**	**0.61**	0.18 J
Total cVOCs	--	--	--	1.1 J,B	46 J,B	--	122 J,B	20.41 J,B	2.08 J,B	13.38 J,B
Polycyclic Aromatic Hydrocarbons (PAHs) - mg/Kg										
Total PAHs	--	--	--	--	--	ND	--	--	--	--

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; other compounds were reported as non-detect.
2. Values per NYSDEC Part 375 Soil Cleanup Objectives (SCOs). Protection of Groundwater SCOs apply to specific VOCS exceeding Groundwater Quality Standards (see Table 3).
3. Sample results were reported by the laboratory in ug/kg and converted to mg/kg for comparisons to SCOs.

Definitions:

ND = Parameter not detected above laboratory detection limit.
"--" = No value available for the parameter; Parameter not analyzed for.
J = Estimated value; result is less than the sample quantitation limit but greater than zero.
B = Compound was found in the blank and sample.

Bold	= Result exceeds Part 375 Unrestricted Use SCOs and/or Protection of Groundwater SCOs.
Bold	= Result exceeds Residential Use SCOs.

TABLE 2

SUMMARY OF TCLP VOC RESULTS
PHASE II ENVIRONMENTAL INVESTIGATION

3077-3097 UNION ROAD & 20-26 HAROLD SQUARE
ORCHARD PARK, NEW YORK

PARAMETER	Characteristic Hazardous Waste Threshold[1] (mg/L)	SB-7 (4-6)
		1/22/2018
TCLP Volatile Organic Compounds (VOCs) - mg/L		
Tetrachloroethene - DL	**0.7**	**2.6 B**
Trichloroethene	**0.5**	0.0081 J

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; other compounds were reported as non-detect.
2. TCLP/Haz Waste Regulatory Levels per 40 CFR 261, Appendix II, 1993 ed., as amended by 58 FR 46040, August 31, 1993.

Definitions:

J = Estimated value; result is less than the sample quantitation limit but greater than zero.

B = Analyte was detected in associated method blank.

DL = Indicates a dilution, re-analysis, re-extraction, or additional initial metals/anion analysis of the sample.

Exceeds Haz Waste Threshold

TABLE 3

SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
PHASE II ENVIRONMENTAL INVESTIGATION
3077-3097 UNION ROAD & 20-26 HAROLD SQUARE
ORCHARD PARK, NY

PARAMETER[1]	GWQS[2]	Sample ID				
		PZ-1	PZ-2	PZ-3	PZ-4	PZ-5
		1/22/2018 and 1/23/2018				
Volatile Organic Compounds (VOCs) - ug/L						
Acetone	**50**	5	7.3	ND	ND	3.2
Carbon disulfide	**--**	0.46	0.66	ND	ND	ND
cis-1,2-Dichloroethene	**5**	ND	**9.8**	**2200**	**37**	0.9
Cyclohexane	**--**	0.18	0.39	ND	0.29	ND
Ethylbenzene	**5**	ND	4.5	ND	ND	ND
Methylcyclohexane	**--**	ND	0.36	ND	0.43	ND
Methylene chloride	**5**	ND	ND	**220**	ND	ND
Tetrachloroethene	**5**	ND	ND	**51000 DL**	**22**	0.66
trans-1,2-Dichloroethene	**5**	ND	ND	ND	3	ND
Trichloroethene	**5**	ND	ND	**2600**	**61**	2.3
Vinyl chloride	**2**	ND	**3.6**	ND	**7.7**	ND
Total Xylenes	**5**	ND	**30**	ND	ND	ND
Total VOCs	**--**	0.64	56.61	56020	131.42	7.06
Total cVOCs	**--**	ND	**13.4**	56020	130.7	3.86

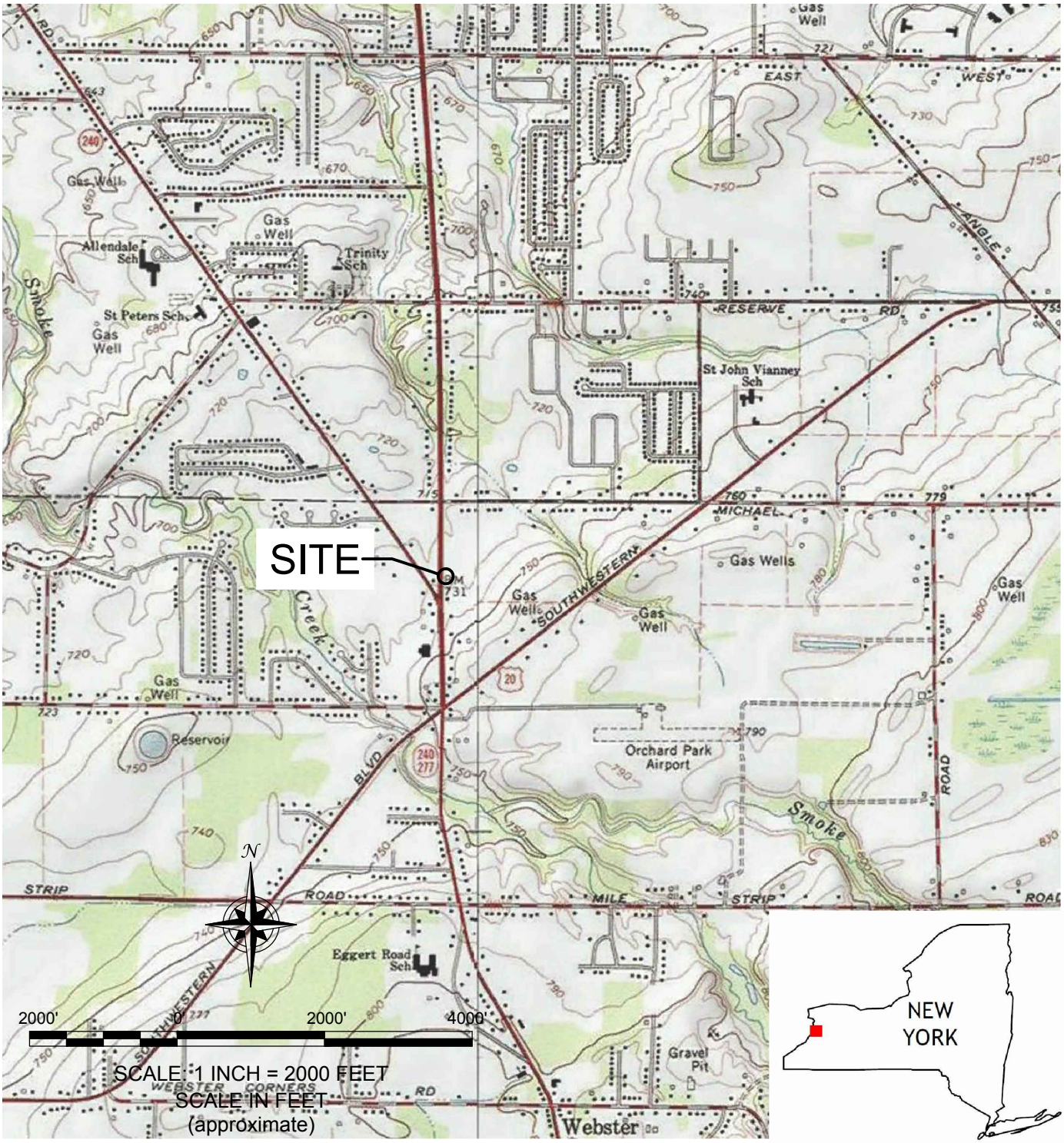
Notes:
1. Only those parameters detected at a minimum of one sample location are presented in this table; other compounds were reported as non-detect.
2. Regulatory limits are NYSDEC Class "GA" Groundwater Quality Standards (GWQS) and Guidance Values and Groundwater Effluent Limitations.

Definitions:
ND = Parameter not detected above laboratory detection limit.
"--" = No value available for the parameter; Parameter not analyzed for.
J = Estimated value; result is less than the sample quantitation limit but greater than zero.
DL = Indicates a dilution, re-analysis, re-extraction, or additional initial metals/anion analysis of the sample.
Bold = Result exceeds NYSDEC Groundwater Quality Standards.

FIGURES

F:\CAD\TurnKey\Benderson\3077 Union Road and Associated Parcels\Phase II\Figure 1 - Site Location and Vicinity Map.dwg

FIGURE 1



TurnKey Environmental Restoration, LLC

2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635

PROJECT NO.: T0105-017-010

DATE: JANUARY 2018

DRAFTED BY: CMS

SITE LOCATION AND VICINITY MAP

PHASE II ENVIRONMENTAL INVESTIGATION

3077-3097 UNION ROAD, 20-26 HAROLD SQUARE
AND ASSOCIATED PARCELS
ORCHARD PARK, NEW YORK

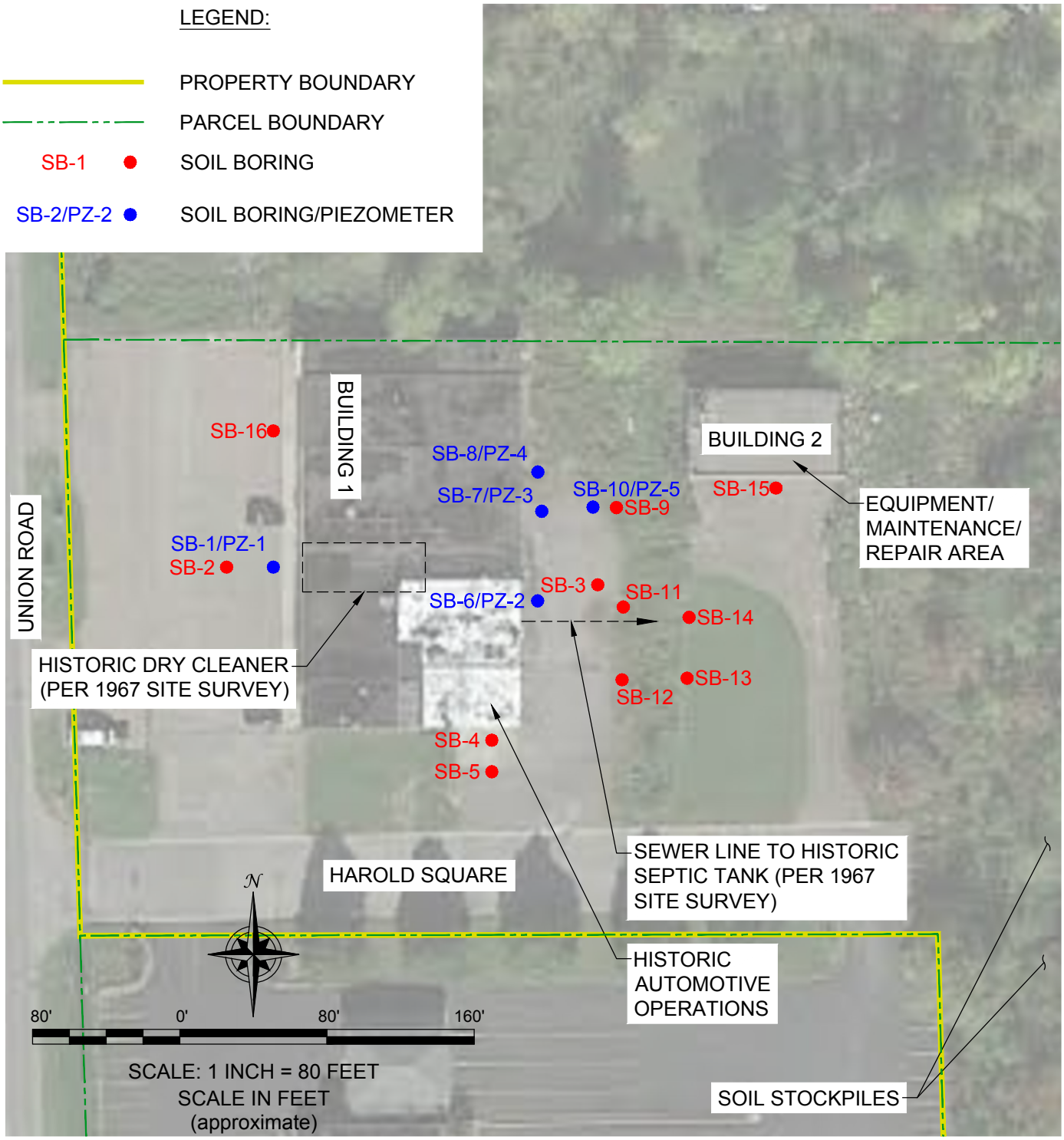
PREPARED FOR

BENDERSON DEVELOPMENT COMPANY

DISCLAIMER:
PROPERTY OF TURNKEY ENVIRONMENTAL RESTORATION, LLC. IMPORTANT: THIS DRAWING PRINT IS LOANED FOR MUTUAL ASSISTANCE AND AS SUCH IS SUBJECT TO RECALL AT ANY TIME. INFORMATION CONTAINED HEREON IS NOT TO BE DISCLOSED OR REPRODUCED IN ANY FORM FOR THE BENEFIT OF PARTIES OTHER THAN NECESSARY SUBCONTRACTORS & SUPPLIERS WITHOUT THE WRITTEN CONSENT OF TURNKEY ENVIRONMENTAL RESTORATION, LLC.

F:\CAD\TurnKey\Benderson\3077 Union Road and Associated Parcels\Phase II\Figure 2 - Investigation Locations.dwg

FIGURE 2



TurnKey Environmental Restoration, LLC

2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635

PROJECT NO.: T0105-017-010

DATE: JANUARY 2018

DRAFTED BY: CMS

INVESTIGATION LOCATIONS

PHASE II ENVIRONMENTAL INVESTIGATION

3077-3097 UNION ROAD, 20-26 HAROLD SQUARE
AND ASSOCIATED PARCELS
ORCHARD PARK, NEW YORK

PREPARED FOR

BENDERSON DEVELOPMENT COMPANY

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APPENDIX A

SOIL BORING LOGS

Project No: T0105-017-001

Borehole Number: SB-1

Project: 3077-3097 Union Road and 20-26 Harold Square

A.K.A.: PZ-1

Client: Benderson Development Company

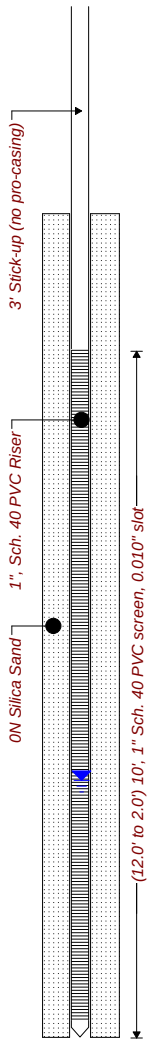
Logged By: CMS

Site Location: Orchard Park, New York

Checked By: BWM

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 – 12.5 – 25)	Lab Sample	Well Completion Details or Remarks
-3.0									
	0.0	Ground Surface							
	0.0 / -0.5	***Asphalt and Subbase***							
	0.5 / -1.2	***Fill*** Black, moist, mostly gravelly fill, some non-plastic fines, some red brick							
2.0	1.2	***Lean Clay*** Brown, moist, mostly medium plasticity fines, some angular gravel, trace fine sands, medium toughness, medium density, reworked.			2.3		0.0 / 0.0 / 0.0		
	-4.0 / 4.0	As Above					0.0		
	-5.2 / 5.2	***Well Graded Gravel with Silt and Sand*** Brown, moist, mostly angular gravel, some non-plastic fines, some fine sand, loose.			3.6		0.0 / 0.0 / 0.0		
7.0	-8.0 / 8.0	As Above					0.0		
	-8.5 / 8.5	***Weathered Rock with Silt and Sand*** Grey, moist, mostly weathered rock, some fine sand, some non-plastic fines, loose. Equipment refusal at 12.0 fbgs			2.6		0.0 / 1.1 / 0.0	Sample Location	
12.0	-12.0 / 12.0	End of Borehole					0.0		



Drilled By: Trec Environmental, Inc
Drill Rig Type: Geoprobe 6620 DT
Drill Method: Direct Push
Comments:
Drill Date(s): 1/22/2018

Hole Size: 2" with 1" well
Stick-up: 3'
Datum:

Sheet: 1 of 1

Project No: T0105-017-001

Borehole Number: SB-2

Project: 3077-3097 Union Road and 20-26 Harold Square

A.K.A.:

Client: Benderson Development Company

Logged By: CMS

Site Location: Orchard Park, New York

Checked By: BWM

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 / 12.5 / 25)	Lab Sample	Well Completion Details or Remarks
0.0	0.0	Ground Surface							
	0.0	***Asphalt and Subbase***							
	-0.5 / 0.5	***Fill*** Black, moist, mostly gravelly fill, some non-plastic fines, red brick layer from 1.4 to 1.8 fbgs.					0.4		
	-1.2 / 1.2	***Lean Clay*** Brown, moist, mostly medium plasticity fines, some angular gravel, trace fine sands, medium toughness, medium density, reworked.			2.7		0.0		
							0.0		
	-4.0 / 4.0	As Above					0.0		
5.0					3.0		0.0		
							0.0		
	-6.3 / 6.3	***Well Graded Gravel with Silt and Sand*** Brown, moist, mostly angular gravel, some non-plastic fines, some fine sand, loose.					0.0		
	-8.0 / 8.0	***Weathered Rock with Silt and Sand*** Grey, moist, mostly weathered rock, some fine sand, some non-plastic fines, loose. Equpiment refusal at 12.0 fbgs					0.0		
10.0					3.2		0.0		
							0.0		
	-12.0 / 12.0	End of Borehole					0.0		

Drilled By: Trec Environmental, Inc
Drill Rig Type: Geoprobe 6620 DT
Drill Method: Direct Push
Comments:
Drill Date(s): 1/22/2018

Hole Size: 2"
Stick-up:
Datum:

Sheet: 1 of 1

Project No: T0105-017-001

Borehole Number: SB-3

Project: 3077-3097 Union Road and 20-26 Harold Square

A.K.A.:

Client: Benderson Development Company

Logged By: CMS

Site Location: Orchard Park, New York

Checked By: BWM

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2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 – 12.5 – 25)	Lab Sample	Well Completion Details or Remarks
0.0	0.0	Ground Surface							
	0.0	***Asphalt and Subbase***							
	-1.1						0.0		
	1.1	***Well Graded Gravel with Silt and Sand*** Brown, moist, mostly well-graded gravel some fine sand, trace medium plasticity fines. loose			1.9		0.5		
							0.0		
	-4.0						1.4		
	4.0	***Weathered Rock***			.5			Sample Location	
	-4.5	Equipment refusal at 4.5 fbgs							
	4.5	End of Borehole							
5.0									

Drilled By: Trec Environmental, Inc
Drill Rig Type: Geoprobe 6620 DT
Drill Method: Direct Push
Comments:
Drill Date(s): 1/22/2018

Hole Size: 2"
Stick-up:
Datum:

Sheet: 1 of 1

Project No: T0105-017-001

Borehole Number: SB-4

Project: 3077-3097 Union Road and 20-26 Harold Square

A.K.A.:

Client: Benderson Development Company

Logged By: CMS

Site Location: Orchard Park, New York

Checked By: BWM

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Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 – 12.5 – 25)	Lab Sample	Well Completion Details or Remarks
0.0	0.0	Ground Surface							
	0.0	***Concrete and Subbase***							
	-0.5 / 0.5	***Fill - Lean Clay with Well Graded Gravel*** Brown, moist, mostly medium plasticity fines, some well-graded gravel and fine sand,. loose.					0.0		
	-1.0 / 1.0	***Fill - Well Graded Gravel with Clay*** Brown, moist, mostly well-graded gravel, some medium plasticity fines and sand, loose							
	-2.0 / 2.0	***Lean Clay with Well-Graded Gravel*** Brown,moist, mostly medium plasticity fines, some gravel, trace fine sand, meium density, medium toughness.			2.8		0.0		
							1.4	Sample Location	
	-4.0 / 4.0	As Above					1.4		
					1.5				
5.0	-5.0 / 5.0	***Weathered Rock***					1.7		
	-5.5 / 5.5	Equpiment refusal at 5.5 fbgs							
		End of Borehole							

Drilled By: Trec Environmental, Inc
Drill Rig Type: Geoprobe 6620 DT
Drill Method: Direct Push
Comments:
Drill Date(s): 1/22/2018

Hole Size: 2"
Stick-up:
Datum:

Sheet: 1 of 1

Project No: T0105-017-001

Borehole Number: SB-5

Project: 3077-3097 Union Road and 20-26 Harold Square

A.K.A.:

Client: Benderson Development Company

Logged By: CMS

Site Location: Orchard Park, New York

Checked By: BWM

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Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 – 12.5 – 25)	Lab Sample	Well Completion Details or Remarks
0.0	0.0 / 0.0	Ground Surface							
		Well-Graded Gravel with Clay and Sand Brown, moist, mostly sub-angular gravel, some medium plasticity fines, trace fine sand, loose							
		Equpiment refusal at 4.0 fbgs							
							0.0		
					2.7		0.0		
							0.0		
							0.0		
	-4.0 / 4.0	End of Borehole							

Drilled By: Trec Environmental, Inc
Drill Rig Type: Geoprobe 6620 DT
Drill Method: Direct Push
Comments:
Drill Date(s): 1/22/2018

Hole Size: 2"
Stick-up:
Datum:

Sheet: 1 of 1

Project No: T0105-017-001

Borehole Number: SB-6

Project: 3077-3097 Union Road and 20-26 Harold Square

A.K.A.: PZ-2

Client: Benderson Development Company

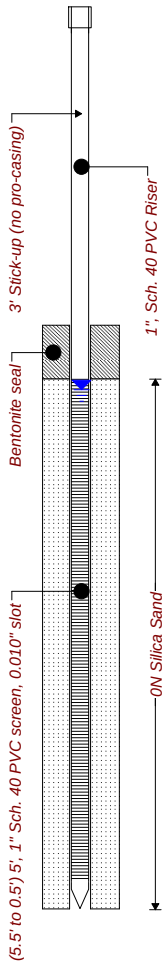
Logged By: CMS

Site Location: Orchard Park, New York

Checked By: BWM

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Buffalo, NY 14218
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SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 – 12.5 – 25)	Lab Sample	Well Completion Details or Remarks
0.0	0.0	Ground Surface							
	0.0	***Asphalt and Subbase***							
	-0.5 / 0.5	***Lean Clay with Gravel*** Grey-Brown, moist, mostly medium plasticity fines, some angular gravel, grey iron staining			3.5		0.0 / 0.0 / 0.0		
2.0									
	-4.0 / 4.0	***Well-Graded Gravel with Sand and Clay*** Grey, moist, mostly sub-angular gravel, some fine sand, trace medium plasticity fines, loose.			1.5		0.0		
	-5.2 / 5.2	***Weathered Rock***							
	-5.5 / 5.5	Grey, moist, mostly weathered roack, some medium plasticity fines.							
		Equipment refusal at 5.5 fbgs							
7.0		End of Borehole							



Drilled By: Trec Environmental, Inc
Drill Rig Type: Geoprobe 6620 DT
Drill Method: Direct Push
Comments:
Drill Date(s): 1/22/2018

Hole Size: 2" with 1" well
Stick-up: 3'
Datum:

Sheet: 1 of 1

Project No: 0105-017-001

Borehole Number: SB-7

Project: 3077-3097 Union Road and 20-26 Harold Square

A.K.A.: PZ-3

Client: Benderson Development Company

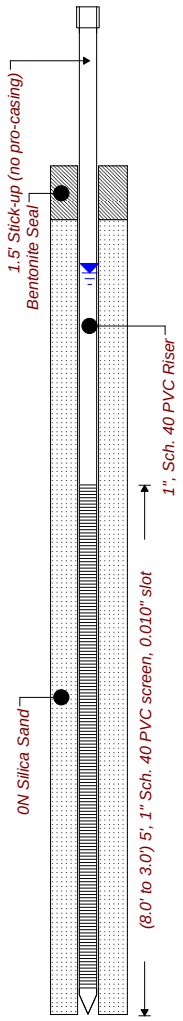
Logged By: CMS

Site Location: Orchard Park, New York

Checked By: BWM

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm	Lab Sample	Well Completion Details or Remarks
-2.0							0 1000 2000 3000		
	0.0	Ground Surface							
	0.0	***Gravel and Subbase***					0.0		
					0.7		50		
3.0							200		
	-4.0						200		
	4.0	***Lean Clay with Gravel*** Grey-brown, moist, mostly medium plasticity fines, some sub-angular gravel, trace fine sand. Noticeable sweet odor in soil.					2200	Sample Location	
							1850		
	-5.7								
	5.7	***Weathered Rock*** Grey, moist, mostly weathered rock, some medium plasticity fines. Equipment refusal at 8.0 fbgs			3.6		150		
							150	Sample Location	
8.0							0.0		
	-8.0								
	8.0	End of Borehole							



Drilled By: Trec Environmental, Inc
Drill Rig Type: Geoprobe 6620 DT
Drill Method: Direct Push
Comments:
Drill Date(s): 1/22/2018

Hole Size: 2" with 1" well
Stick-up: 1.5'
Datum:

Sheet: 1 of 1

Project No: T0105-017-001

Borehole Number: SB-8

Project: 3077-3097 Union Road and 20-26 Harold Square

A.K.A.: PZ-4

Client: Benderson Development Company

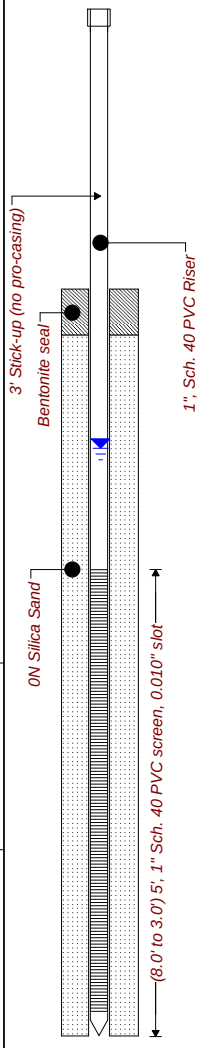
Logged By: CMS

Site Location: Orchard Park, New York

Checked By: BWM

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 – 12.5 – 25)	Lab Sample	Well Completion Details or Remarks
-3.0									
	0.0	Ground Surface							
	0.0	***Asphalt and Subbase***					0.0		
	-0.5 0.5	***Lean Clay with Gravel*** Reddish-Brown, moist, mostly medium plasticity fines, some angular gravel, little fine sand, medium toughness, medium density.			2.2		.5 0.0		
2.0									
	-4.0 4.0	As Above					0.0		
	-4.8 4.8	***Well-Graded Gravel with Clay and Sand*** Brown, moist, mostly sub-angular gravel, some medium plasticity fines, little fine sand, loose. Equipment refusal at 8.0 fbgs			3.6		0.0 0.5	Sample Location	
7.0							0.0		
	-8.0 8.0	End of Borehole					0.0		



Drilled By: Trec Environmental, Inc
Drill Rig Type: Geoprobe 6620 DT
Drill Method: Direct Push
Comments:
Drill Date(s): 1/22/2018

Hole Size: 2" with 1" well
Stick-up: 3'
Datum:

Sheet: 1 of 1

Project No: T0105-017-001

Borehole Number: SB-9

Project: 3077-3097 Union Road and 20-26 Harold Square

A.K.A.:

Client: Benderson Development Company

Logged By: CMS

Site Location: Orchard Park, New York

Checked By: BWM

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 – 12.5 – 25)	Lab Sample	Well Completion Details or Remarks
0.0	0.0	Ground Surface							
	0.0	***Asphalt and Subbase***							
	-0.5								
	0.5	***Lean Clay with Gravel*** Reddish-Brown, moist, mostly medium plasticity fines, some angular gravel, little fine sand, medium toughness, medium density.					0.0		
					2.4		0.0		
	-2.2								
	2.2	***Weathered Rock*** Equipment refusal at 4.0 fbgs					0.0		
	-4.0						1.4		
	4.0	End of Borehole							

Drilled By: Trec Environmental, Inc
Drill Rig Type: Geoprobe 6620 DT
Drill Method: Direct Push
Comments:
Drill Date(s): 1/22/2018

Hole Size: 2"
Stick-up:
Datum:

Sheet: 1 of 1

Project No: T0105-017-001

Borehole Number: SB-10

Project: 3077-3097 Union Road and 20-26 Harold Square

A.K.A.: PZ-5

Client: Benderson Development Company

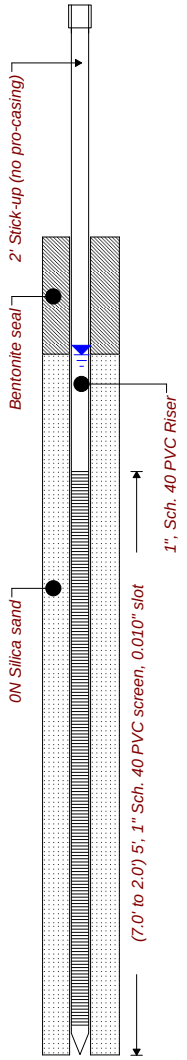
Logged By: CMS

Site Location: Orchard Park, New York

Checked By: BWM

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2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 – 12.5 – 25)	Lab Sample	Well Completion Details or Remarks
-2.0									
	0.0	Ground Surface							
	0.0	***Asphalt and Subbase***							
	-0.5 / 0.5	***Lean Clay with Gravel*** Reddish-Brown, moist, mostly medium plasticity fines, some angular gravel, little fine sand, medium toughness, medium density.					0.0		
	-2.2 / 2.2	***Weathered Rock***			2.4		0.0		
3.0							0.0		
	-4.0 / 4.0	As Above					0.0		
		Equipment refusal at 7.0 fbgs			3.0		0.0		
							0.0		
	-7.0 / 7.0	End of Borehole					0.0		
8.0									



Drilled By: Trec Environmental, Inc
Drill Rig Type: Geoprobe 6620 DT
Drill Method: Direct Push
Comments:
Drill Date(s): 1/22/2018

Hole Size: 2" with 1" well
Stick-up: 2'
Datum:

Sheet: 1 of 1

Project No: T0105-017-001

Borehole Number: SB-11

Project: 3077-3097 Union Road and 20-26 Harold Square

A.K.A.:

Client: Benderson Development Company

Logged By: CMS

Site Location: Orchard Park, New York

Checked By: BWM

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 – 12.5 – 25)	Lab Sample	Well Completion Details or Remarks
0.0	0.0 / 0.0	Ground Surface							
	-0.3 / 0.3	***Topsoil*** Brown, moist, mostly organic soil, some medium plasticity fines.							
	-0.5 / 0.5	***Lean Clay*** Light Brown, moist, mostly medium plasticity fines, some angular gravel, trace fine sand, medium toughness, medium density.							
		Gravel with Silt Dark Brown, moist, mostly sub-angular gravel, some non-plastic fines, loose					0.0		
	-2.0 / 2.0	***Weathered Rock***			2.5		0.0		
		Equipment refusal at 4.0 fbgs					1.0	Sample Location	
	-4.0 / 4.0	End of Borehole					0.0		

Drilled By: Trec Environmental, Inc
Drill Rig Type: Geoprobe 6620 DT
Drill Method: Direct Push
Comments:
Drill Date(s): 1/22/2018

Hole Size: 2"
Stick-up:
Datum:

Sheet: 1 of 1

Project No: T0105-017-001

Borehole Number: SB-12

Project: 3077-3097 Union Road and 20-26 Harold Square

A.K.A.:

Client: Benderson Development Company

Logged By: CMS

Site Location: Orchard Park, New York

Checked By: BWM

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 – 12.5 – 25)	Lab Sample	Well Completion Details or Remarks
0.0	0.0 / 0.0	Ground Surface							
	-0.3 / 0.3	***Topsoil*** Brown, moist, mostly organic soil, some medium plasticity fines.							
	-0.5 / 0.5	***Lean Clay*** Light Brown, moist, mostly medium plasticity fines, some angular gravel, trace fine sand, medium toughness, medium density.							
		Gravel with Silt Dark Brown, moist, mostly sub-angular gravel. some non-plastic fines, loose.					0.1		
	-2.0 / 2.0	***Weathered Rock***			2.3		0.0		
		Equipment refusal at 4.0 fbgs					0.1		
	-4.0 / 4.0	End of Borehole					0.0		

Drilled By: Trec Environmental, Inc
Drill Rig Type: Geoprobe 6620 DT
Drill Method: Direct Push
Comments:
Drill Date(s): 1/22/2018

Hole Size: 2"
Stick-up:
Datum:

Sheet: 1 of 1

Project No: T0105-017-001

Borehole Number: SB-13

Project: 3077-3097 Union Road and 20-26 Harold Square

A.K.A.:

Client: Benderson Development Company

Logged By: CMS

Site Location: Orchard Park, New York

Checked By: BWM

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 – 12.5 – 25)	Lab Sample	Well Completion Details or Remarks
0.0	0.0	Ground Surface							
	0.0	***Topsoil*** Brown, moist, mostly organic soil, some medium plasticity fines.					0.0		
	-0.5 / 0.5	***Lean Clay with Sand*** Reddish-Brown, moist, mostly medium plasticity fines, some fine sand, trace sub-angular gravel, medium toughness, medium density.					0.0		
	-1.8 / 1.8	***Sand with Lean Clay*** Reddish-Brown, moist, mostly fine sand, some medium plasticity fines, trace sub-angular gravel.			2.9		0.0		
	-2.3 / 2.3	***Weathered Rock with Clay and Sand*** Reddish-Brown, mostly angular gravel, some fine sand and medium plasticity fines.					0.0		
	-4.0 / 4.0	As Above					0.0		
5.0					3.6		0.0		
	-8.0 / 8.0	As Above					0.0		
		Equipment refusal at 9.0 fbgs			0.8				
	-9.0 / 9.0	End of Borehole					0.0		

Drilled By: Trec Environmental, Inc
Drill Rig Type: Geoprobe 6620 DT
Drill Method: Direct Push
Comments:
Drill Date(s): 1/22/2018

Hole Size: 2"
Stick-up:
Datum:

Sheet: 1 of 1

Project No: T0105-017-001

Borehole Number: SB-14

Project: 3077-3097 Union Road and 20-26 Harold Square

A.K.A.:

Client: Benderson Development Company

Logged By: CMS

Site Location: Orchard Park, New York

Checked By: BWM

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 / 12.5 / 25)	Lab Sample	Well Completion Details or Remarks
0.0	0.0 / 0.0	Ground Surface							
		Topsoil Brown, moist, mostly organic soil, some medium plasticity fines.							
	-0.5 / 0.5	***Lean Clay with Sand*** Light brown, moist, mostly medium plasticity fines, some fine sand, trace sub-angular gravel, medium toughness, medium density.			3.6		0.0		
							0.0		
							0.0		
	-4.0 / 4.0	As Above					0.0		
5.0							0.0		
	-5.5 / 5.5	***Weathered Rock*** Dark Brown, moist, mostly angular gravel, some fine sand, trace medium plasticity fines, loose.			3.6		0.0		
		Equipment refusal at 7.8 fbgs					0.0		
	-7.8 / 7.8	End of Borehole							

Drilled By: Trec Environmental, Inc
Drill Rig Type: Geoprobe 6620 DT
Drill Method: Direct Push
Comments:
Drill Date(s): 1/22/2018

Hole Size: 2"
Stick-up:
Datum:

Sheet: 1 of 1

Project No: T0105-017-001

Borehole Number: SB-15

Project: 3077-3097 Union Road and 20-26 Harold Square

A.K.A.:

Client: Benderson Development Company

Logged By: CMS

Site Location: Orchard Park, New York

Checked By: BWM

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 / 12.5 / 25)	Lab Sample	Well Completion Details or Remarks
0.0	0.0	Ground Surface							
	0.0	***Asphalt and Subbase***							
	-0.5								
	0.5	***Lean Clay*** Dark brown and grey, moist, mostly medium plasticity fines, trace angular gravel, trace fine sand, low toughness, medium density.					0.0		
					2.8		0.0		
							0.0		
	-4.0						0.0		
	4.0	As Above					0.0		
5.0							0.0		
	-6.2				2.4		0.0		
	6.2	***Weathered Rock***					0.0		
	-8.0						0.0		
	8.0	As Above Equpiment refusal at 9.5 fbgs			1.0		0.0		
	-9.5								
	9.5	End of Borehole							
10.0									

Drilled By: Trec Environmental, Inc
Drill Rig Type: Geoprobe 6620 DT
Drill Method: Direct Push
Comments:
Drill Date(s): 1/22/2018

Hole Size: 2"
Stick-up:
Datum:

Sheet: 1 of 1

Project No: T0105-017-001

Borehole Number: SB-16

Project: 3077-3097 Union Road and 20-26 Harold Square

A.K.A.:

Client: Benderson Development Company

Logged By: CMS

Site Location: Orchard Park, New York

Checked By: BWM

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 / 12.5 / 25)	Lab Sample	Well Completion Details or Remarks
0.0	0.0	Ground Surface							
	0.0	***Asphalt and Subbase***					0.0		
	-1.3 / 1.3	***Lean Clay*** Dark brown, mostly medium plasticity fines, trace fine sand, medium toughness, medium density.			2.0		0.0		
							0.0		
	-4.0 / 4.0	As Above, color change to brown-grey.					0.0		
5.0							0.0		
	-6.3 / 6.3	***Lean Clay with Weathered Rock*** As Above, with angular gravel			3.4		0.0		
	-8.0 / 8.0	As Above, wet.					0.0		
							0.0		
10.0	-9.9 / 9.9	***Weathered Rock*** Grey, wet, mostly angular gravel, trace medium plasticity fines, loose.			3.8		0.0		
							0.0		
	-12.0 / 12.0	End of Borehole					0.0		

Drilled By: Trec Environmental, Inc
Drill Rig Type: Geoprobe 6620 DT
Drill Method: Direct Push
Comments:
Drill Date(s): 1/22/2018

Hole Size: 2"
Stick-up:
Datum:

Sheet: 1 of 1

APPENDIX B

PHOTO LOG

SITE PHOTOGRAPHS

Photo 1:



Photo 2:



Photo 3:



Photo 4:



Photo 1: View during completion of SB-1 (west of former dry cleaner, looking north).

Photo 2: View during completion of SB-7 (east of former dry cleaner, looking west).

Photo 3: View during completion of SB-4 (south of automotive repair operation, looking north).

Photo 4: View of typical soils.

APPENDIX C

LABORATORY ANALYTICAL DATA SUMMARY PACKAGE

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

TestAmerica Job ID: 480-130449-1
Client Project/Site: Benchmark - 3077-3097 Union Rd

For:
Benchmark Env. Eng. & Science, PLLC
2558 Hamburg Turnpike
Lackawanna, New York 14218

Attn: Bryan Mayback

Joseph V. Giacomazza

Authorized for release by:
1/29/2018 10:15:46 AM
Joe Giacomazza, Project Management Assistant II
joe.giacomazza@testamericainc.com

Designee for

Brian Fischer, Manager of Project Management
(716)504-9835
brian.fischer@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 3077-3097 Union Rd

TestAmerica Job ID: 480-130449-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 480-130449-1

Laboratory: TestAmerica Buffalo

Narrative

Job Narrative
480-130449-1

Comments
No additional comments.

Receipt
The samples were received on 1/23/2018 3:15 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.5º C.

GC/MS VOA
Method(s) 8260C: The continuing calibration verification (CCV) associated with batch 480-397230 recovered above the upper control limit for 1,1,2-Trichloro-1,2,2-trifluoroethane. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following sample is impacted: TWW-1 (480-130449-8).

Method(s) 8260C: Due to the coelution of Ethyl Acetate with 2-Butanone in the full spike solution, these analytes exceeded control limits in the laboratory control sample (LCS) and/or laboratory control sample duplicate (LCSD) associated with batch 480-397230. The following sample was affected : TWW-1 (480-130449-8).

Method(s) 8260C: The following sample was diluted to bring the concentration of target analytes within the calibration range: SB-7 (4-6) (480-130449-4). Elevated reporting limits (RLs) are provided.

Method(s) 8260C: The following sample(s) were collected in properly preserved vials for analysis of volatile organic compounds (VOCs). However, the pH was outside the required criteria when verified by the laboratory, and corrective action was not possible: TWW-1 (480-130449-8).
The sample was analyzed within 7 days per EPA recommendation.

Method(s) 8260C: The following samples were diluted due to the nature of the TCLP matrix: SB-7 (4-6) (480-130449-4) and (LB 480-397113/1-A). Elevated reporting limits (RLs) are provided.

Method(s) 8260C: The laboratory control sample (LCS) for preparation batch 480-397178 and analytical batch 480-397378 recovered outside control limits for the following analyte: 1,2-Dibromo-3-Chloropropane. 1,2-Dibromo-3-Chloropropane has been identified as a poor performing analyte when analyzed using this method; therefore, re-extraction was not performed. These results have been reported and qualified.

Method(s) 8260C: The following samples were diluted to bring the concentration of target analytes within the calibration range: SB-3 (6-8) (480-130449-2), SB-7 (4-6) (480-130449-4), SB-7 (6-8) (480-130449-5) and SB-11 (2-4) (480-130449-7). Elevated reporting limits (RLs) are provided.

Method(s) 8260C: The following sample was diluted to bring the concentration of target analytes within the calibration range: SB-7 (4-6) (480-130449-4). Elevated reporting limits (RLs) are provided.

Method(s) 8260C: The following samples as analyzed using medium level soil analysis and diluted to bring the concentration of target analytes within the calibration range: SB-3 (6-8) (480-130449-2), SB-7 (4-6) (480-130449-4), SB-7 (6-8) (480-130449-5) and SB-11 (2-4) (480-130449-7). Elevated reporting limits (RLs) are provided.

Method(s) 8260C: The following samples were analyzed using medium level soil analysis to bring the concentration of target analytes within the calibration range: SB-1 (10-12) (480-130449-1), SB-8 (4-6) (480-130449-6), (480-130382-A-3-C MS) and (480-130382-A-3-D MSD). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC/MS Semi VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Job ID: 480-130449-1 (Continued)

Laboratory: TestAmerica Buffalo (Continued)

Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 3077-3097 Union Rd

TestAmerica Job ID: 480-130449-1

Client Sample ID: SB-1 (10-12) — Lab Sample ID: 480-130449-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Methylene Chloride	100	J B	130	25	ug/Kg	1	☼	8260C	Total/NA
Tetrachloroethene	1000		130	17	ug/Kg	1	☼	8260C	Total/NA

Client Sample ID: SB-3 ~~(6-8)~~ — Lab Sample ID: 480-130449-2

Note: Actual Sample was taken from 4'-4.5'

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	170	J	450	120	ug/Kg	4	☼	8260C	Total/NA
Methylene Chloride	330	J B	450	89	ug/Kg	4	☼	8260C	Total/NA
Tetrachloroethene	44000		450	61	ug/Kg	4	☼	8260C	Total/NA
Trichloroethene	1500		450	130	ug/Kg	4	☼	8260C	Total/NA

Client Sample ID: SB-4 (2-4) — Lab Sample ID: 480-130449-3

No Detections.

Client Sample ID: SB-7 (4-6) — Lab Sample ID: 480-130449-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Methylene Chloride	2000	J B	2500	490	ug/Kg	20	☼	8260C	Total/NA
Tetrachloroethene	120000		2500	330	ug/Kg	20	☼	8260C	Total/NA
Trichloroethene	0.0081	J	0.010	0.0046	mg/L	10		8260C	TCLP
Tetrachloroethene - DL	2.6	B	0.050	0.018	mg/L	50		8260C	TCLP

Client Sample ID: SB-7 (6-8) — Lab Sample ID: 480-130449-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	280		220	61	ug/Kg	2	☼	8260C	Total/NA
Methylene Chloride	190	J B	220	44	ug/Kg	2	☼	8260C	Total/NA
Tetrachloroethene	19000		220	30	ug/Kg	2	☼	8260C	Total/NA
Trichloroethene	940		220	62	ug/Kg	2	☼	8260C	Total/NA

Client Sample ID: SB-8 (4-6) — Lab Sample ID: 480-130449-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	260		130	35	ug/Kg	1	☼	8260C	Total/NA
Methylene Chloride	110	J B	130	25	ug/Kg	1	☼	8260C	Total/NA
Tetrachloroethene	1100		130	17	ug/Kg	1	☼	8260C	Total/NA
Trichloroethene	610		130	36	ug/Kg	1	☼	8260C	Total/NA

Client Sample ID: SB-11 (2-4) — Lab Sample ID: 480-130449-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Methylene Chloride	200	J B	240	47	ug/Kg	2	☼	8260C	Total/NA
Tetrachloroethene	13000		240	32	ug/Kg	2	☼	8260C	Total/NA
Trichloroethene	180	J	240	66	ug/Kg	2	☼	8260C	Total/NA

Client Sample ID: TWW-1 — Lab Sample ID: 480-130449-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	5.0	J	10	3.0	ug/L	1		8260C	Total/NA
Carbon disulfide	0.46	J	1.0	0.19	ug/L	1		8260C	Total/NA

This Detection Summary does not include radiochemical test results.

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 3077-3097 Union Rd

TestAmerica Job ID: 480-130449-1

Client Sample ID: TWW-1 (Continued)

Lab Sample ID: 480-130449-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cyclohexane	0.18	J	1.0	0.18	ug/L	1		8260C	Total/NA

This Detection Summary does not include radiochemical test results.

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 3077-3097 Union Rd

TestAmerica Job ID: 480-130449-1

Client Sample ID: SB-1 (10-12)
Date Collected: 01/22/18 08:45
Date Received: 01/23/18 15:15

Lab Sample ID: 480-130449-1
Matrix: Solid
Percent Solids: 84.2

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		130	35	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
1,1,2,2-Tetrachloroethane	ND		130	20	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		130	63	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
1,1,2-Trichloroethane	ND		130	26	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
1,1-Dichloroethane	ND		130	39	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
1,1-Dichloroethene	ND		130	43	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
1,2,4-Trichlorobenzene	ND		130	48	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
1,2,4-Trimethylbenzene	ND		130	35	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
1,2-Dibromo-3-Chloropropane	ND	*	130	63	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
1,2-Dichlorobenzene	ND		130	32	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
1,2-Dichloroethane	ND		130	51	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
1,2-Dichloropropane	ND		130	20	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
1,3,5-Trimethylbenzene	ND		130	38	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
1,3-Dichlorobenzene	ND		130	34	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
1,4-Dichlorobenzene	ND		130	18	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
2-Butanone (MEK)	ND		630	370	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
2-Hexanone	ND		630	260	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
4-Isopropyltoluene	ND		130	42	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
4-Methyl-2-pentanone (MIBK)	ND		630	40	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
Acetone	ND		630	520	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
Benzene	ND		130	24	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
Bromoform	ND		130	63	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
Bromomethane	ND		130	28	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
Carbon disulfide	ND		130	57	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
Carbon tetrachloride	ND		130	32	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
Chlorobenzene	ND		130	17	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
Dibromochloromethane	ND		130	61	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
Chloroethane	ND		130	26	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
Chloroform	ND		130	86	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
Chloromethane	ND		130	30	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
cis-1,2-Dichloroethene	ND		130	35	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
Cyclohexane	ND		130	28	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
Bromodichloromethane	ND		130	25	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
Dichlorodifluoromethane	ND		130	55	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
Ethylbenzene	ND		130	37	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
1,2-Dibromoethane	ND		130	22	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
Isopropylbenzene	ND		130	19	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
Methyl acetate	ND		630	60	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
Methyl tert-butyl ether	ND		130	47	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
Methylcyclohexane	ND		130	59	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
Methylene Chloride	**100**	**J B**	130	25	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
m,p-Xylene	ND		250	70	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
n-Butylbenzene	ND		130	37	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
N-Propylbenzene	ND		130	33	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
o-Xylene	ND		130	16	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
sec-Butylbenzene	ND		130	46	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
Tetrachloroethene	**1000**		130	17	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
Toluene	ND		130	34	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
trans-1,2-Dichloroethene	ND		130	30	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 3077-3097 Union Rd

TestAmerica Job ID: 480-130449-1

Client Sample ID: SB-1 (10-12)
Date Collected: 01/22/18 08:45
Date Received: 01/23/18 15:15

Lab Sample ID: 480-130449-1
Matrix: Solid
Percent Solids: 84.2

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
trans-1,3-Dichloropropene	ND		130	12	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
Trichloroethene	ND		130	35	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
Trichlorofluoromethane	ND		130	59	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
Vinyl chloride	ND		130	42	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
Xylenes, Total	ND		250	70	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
cis-1,3-Dichloropropene	ND		130	30	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
Styrene	ND		130	30	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1
tert-Butylbenzene	ND		130	35	ug/Kg	☼	01/24/18 15:46	01/26/18 00:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*53 - 146*	*01/24/18 15:46*	*01/26/18 00:11*	*1*
4-Bromofluorobenzene (Surr)	*105*		*49 - 148*	*01/24/18 15:46*	*01/26/18 00:11*	*1*
Toluene-d8 (Surr)	*102*		*50 - 149*	*01/24/18 15:46*	*01/26/18 00:11*	*1*
Dibromofluoromethane (Surr)	*95*		*60 - 140*	*01/24/18 15:46*	*01/26/18 00:11*	*1*

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 3077-3097 Union Rd

TestAmerica Job ID: 480-130449-1

Client Sample ID: SB-3 (~~6-8~~) Note: Actual Sample was taken from 4'-4.5'
Date Collected: 01/22/18 09:30
Date Received: 01/23/18 15:15

Lab Sample ID: 480-130449-2
Matrix: Solid
Percent Solids: 92.2

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		450	120	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
1,1,2,2-Tetrachloroethane	ND		450	73	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		450	230	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
1,1,2-Trichloroethane	ND		450	95	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
1,1-Dichloroethane	ND		450	140	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
1,1-Dichloroethene	ND		450	160	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
1,2,4-Trichlorobenzene	ND		450	170	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
1,2,4-Trimethylbenzene	ND		450	130	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
1,2-Dibromo-3-Chloropropane	ND	*	450	230	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
1,2-Dichlorobenzene	ND		450	110	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
1,2-Dichloroethane	ND		450	180	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
1,2-Dichloropropane	ND		450	73	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
1,3,5-Trimethylbenzene	ND		450	140	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
1,3-Dichlorobenzene	ND		450	120	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
1,4-Dichlorobenzene	ND		450	63	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
2-Butanone (MEK)	ND		2300	1300	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
2-Hexanone	ND		2300	920	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
4-Isopropyltoluene	ND		450	150	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
4-Methyl-2-pentanone (MIBK)	ND		2300	140	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
Acetone	ND		2300	1900	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
Benzene	ND		450	86	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
Bromoform	ND		450	230	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
Bromomethane	ND		450	99	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
Carbon disulfide	ND		450	200	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
Carbon tetrachloride	ND		450	110	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
Chlorobenzene	ND		450	59	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
Dibromochloromethane	ND		450	220	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
Chloroethane	ND		450	94	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
Chloroform	ND		450	310	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
Chloromethane	ND		450	110	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
cis-1,2-Dichloroethene	**170**	**J**	450	120	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
Cyclohexane	ND		450	100	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
Bromodichloromethane	ND		450	90	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
Dichlorodifluoromethane	ND		450	200	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
Ethylbenzene	ND		450	130	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
1,2-Dibromoethane	ND		450	79	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
Isopropylbenzene	ND		450	68	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
Methyl acetate	ND		2300	210	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
Methyl tert-butyl ether	ND		450	170	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
Methylcyclohexane	ND		450	210	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
Methylene Chloride	**330**	**J B**	450	89	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
m,p-Xylene	ND		900	250	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
n-Butylbenzene	ND		450	130	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
N-Propylbenzene	ND		450	120	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
o-Xylene	ND		450	59	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
sec-Butylbenzene	ND		450	170	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
Tetrachloroethene	**44000**		450	61	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
Toluene	ND		450	120	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
trans-1,2-Dichloroethene	ND		450	110	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 3077-3097 Union Rd

TestAmerica Job ID: 480-130449-1

Client Sample ID: SB-3 ~~(6-8)~~
Date Collected: 01/22/18 09:30
Date Received: 01/23/18 15:15

Note: Actual Sample was taken from 4'-4.5'

Lab Sample ID: 480-130449-2
Matrix: Solid
Percent Solids: 92.2

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
trans-1,3-Dichloropropene	ND		450	44	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
Trichloroethene	**1500**		450	130	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
Trichlorofluoromethane	ND		450	210	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
Vinyl chloride	ND		450	150	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
Xylenes, Total	ND		900	250	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
cis-1,3-Dichloropropene	ND		450	110	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
Styrene	ND		450	110	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4
tert-Butylbenzene	ND		450	130	ug/Kg	☼	01/24/18 15:46	01/26/18 00:34	4

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*53 - 146*	*01/24/18 15:46*	*01/26/18 00:34*	*4*
4-Bromofluorobenzene (Surr)	*103*		*49 - 148*	*01/24/18 15:46*	*01/26/18 00:34*	*4*
Toluene-d8 (Surr)	*101*		*50 - 149*	*01/24/18 15:46*	*01/26/18 00:34*	*4*
Dibromofluoromethane (Surr)	*98*		*60 - 140*	*01/24/18 15:46*	*01/26/18 00:34*	*4*

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 3077-3097 Union Rd

TestAmerica Job ID: 480-130449-1

Client Sample ID: SB-4 (2-4)
Date Collected: 01/22/18 10:00
Date Received: 01/23/18 15:15

Lab Sample ID: 480-130449-3
Matrix: Solid
Percent Solids: 90.6

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		190	27	ug/Kg	☼	01/24/18 16:05	01/26/18 00:10	1
Acenaphthylene	ND		190	24	ug/Kg	☼	01/24/18 16:05	01/26/18 00:10	1
Anthracene	ND		190	46	ug/Kg	☼	01/24/18 16:05	01/26/18 00:10	1
Benzo[a]anthracene	ND		190	19	ug/Kg	☼	01/24/18 16:05	01/26/18 00:10	1
Benzo[a]pyrene	ND		190	27	ug/Kg	☼	01/24/18 16:05	01/26/18 00:10	1
Benzo[b]fluoranthene	ND		190	30	ug/Kg	☼	01/24/18 16:05	01/26/18 00:10	1
Benzo[g,h,i]perylene	ND		190	20	ug/Kg	☼	01/24/18 16:05	01/26/18 00:10	1
Benzo[k]fluoranthene	ND		190	24	ug/Kg	☼	01/24/18 16:05	01/26/18 00:10	1
Chrysene	ND		190	42	ug/Kg	☼	01/24/18 16:05	01/26/18 00:10	1
Dibenz(a,h)anthracene	ND		190	33	ug/Kg	☼	01/24/18 16:05	01/26/18 00:10	1
Fluoranthene	ND		190	20	ug/Kg	☼	01/24/18 16:05	01/26/18 00:10	1
Fluorene	ND		190	22	ug/Kg	☼	01/24/18 16:05	01/26/18 00:10	1
Indeno[1,2,3-cd]pyrene	ND		190	23	ug/Kg	☼	01/24/18 16:05	01/26/18 00:10	1
Naphthalene	ND		190	24	ug/Kg	☼	01/24/18 16:05	01/26/18 00:10	1
Pyrene	ND		190	22	ug/Kg	☼	01/24/18 16:05	01/26/18 00:10	1
Phenanthrene	ND		190	27	ug/Kg	☼	01/24/18 16:05	01/26/18 00:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*89*		*54 - 120*	*01/24/18 16:05*	*01/26/18 00:10*	*1*
2-Fluorobiphenyl	*83*		*60 - 120*	*01/24/18 16:05*	*01/26/18 00:10*	*1*
2-Fluorophenol (Surr)	*75*		*52 - 120*	*01/24/18 16:05*	*01/26/18 00:10*	*1*
Phenol-d5 (Surr)	*74*		*54 - 120*	*01/24/18 16:05*	*01/26/18 00:10*	*1*
p-Terphenyl-d14 (Surr)	*93*		*65 - 121*	*01/24/18 16:05*	*01/26/18 00:10*	*1*
Nitrobenzene-d5 (Surr)	*75*		*53 - 120*	*01/24/18 16:05*	*01/26/18 00:10*	*1*

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 3077-3097 Union Rd

TestAmerica Job ID: 480-130449-1

Client Sample ID: SB-7 (4-6)
Date Collected: 01/22/18 11:15
Date Received: 01/23/18 15:15

Lab Sample ID: 480-130449-4
Matrix: Solid
Percent Solids: 84.9

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		2500	690	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
1,1,2,2-Tetrachloroethane	ND		2500	400	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2500	1200	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
1,1,2-Trichloroethane	ND		2500	520	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
1,1-Dichloroethane	ND		2500	770	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
1,1-Dichloroethene	ND		2500	860	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
1,2,4-Trichlorobenzene	ND		2500	940	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
1,2,4-Trimethylbenzene	ND		2500	690	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
1,2-Dibromo-3-Chloropropane	ND	*	2500	1200	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
1,2-Dichlorobenzene	ND		2500	630	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
1,2-Dichloroethane	ND		2500	1000	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
1,2-Dichloropropane	ND		2500	400	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
1,3,5-Trimethylbenzene	ND		2500	750	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
1,3-Dichlorobenzene	ND		2500	660	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
1,4-Dichlorobenzene	ND		2500	350	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
2-Butanone (MEK)	ND		12000	7400	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
2-Hexanone	ND		12000	5100	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
4-Isopropyltoluene	ND		2500	840	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
4-Methyl-2-pentanone (MIBK)	ND		12000	790	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
Acetone	ND		12000	10000	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
Benzene	ND		2500	470	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
Bromoform	ND		2500	1200	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
Bromomethane	ND		2500	550	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
Carbon disulfide	ND		2500	1100	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
Carbon tetrachloride	ND		2500	630	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
Chlorobenzene	ND		2500	330	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
Dibromochloromethane	ND		2500	1200	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
Chloroethane	ND		2500	520	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
Chloroform	ND		2500	1700	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
Chloromethane	ND		2500	590	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
cis-1,2-Dichloroethene	ND		2500	680	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
Cyclohexane	ND		2500	550	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
Bromodichloromethane	ND		2500	500	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
Dichlorodifluoromethane	ND		2500	1100	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
Ethylbenzene	ND		2500	720	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
1,2-Dibromoethane	ND		2500	430	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
Isopropylbenzene	ND		2500	370	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
Methyl acetate	ND		12000	1200	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
Methyl tert-butyl ether	ND		2500	940	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
Methylcyclohexane	ND		2500	1200	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
Methylene Chloride	**2000**	**J B**	2500	490	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
m,p-Xylene	ND		5000	1400	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
n-Butylbenzene	ND		2500	720	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
N-Propylbenzene	ND		2500	650	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
o-Xylene	ND		2500	320	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
sec-Butylbenzene	ND		2500	910	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
Tetrachloroethene	**120000**		2500	330	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
Toluene	ND		2500	660	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
trans-1,2-Dichloroethene	ND		2500	590	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20

Client Sample ID: SB-7 (4-6)
Date Collected: 01/22/18 11:15
Date Received: 01/23/18 15:15

Lab Sample ID: 480-130449-4
Matrix: Solid
Percent Solids: 84.9

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
trans-1,3-Dichloropropene	ND		2500	240	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
Trichloroethene	ND		2500	690	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
Trichlorofluoromethane	ND		2500	1200	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
Vinyl chloride	ND		2500	830	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
Xylenes, Total	ND		5000	1400	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
cis-1,3-Dichloropropene	ND		2500	590	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
Styrene	ND		2500	600	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20
tert-Butylbenzene	ND		2500	690	ug/Kg	☼	01/24/18 15:46	01/26/18 00:57	20

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*53 - 146*	*01/24/18 15:46*	*01/26/18 00:57*	*20*
4-Bromofluorobenzene (Surr)	*102*		*49 - 148*	*01/24/18 15:46*	*01/26/18 00:57*	*20*
Toluene-d8 (Surr)	*101*		*50 - 149*	*01/24/18 15:46*	*01/26/18 00:57*	*20*
Dibromofluoromethane (Surr)	*98*		*60 - 140*	*01/24/18 15:46*	*01/26/18 00:57*	*20*

Method: 8260C - Volatile Organic Compounds by GC/MS - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane	ND		0.010	0.0021	mg/L			01/25/18 13:21	10
2-Butanone (MEK)	ND		0.050	0.013	mg/L			01/25/18 13:21	10
Benzene	ND		0.010	0.0041	mg/L			01/25/18 13:21	10
Carbon tetrachloride	ND		0.010	0.0027	mg/L			01/25/18 13:21	10
Chlorobenzene	ND		0.010	0.0075	mg/L			01/25/18 13:21	10
Chloroform	ND		0.010	0.0034	mg/L			01/25/18 13:21	10
Trichloroethene	**0.0081**	**J**	0.010	0.0046	mg/L			01/25/18 13:21	10
Vinyl chloride	ND		0.010	0.0090	mg/L			01/25/18 13:21	10
1,1-Dichloroethene	ND		0.010	0.0029	mg/L			01/25/18 13:21	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*77 - 120*		*01/25/18 13:21*	*10*
4-Bromofluorobenzene (Surr)	*104*		*73 - 120*		*01/25/18 13:21*	*10*
Toluene-d8 (Surr)	*104*		*80 - 120*		*01/25/18 13:21*	*10*
Dibromofluoromethane (Surr)	*104*		*75 - 123*		*01/25/18 13:21*	*10*

Method: 8260C - Volatile Organic Compounds by GC/MS - TCLP - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	**2.6**	**B**	0.050	0.018	mg/L			01/26/18 13:34	50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*77 - 120*		*01/26/18 13:34*	*50*
4-Bromofluorobenzene (Surr)	*106*		*73 - 120*		*01/26/18 13:34*	*50*
Toluene-d8 (Surr)	*103*		*80 - 120*		*01/26/18 13:34*	*50*
Dibromofluoromethane (Surr)	*99*		*75 - 123*		*01/26/18 13:34*	*50*

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 3077-3097 Union Rd

TestAmerica Job ID: 480-130449-1

Client Sample ID: SB-7 (6-8)
Date Collected: 01/22/18 11:15
Date Received: 01/23/18 15:15

Lab Sample ID: 480-130449-5
Matrix: Solid
Percent Solids: 92.5

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		220	61	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
1,1,2,2-Tetrachloroethane	ND		220	36	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		220	110	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
1,1,2-Trichloroethane	ND		220	46	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
1,1-Dichloroethane	ND		220	68	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
1,1-Dichloroethene	ND		220	77	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
1,2,4-Trichlorobenzene	ND		220	84	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
1,2,4-Trimethylbenzene	ND		220	62	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
1,2-Dibromo-3-Chloropropane	ND	*	220	110	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
1,2-Dichlorobenzene	ND		220	56	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
1,2-Dichloroethane	ND		220	91	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
1,2-Dichloropropane	ND		220	36	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
1,3,5-Trimethylbenzene	ND		220	67	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
1,3-Dichlorobenzene	ND		220	59	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
1,4-Dichlorobenzene	ND		220	31	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
2-Butanone (MEK)	ND		1100	660	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
2-Hexanone	ND		1100	450	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
4-Isopropyltoluene	ND		220	75	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
4-Methyl-2-pentanone (MIBK)	ND		1100	71	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
Acetone	ND		1100	910	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
Benzene	ND		220	42	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
Bromoform	ND		220	110	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
Bromomethane	ND		220	49	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
Carbon disulfide	ND		220	100	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
Carbon tetrachloride	ND		220	56	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
Chlorobenzene	ND		220	29	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
Dibromochloromethane	ND		220	110	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
Chloroethane	ND		220	46	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
Chloroform	ND		220	150	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
Chloromethane	ND		220	53	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
cis-1,2-Dichloroethene	**280**		220	61	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
Cyclohexane	ND		220	49	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
Bromodichloromethane	ND		220	44	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
Dichlorodifluoromethane	ND		220	97	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
Ethylbenzene	ND		220	64	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
1,2-Dibromoethane	ND		220	39	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
Isopropylbenzene	ND		220	33	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
Methyl acetate	ND		1100	110	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
Methyl tert-butyl ether	ND		220	84	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
Methylcyclohexane	ND		220	100	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
Methylene Chloride	**190**	**J B**	220	44	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
m,p-Xylene	ND		440	120	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
n-Butylbenzene	ND		220	65	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
N-Propylbenzene	ND		220	58	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
o-Xylene	ND		220	29	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
sec-Butylbenzene	ND		220	81	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
Tetrachloroethene	**19000**		220	30	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
Toluene	ND		220	59	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
trans-1,2-Dichloroethene	ND		220	52	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 3077-3097 Union Rd

TestAmerica Job ID: 480-130449-1

Client Sample ID: SB-7 (6-8)
Date Collected: 01/22/18 11:15
Date Received: 01/23/18 15:15

Lab Sample ID: 480-130449-5
Matrix: Solid
Percent Solids: 92.5

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
trans-1,3-Dichloropropene	ND		220	22	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
Trichloroethene	**940**		220	62	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
Trichlorofluoromethane	ND		220	100	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
Vinyl chloride	ND		220	74	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
Xylenes, Total	ND		440	120	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
cis-1,3-Dichloropropene	ND		220	53	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
Styrene	ND		220	53	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2
tert-Butylbenzene	ND		220	62	ug/Kg	☼	01/24/18 15:46	01/26/18 01:20	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*53 - 146*	*01/24/18 15:46*	*01/26/18 01:20*	*2*
4-Bromofluorobenzene (Surr)	*106*		*49 - 148*	*01/24/18 15:46*	*01/26/18 01:20*	*2*
Toluene-d8 (Surr)	*104*		*50 - 149*	*01/24/18 15:46*	*01/26/18 01:20*	*2*
Dibromofluoromethane (Surr)	*97*		*60 - 140*	*01/24/18 15:46*	*01/26/18 01:20*	*2*

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 3077-3097 Union Rd

TestAmerica Job ID: 480-130449-1

Client Sample ID: SB-8 (4-6)
Date Collected: 01/22/18 11:30
Date Received: 01/23/18 15:15

Lab Sample ID: 480-130449-6
Matrix: Solid
Percent Solids: 83.8

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		130	36	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
1,1,2,2-Tetrachloroethane	ND		130	21	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		130	64	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
1,1,2-Trichloroethane	ND		130	27	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
1,1-Dichloroethane	ND		130	40	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
1,1-Dichloroethene	ND		130	44	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
1,2,4-Trichlorobenzene	ND		130	49	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
1,2,4-Trimethylbenzene	ND		130	36	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
1,2-Dibromo-3-Chloropropane	ND	*	130	64	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
1,2-Dichlorobenzene	ND		130	33	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
1,2-Dichloroethane	ND		130	53	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
1,2-Dichloropropane	ND		130	21	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
1,3,5-Trimethylbenzene	ND		130	39	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
1,3-Dichlorobenzene	ND		130	34	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
1,4-Dichlorobenzene	ND		130	18	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
2-Butanone (MEK)	ND		640	380	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
2-Hexanone	ND		640	260	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
4-Isopropyltoluene	ND		130	43	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
4-Methyl-2-pentanone (MIBK)	ND		640	41	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
Acetone	ND		640	530	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
Benzene	ND		130	24	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
Bromoform	ND		130	64	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
Bromomethane	ND		130	28	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
Carbon disulfide	ND		130	59	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
Carbon tetrachloride	ND		130	33	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
Chlorobenzene	ND		130	17	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
Dibromochloromethane	ND		130	62	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
Chloroethane	ND		130	27	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
Chloroform	ND		130	88	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
Chloromethane	ND		130	31	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
cis-1,2-Dichloroethene	**260**		130	35	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
Cyclohexane	ND		130	29	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
Bromodichloromethane	ND		130	26	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
Dichlorodifluoromethane	ND		130	56	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
Ethylbenzene	ND		130	37	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
1,2-Dibromoethane	ND		130	23	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
Isopropylbenzene	ND		130	19	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
Methyl acetate	ND		640	61	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
Methyl tert-butyl ether	ND		130	49	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
Methylcyclohexane	ND		130	60	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
Methylene Chloride	**110**	**J B**	130	25	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
m,p-Xylene	ND		260	71	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
n-Butylbenzene	ND		130	38	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
N-Propylbenzene	ND		130	34	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
o-Xylene	ND		130	17	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
sec-Butylbenzene	ND		130	47	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
Tetrachloroethene	**1100**		130	17	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
Toluene	ND		130	34	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
trans-1,2-Dichloroethene	ND		130	30	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 3077-3097 Union Rd

TestAmerica Job ID: 480-130449-1

Client Sample ID: SB-8 (4-6)
Date Collected: 01/22/18 11:30
Date Received: 01/23/18 15:15

Lab Sample ID: 480-130449-6
Matrix: Solid
Percent Solids: 83.8

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
trans-1,3-Dichloropropene	ND		130	13	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
Trichloroethene	**610**		130	36	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
Trichlorofluoromethane	ND		130	60	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
Vinyl chloride	ND		130	43	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
Xylenes, Total	ND		260	71	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
cis-1,3-Dichloropropene	ND		130	31	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
Styrene	ND		130	31	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1
tert-Butylbenzene	ND		130	36	ug/Kg	☼	01/24/18 15:46	01/26/18 01:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*53 - 146*	*01/24/18 15:46*	*01/26/18 01:43*	*1*
4-Bromofluorobenzene (Surr)	*107*		*49 - 148*	*01/24/18 15:46*	*01/26/18 01:43*	*1*
Toluene-d8 (Surr)	*105*		*50 - 149*	*01/24/18 15:46*	*01/26/18 01:43*	*1*
Dibromofluoromethane (Surr)	*94*		*60 - 140*	*01/24/18 15:46*	*01/26/18 01:43*	*1*

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 3077-3097 Union Rd

TestAmerica Job ID: 480-130449-1

Client Sample ID: SB-11 (2-4)
Date Collected: 01/22/18 13:15
Date Received: 01/23/18 15:15

Lab Sample ID: 480-130449-7
Matrix: Solid
Percent Solids: 88.7

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		240	66	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
1,1,2,2-Tetrachloroethane	ND		240	38	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		240	120	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
1,1,2-Trichloroethane	ND		240	50	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
1,1-Dichloroethane	ND		240	73	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
1,1-Dichloroethene	ND		240	82	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
1,2,4-Trichlorobenzene	ND		240	90	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
1,2,4-Trimethylbenzene	ND		240	66	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
1,2-Dibromo-3-Chloropropane	ND	*	240	120	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
1,2-Dichlorobenzene	ND		240	60	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
1,2-Dichloroethane	ND		240	97	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
1,2-Dichloropropane	ND		240	38	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
1,3,5-Trimethylbenzene	ND		240	72	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
1,3-Dichlorobenzene	ND		240	63	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
1,4-Dichlorobenzene	ND		240	33	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
2-Butanone (MEK)	ND		1200	700	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
2-Hexanone	ND		1200	490	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
4-Isopropyltoluene	ND		240	80	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
4-Methyl-2-pentanone (MIBK)	ND		1200	76	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
Acetone	ND		1200	970	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
Benzene	ND		240	45	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
Bromoform	ND		240	120	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
Bromomethane	ND		240	52	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
Carbon disulfide	ND		240	110	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
Carbon tetrachloride	ND		240	60	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
Chlorobenzene	ND		240	31	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
Dibromochloromethane	ND		240	110	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
Chloroethane	ND		240	49	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
Chloroform	ND		240	160	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
Chloromethane	ND		240	56	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
cis-1,2-Dichloroethene	ND		240	65	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
Cyclohexane	ND		240	53	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
Bromodichloromethane	ND		240	47	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
Dichlorodifluoromethane	ND		240	100	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
Ethylbenzene	ND		240	69	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
1,2-Dibromoethane	ND		240	41	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
Isopropylbenzene	ND		240	36	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
Methyl acetate	ND		1200	110	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
Methyl tert-butyl ether	ND		240	90	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
Methylcyclohexane	ND		240	110	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
Methylene Chloride	**200**	**J B**	240	47	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
m,p-Xylene	ND		470	130	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
n-Butylbenzene	ND		240	69	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
N-Propylbenzene	ND		240	62	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
o-Xylene	ND		240	31	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
sec-Butylbenzene	ND		240	87	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
Tetrachloroethene	**13000**		240	32	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
Toluene	ND		240	64	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
trans-1,2-Dichloroethene	ND		240	56	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 3077-3097 Union Rd

TestAmerica Job ID: 480-130449-1

Client Sample ID: SB-11 (2-4)
Date Collected: 01/22/18 13:15
Date Received: 01/23/18 15:15

Lab Sample ID: 480-130449-7
Matrix: Solid
Percent Solids: 88.7

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
trans-1,3-Dichloropropene	ND		240	23	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
Trichloroethene	**180**	**J**	240	66	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
Trichlorofluoromethane	ND		240	110	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
Vinyl chloride	ND		240	79	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
Xylenes, Total	ND		470	130	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
cis-1,3-Dichloropropene	ND		240	57	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
Styrene	ND		240	57	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2
tert-Butylbenzene	ND		240	66	ug/Kg	☼	01/24/18 15:46	01/26/18 02:07	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*53 - 146*	*01/24/18 15:46*	*01/26/18 02:07*	*2*
4-Bromofluorobenzene (Surr)	*105*		*49 - 148*	*01/24/18 15:46*	*01/26/18 02:07*	*2*
Toluene-d8 (Surr)	*101*		*50 - 149*	*01/24/18 15:46*	*01/26/18 02:07*	*2*
Dibromofluoromethane (Surr)	*93*		*60 - 140*	*01/24/18 15:46*	*01/26/18 02:07*	*2*

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 3077-3097 Union Rd

TestAmerica Job ID: 480-130449-1

Client Sample ID: TWW-1
Date Collected: 01/22/18 16:00
Date Received: 01/23/18 15:15

Lab Sample ID: 480-130449-8
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			01/25/18 11:40	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			01/25/18 11:40	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.31	ug/L			01/25/18 11:40	1
1,1,2-Trichloroethane	ND		1.0	0.23	ug/L			01/25/18 11:40	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			01/25/18 11:40	1
1,1-Dichloroethene	ND		1.0	0.29	ug/L			01/25/18 11:40	1
1,2,4-Trichlorobenzene	ND		1.0	0.41	ug/L			01/25/18 11:40	1
1,2,4-Trimethylbenzene	ND		1.0	0.75	ug/L			01/25/18 11:40	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			01/25/18 11:40	1
1,2-Dibromoethane	ND		1.0	0.73	ug/L			01/25/18 11:40	1
1,2-Dichlorobenzene	ND		1.0	0.79	ug/L			01/25/18 11:40	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			01/25/18 11:40	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			01/25/18 11:40	1
1,3,5-Trimethylbenzene	ND		1.0	0.77	ug/L			01/25/18 11:40	1
1,3-Dichlorobenzene	ND		1.0	0.78	ug/L			01/25/18 11:40	1
1,4-Dichlorobenzene	ND		1.0	0.84	ug/L			01/25/18 11:40	1
2-Butanone (MEK)	ND	*	10	1.3	ug/L			01/25/18 11:40	1
2-Hexanone	ND		5.0	1.2	ug/L			01/25/18 11:40	1
4-Isopropyltoluene	ND		1.0	0.31	ug/L			01/25/18 11:40	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			01/25/18 11:40	1
Acetone	**5.0**	**J**	10	3.0	ug/L			01/25/18 11:40	1
Benzene	ND		1.0	0.41	ug/L			01/25/18 11:40	1
Bromodichloromethane	ND		1.0	0.39	ug/L			01/25/18 11:40	1
Bromoform	ND		1.0	0.26	ug/L			01/25/18 11:40	1
Bromomethane	ND		1.0	0.69	ug/L			01/25/18 11:40	1
Carbon disulfide	**0.46**	**J**	1.0	0.19	ug/L			01/25/18 11:40	1
Carbon tetrachloride	ND		1.0	0.27	ug/L			01/25/18 11:40	1
Chlorobenzene	ND		1.0	0.75	ug/L			01/25/18 11:40	1
Chloroethane	ND		1.0	0.32	ug/L			01/25/18 11:40	1
Chloroform	ND		1.0	0.34	ug/L			01/25/18 11:40	1
Chloromethane	ND		1.0	0.35	ug/L			01/25/18 11:40	1
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			01/25/18 11:40	1
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			01/25/18 11:40	1
Cyclohexane	**0.18**	**J**	1.0	0.18	ug/L			01/25/18 11:40	1
Dibromochloromethane	ND		1.0	0.32	ug/L			01/25/18 11:40	1
Dichlorodifluoromethane	ND		1.0	0.68	ug/L			01/25/18 11:40	1
Ethylbenzene	ND		1.0	0.74	ug/L			01/25/18 11:40	1
Isopropylbenzene	ND		1.0	0.79	ug/L			01/25/18 11:40	1
m,p-Xylene	ND		2.0	0.66	ug/L			01/25/18 11:40	1
Methyl acetate	ND		2.5	1.3	ug/L			01/25/18 11:40	1
Methyl tert-butyl ether	ND		1.0	0.16	ug/L			01/25/18 11:40	1
Methylcyclohexane	ND		1.0	0.16	ug/L			01/25/18 11:40	1
Methylene Chloride	ND		1.0	0.44	ug/L			01/25/18 11:40	1
n-Butylbenzene	ND		1.0	0.64	ug/L			01/25/18 11:40	1
N-Propylbenzene	ND		1.0	0.69	ug/L			01/25/18 11:40	1
o-Xylene	ND		1.0	0.76	ug/L			01/25/18 11:40	1
sec-Butylbenzene	ND		1.0	0.75	ug/L			01/25/18 11:40	1
Styrene	ND		1.0	0.73	ug/L			01/25/18 11:40	1
tert-Butylbenzene	ND		1.0	0.81	ug/L			01/25/18 11:40	1

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 3077-3097 Union Rd

TestAmerica Job ID: 480-130449-1

Client Sample ID: TWW-1
Date Collected: 01/22/18 16:00
Date Received: 01/23/18 15:15

Lab Sample ID: 480-130449-8
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	ND		1.0	0.36	ug/L			01/25/18 11:40	1
Toluene	ND		1.0	0.51	ug/L			01/25/18 11:40	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			01/25/18 11:40	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			01/25/18 11:40	1
Trichloroethene	ND		1.0	0.46	ug/L			01/25/18 11:40	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			01/25/18 11:40	1
Vinyl chloride	ND		1.0	0.90	ug/L			01/25/18 11:40	1
Xylenes, Total	ND		2.0	0.66	ug/L			01/25/18 11:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*77 - 120*		*01/25/18 11:40*	*1*
4-Bromofluorobenzene (Surr)	*101*		*73 - 120*		*01/25/18 11:40*	*1*
Toluene-d8 (Surr)	*97*		*80 - 120*		*01/25/18 11:40*	*1*

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 3077-3097 Union Rd

TestAmerica Job ID: 480-130449-1

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(53-146)	(49-148)	(50-149)	(60-140)
480-130449-1	SB-1 (10-12)	92	105	102	95
480-130449-2	SB-3 (6-8)	98	103	101	98
480-130449-4	SB-7 (4-6)	96	102	101	98
480-130449-5	SB-7 (6-8)	101	106	104	97
480-130449-6	SB-8 (4-6)	95	107	105	94
480-130449-7	SB-11 (2-4)	97	105	101	93
LCS 480-397178/1-A	Lab Control Sample	96	107	103	105

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(77-120)	(73-120)	(80-120)	(75-123)
LCS 480-397236/6	Lab Control Sample	96	111	103	107
LCS 480-397428/5	Lab Control Sample	100	109	103	104
MB 480-397178/2-A	Method Blank	96	106	102	96
MB 480-397236/8	Method Blank	94	105	102	102
MB 480-397428/8	Method Blank	96	107	104	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Solid **Prep Type: TCLP**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(77-120)	(73-120)	(80-120)	(75-123)
480-130449-4	SB-7 (4-6)	100	104	104	104
480-130449-4 - DL	SB-7 (4-6)	98	106	103	99
LB 480-397113/1-A	Method Blank	103	103	104	108

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Surrogate Summary

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 3077-3097 Union Rd

TestAmerica Job ID: 480-130449-1

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)								
		DCA	BFB	TOL						
Lab Sample ID	Client Sample ID	(77-120)	(73-120)	(80-120)						
480-130449-8	TWW-1	99	101	97						
LCS 480-397230/5	Lab Control Sample	95	100	95						
MB 480-397230/8	Method Blank	100	102	97						

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)							
		TBP	FBP	2FP	PHL	TPHd14	NBZ		
Lab Sample ID	Client Sample ID	(54-120)	(60-120)	(52-120)	(54-120)	(65-121)	(53-120)		
480-130449-3	SB-4 (2-4)	89	83	75	74	93	75		
480-130449-3 MS	SB-4 (2-4)	97	89	75	77	93	82		
480-130449-3 MSD	SB-4 (2-4)	90	83	77	77	95	80		
LCS 480-397187/2-A	Lab Control Sample	93	85	75	74	100	78		
MB 480-397187/1-A	Method Blank	77	88	78	77	106	77		

Surrogate Legend

TBP = 2,4,6-Tribromophenol (Surr)
FBP = 2-Fluorobiphenyl
2FP = 2-Fluorophenol (Surr)
PHL = Phenol-d5 (Surr)
TPHd14 = p-Terphenyl-d14 (Surr)
NBZ = Nitrobenzene-d5 (Surr)

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 480-397178/2-A
Matrix: Solid
Analysis Batch: 397378

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 397178

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		100	82	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
1,1,2,2-Tetrachloroethane	ND		100	21	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		100	31	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
1,1,2-Trichloroethane	ND		100	23	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
1,1-Dichloroethane	ND		100	38	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
1,2,4-Trichlorobenzene	ND		100	41	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
1,2,4-Trimethylbenzene	ND		100	75	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
1,2-Dibromo-3-Chloropropane	ND		100	39	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
1,2-Dichlorobenzene	ND		100	79	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
1,2-Dichloroethane	ND		0.10	0.021	mg/L		01/24/18 15:04	01/25/18 21:29	1
1,1-Dichloroethene	ND		0.10	0.029	mg/L		01/24/18 15:04	01/25/18 21:29	1
1,2-Dichloropropane	ND		100	72	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
1,3,5-Trimethylbenzene	ND		100	77	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
1,3-Dichlorobenzene	ND		100	78	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
1,4-Dichlorobenzene	ND		100	84	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
2-Butanone (MEK)	ND		0.50	0.13	mg/L		01/24/18 15:04	01/25/18 21:29	1
2-Hexanone	ND		500	120	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
4-Isopropyltoluene	ND		100	31	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
4-Methyl-2-pentanone (MIBK)	ND		500	210	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
Acetone	ND		500	300	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
Benzene	ND		0.10	0.041	mg/L		01/24/18 15:04	01/25/18 21:29	1
Bromoform	ND		100	26	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
Bromomethane	ND		100	69	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
Carbon disulfide	ND		100	19	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
Carbon tetrachloride	ND		0.10	0.027	mg/L		01/24/18 15:04	01/25/18 21:29	1
Chlorobenzene	ND		0.10	0.075	mg/L		01/24/18 15:04	01/25/18 21:29	1
Chloroethane	ND		100	32	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
Chloroform	ND		0.10	0.034	mg/L		01/24/18 15:04	01/25/18 21:29	1
Chloromethane	ND		100	34	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
cis-1,2-Dichloroethene	ND		100	81	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
Bromodichloromethane	ND		100	38	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
Cyclohexane	ND		100	18	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
Dibromochloromethane	ND		100	32	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
1,2-Dibromoethane	ND		100	73	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
Dichlorodifluoromethane	ND		100	68	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
Ethylbenzene	ND		100	74	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
Isopropylbenzene	ND		100	79	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
Methyl acetate	ND		100	50	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
Methyl tert-butyl ether	ND		100	16	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
m,p-Xylene	ND		200	66	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
Methylcyclohexane	ND		100	16	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
Methylene Chloride	72.4	J	100	44	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
n-Butylbenzene	ND		100	64	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
N-Propylbenzene	ND		100	69	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
o-Xylene	ND		100	76	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
sec-Butylbenzene	ND		100	75	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
Tetrachloroethene	ND		0.10	0.036	mg/L		01/24/18 15:04	01/25/18 21:29	1
Toluene	ND		100	51	ug/Kg		01/24/18 15:04	01/25/18 21:29	1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 480-397178/2-A
Matrix: Solid
Analysis Batch: 397378

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 397178

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
trans-1,2-Dichloroethene	ND		100	90	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
trans-1,3-Dichloropropene	ND		100	37	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
Trichloroethene	ND		0.10	0.046	mg/L		01/24/18 15:04	01/25/18 21:29	1
Trichlorofluoromethane	ND		100	88	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
cis-1,3-Dichloropropene	ND		100	36	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
Vinyl chloride	ND		0.10	0.090	mg/L		01/24/18 15:04	01/25/18 21:29	1
Styrene	ND		100	73	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
Xylenes, Total	ND		200	66	ug/Kg		01/24/18 15:04	01/25/18 21:29	1
tert-Butylbenzene	ND		100	81	ug/Kg		01/24/18 15:04	01/25/18 21:29	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*77 - 120*	*01/24/18 15:04*	*01/25/18 21:29*	*1*
4-Bromofluorobenzene (Surr)	*106*		*73 - 120*	*01/24/18 15:04*	*01/25/18 21:29*	*1*
Toluene-d8 (Surr)	*102*		*80 - 120*	*01/24/18 15:04*	*01/25/18 21:29*	*1*
Dibromofluoromethane (Surr)	*96*		*75 - 123*	*01/24/18 15:04*	*01/25/18 21:29*	*1*

Lab Sample ID: LCS 480-397178/1-A
Matrix: Solid
Analysis Batch: 397378

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 397178

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	2500	2380		ug/Kg		95	68 - 130
1,1,2,2-Tetrachloroethane	2500	2000		ug/Kg		80	73 - 120
1,1,2-Trichloro-1,2,2-trifluoroethane	2500	2800		ug/Kg		112	10 - 179
1,1,2-Trichloroethane	2500	2460		ug/Kg		98	80 - 120
1,1-Dichloroethane	2500	2630		ug/Kg		105	78 - 121
1,2,4-Trichlorobenzene	2500	2470		ug/Kg		99	70 - 140
1,2,4-Trimethylbenzene	2500	2290		ug/Kg		92	77 - 127
1,2-Dibromo-3-Chloropropane	2500	1360	*	ug/Kg		54	56 - 122
1,2-Dichlorobenzene	2500	2480		ug/Kg		99	78 - 125
1,2-Dichloroethane	2500	2460		ug/Kg		98	74 - 127
1,1-Dichloroethene	2500	2710		ug/Kg		108	48 - 133
1,2-Dichloropropane	2500	2650		ug/Kg		106	80 - 120
1,3,5-Trimethylbenzene	2500	2310		ug/Kg		92	79 - 120
1,3-Dichlorobenzene	2500	2450		ug/Kg		98	80 - 120
1,4-Dichlorobenzene	2500	2440		ug/Kg		98	80 - 120
2-Butanone (MEK)	12500	11400		ug/Kg		91	54 - 149
2-Hexanone	12500	10300		ug/Kg		82	59 - 127
4-Isopropyltoluene	2500	2400		ug/Kg		96	80 - 120
4-Methyl-2-pentanone (MIBK)	12500	10600		ug/Kg		85	74 - 120
Acetone	12500	10500		ug/Kg		84	47 - 141
Benzene	2500	2700		ug/Kg		108	77 - 125
Bromoform	2500	1830		ug/Kg		73	48 - 125
Bromomethane	2500	2540		ug/Kg		102	39 - 149
Carbon disulfide	2500	2330		ug/Kg		93	40 - 136
Carbon tetrachloride	2500	2180		ug/Kg		87	54 - 135
Chlorobenzene	2500	2660		ug/Kg		106	76 - 126

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 480-397178/1-A
Matrix: Solid
Analysis Batch: 397378

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 397178

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloroethane	2500	3020		ug/Kg		121	23 - 150
Chloroform	2500	2630		ug/Kg		105	78 - 120
Chloromethane	2500	2290		ug/Kg		92	61 - 124
cis-1,2-Dichloroethene	2500	2710		ug/Kg		108	79 - 124
Bromodichloromethane	2500	2310		ug/Kg		93	71 - 121
Cyclohexane	2500	2540		ug/Kg		102	49 - 129
Dibromochloromethane	2500	2030		ug/Kg		81	64 - 120
1,2-Dibromoethane	2500	2420		ug/Kg		97	80 - 120
Dichlorodifluoromethane	2500	2300		ug/Kg		92	10 - 150
Ethylbenzene	2500	2550		ug/Kg		102	78 - 124
Isopropylbenzene	2500	2330		ug/Kg		93	76 - 120
Methyl acetate	5000	4310		ug/Kg		86	71 - 123
Methyl tert-butyl ether	2500	2460		ug/Kg		98	67 - 137
m,p-Xylene	2500	2570		ug/Kg		103	77 - 125
Methylcyclohexane	2500	2760		ug/Kg		111	50 - 130
Methylene Chloride	2500	2520		ug/Kg		101	75 - 118
Naphthalene	2500	2220		ug/Kg		89	65 - 142
n-Butylbenzene	2500	2340		ug/Kg		93	80 - 120
N-Propylbenzene	2500	2300		ug/Kg		92	76 - 120
o-Xylene	2500	2680		ug/Kg		107	80 - 124
sec-Butylbenzene	2500	2370		ug/Kg		95	79 - 120
Tetrachloroethene	2500	2830		ug/Kg		113	73 - 133
Toluene	2500	2540		ug/Kg		102	75 - 124
trans-1,2-Dichloroethene	2500	2740		ug/Kg		109	74 - 129
trans-1,3-Dichloropropene	2500	2210		ug/Kg		88	73 - 120
Trichloroethene	2500	2710		ug/Kg		108	75 - 131
Trichlorofluoromethane	2500	2960		ug/Kg		118	29 - 158
cis-1,3-Dichloropropene	2500	2500		ug/Kg		100	75 - 121
Vinyl chloride	2500	2400		ug/Kg		96	59 - 124
Styrene	2500	2560		ug/Kg		102	80 - 120
tert-Butylbenzene	2500	2410		ug/Kg		96	78 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*53 - 146*
4-Bromofluorobenzene (Surr)	*107*		*49 - 148*
Toluene-d8 (Surr)	*103*		*50 - 149*
Dibromofluoromethane (Surr)	*105*		*60 - 140*

Lab Sample ID: MB 480-397230/8
Matrix: Water
Analysis Batch: 397230

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			01/25/18 10:43	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			01/25/18 10:43	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.31	ug/L			01/25/18 10:43	1
1,1,2-Trichloroethane	ND		1.0	0.23	ug/L			01/25/18 10:43	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			01/25/18 10:43	1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 480-397230/8
Matrix: Water
Analysis Batch: 397230

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	ND		1.0	0.41	ug/L			01/25/18 10:43	1
1,2,4-Trimethylbenzene	ND		1.0	0.75	ug/L			01/25/18 10:43	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			01/25/18 10:43	1
1,2-Dichlorobenzene	ND		1.0	0.79	ug/L			01/25/18 10:43	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			01/25/18 10:43	1
1,1-Dichloroethene	ND		1.0	0.29	ug/L			01/25/18 10:43	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			01/25/18 10:43	1
1,3,5-Trimethylbenzene	ND		1.0	0.77	ug/L			01/25/18 10:43	1
1,3-Dichlorobenzene	ND		1.0	0.78	ug/L			01/25/18 10:43	1
1,4-Dichlorobenzene	ND		1.0	0.84	ug/L			01/25/18 10:43	1
2-Butanone (MEK)	ND		10	1.3	ug/L			01/25/18 10:43	1
2-Hexanone	ND		5.0	1.2	ug/L			01/25/18 10:43	1
4-Isopropyltoluene	ND		1.0	0.31	ug/L			01/25/18 10:43	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			01/25/18 10:43	1
Acetone	ND		10	3.0	ug/L			01/25/18 10:43	1
Benzene	ND		1.0	0.41	ug/L			01/25/18 10:43	1
Bromoform	ND		1.0	0.26	ug/L			01/25/18 10:43	1
Bromomethane	ND		1.0	0.69	ug/L			01/25/18 10:43	1
Carbon disulfide	ND		1.0	0.19	ug/L			01/25/18 10:43	1
Carbon tetrachloride	ND		1.0	0.27	ug/L			01/25/18 10:43	1
Chlorobenzene	ND		1.0	0.75	ug/L			01/25/18 10:43	1
Chloroethane	ND		1.0	0.32	ug/L			01/25/18 10:43	1
Chloroform	ND		1.0	0.34	ug/L			01/25/18 10:43	1
Chloromethane	ND		1.0	0.35	ug/L			01/25/18 10:43	1
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			01/25/18 10:43	1
Bromodichloromethane	ND		1.0	0.39	ug/L			01/25/18 10:43	1
Cyclohexane	ND		1.0	0.18	ug/L			01/25/18 10:43	1
Dibromochloromethane	ND		1.0	0.32	ug/L			01/25/18 10:43	1
1,2-Dibromoethane	ND		1.0	0.73	ug/L			01/25/18 10:43	1
Dichlorodifluoromethane	ND		1.0	0.68	ug/L			01/25/18 10:43	1
Ethylbenzene	ND		1.0	0.74	ug/L			01/25/18 10:43	1
Isopropylbenzene	ND		1.0	0.79	ug/L			01/25/18 10:43	1
Methyl acetate	ND		2.5	1.3	ug/L			01/25/18 10:43	1
Methyl tert-butyl ether	ND		1.0	0.16	ug/L			01/25/18 10:43	1
m,p-Xylene	ND		2.0	0.66	ug/L			01/25/18 10:43	1
Methylcyclohexane	ND		1.0	0.16	ug/L			01/25/18 10:43	1
Methylene Chloride	ND		1.0	0.44	ug/L			01/25/18 10:43	1
n-Butylbenzene	ND		1.0	0.64	ug/L			01/25/18 10:43	1
N-Propylbenzene	ND		1.0	0.69	ug/L			01/25/18 10:43	1
o-Xylene	ND		1.0	0.76	ug/L			01/25/18 10:43	1
sec-Butylbenzene	ND		1.0	0.75	ug/L			01/25/18 10:43	1
Tetrachloroethene	ND		1.0	0.36	ug/L			01/25/18 10:43	1
Toluene	ND		1.0	0.51	ug/L			01/25/18 10:43	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			01/25/18 10:43	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			01/25/18 10:43	1
Trichloroethene	ND		1.0	0.46	ug/L			01/25/18 10:43	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			01/25/18 10:43	1
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			01/25/18 10:43	1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 480-397230/8
Matrix: Water
Analysis Batch: 397230

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		1.0	0.90	ug/L			01/25/18 10:43	1
Styrene	ND		1.0	0.73	ug/L			01/25/18 10:43	1
Xylenes, Total	ND		2.0	0.66	ug/L			01/25/18 10:43	1
tert-Butylbenzene	ND		1.0	0.81	ug/L			01/25/18 10:43	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*77 - 120*		*01/25/18 10:43*	*1*
4-Bromofluorobenzene (Surr)	*102*		*73 - 120*		*01/25/18 10:43*	*1*
Toluene-d8 (Surr)	*97*		*80 - 120*		*01/25/18 10:43*	*1*

Lab Sample ID: LCS 480-397230/5
Matrix: Water
Analysis Batch: 397230

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	25.0	26.1		ug/L		104	73 - 126
1,1,2,2-Tetrachloroethane	25.0	22.8		ug/L		91	76 - 120
1,1,2-Trichloro-1,2,2-trifluoroethane	25.0	28.2		ug/L		113	61 - 148
1,1,2-Trichloroethane	25.0	23.1		ug/L		92	76 - 122
1,1-Dichloroethane	25.0	25.9		ug/L		103	77 - 120
1,2,4-Trichlorobenzene	25.0	25.5		ug/L		102	79 - 122
1,2,4-Trimethylbenzene	25.0	24.1		ug/L		96	76 - 121
1,2-Dibromo-3-Chloropropane	25.0	22.5		ug/L		90	56 - 134
1,2-Dichlorobenzene	25.0	25.4		ug/L		102	80 - 124
1,2-Dichloroethane	25.0	24.1		ug/L		96	75 - 120
1,1-Dichloroethene	25.0	25.1		ug/L		100	66 - 127
1,2-Dichloropropane	25.0	23.8		ug/L		95	76 - 120
1,3,5-Trimethylbenzene	25.0	24.2		ug/L		97	77 - 121
1,3-Dichlorobenzene	25.0	25.4		ug/L		102	77 - 120
1,4-Dichlorobenzene	25.0	24.9		ug/L		100	80 - 120
2-Butanone (MEK)	125	233	*	ug/L		186	57 - 140
2-Hexanone	125	114		ug/L		91	65 - 127
4-Isopropyltoluene	25.0	25.4		ug/L		102	73 - 120
4-Methyl-2-pentanone (MIBK)	125	113		ug/L		90	71 - 125
Acetone	125	145		ug/L		116	56 - 142
Benzene	25.0	25.4		ug/L		102	71 - 124
Bromoform	25.0	23.3		ug/L		93	61 - 132
Bromomethane	25.0	22.1		ug/L		89	55 - 144
Carbon disulfide	25.0	25.1		ug/L		100	59 - 134
Carbon tetrachloride	25.0	26.2		ug/L		105	72 - 134
Chlorobenzene	25.0	24.5		ug/L		98	80 - 120
Chloroethane	25.0	21.3		ug/L		85	69 - 136
Chloroform	25.0	23.5		ug/L		94	73 - 127
Chloromethane	25.0	21.4		ug/L		86	68 - 124
cis-1,2-Dichloroethene	25.0	24.2		ug/L		97	74 - 124
Bromodichloromethane	25.0	25.2		ug/L		101	80 - 122
Cyclohexane	25.0	25.6		ug/L		102	59 - 135

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 480-397230/5
Matrix: Water
Analysis Batch: 397230

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Dibromochloromethane	25.0	23.9		ug/L		95	75 - 125
1,2-Dibromoethane	25.0	23.9		ug/L		96	77 - 120
Dichlorodifluoromethane	25.0	20.5		ug/L		82	59 - 135
Ethylbenzene	25.0	24.1		ug/L		96	77 - 123
Isopropylbenzene	25.0	24.6		ug/L		99	77 - 122
Methyl acetate	50.0	48.0		ug/L		96	74 - 133
Methyl tert-butyl ether	25.0	24.7		ug/L		99	77 - 120
m,p-Xylene	25.0	23.9		ug/L		96	76 - 122
Methylcyclohexane	25.0	25.8		ug/L		103	68 - 134
Methylene Chloride	25.0	25.4		ug/L		101	75 - 124
n-Butylbenzene	25.0	24.1		ug/L		97	71 - 128
N-Propylbenzene	25.0	24.4		ug/L		98	75 - 127
o-Xylene	25.0	24.5		ug/L		98	76 - 122
sec-Butylbenzene	25.0	24.8		ug/L		99	74 - 127
Tetrachloroethene	25.0	27.8		ug/L		111	74 - 122
Toluene	25.0	24.5		ug/L		98	80 - 122
trans-1,2-Dichloroethene	25.0	25.2		ug/L		101	73 - 127
trans-1,3-Dichloropropene	25.0	23.1		ug/L		93	80 - 120
Trichloroethene	25.0	25.1		ug/L		100	74 - 123
Trichlorofluoromethane	25.0	24.3		ug/L		97	62 - 150
cis-1,3-Dichloropropene	25.0	24.9		ug/L		100	74 - 124
Vinyl chloride	25.0	22.0		ug/L		88	65 - 133
Styrene	25.0	24.2		ug/L		97	80 - 120
tert-Butylbenzene	25.0	25.2		ug/L		101	75 - 123

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*77 - 120*
4-Bromofluorobenzene (Surr)	*100*		*73 - 120*
Toluene-d8 (Surr)	*95*		*80 - 120*

Lab Sample ID: MB 480-397236/8
Matrix: Solid
Analysis Batch: 397236

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane	ND		0.0010	0.00021	mg/L			01/25/18 11:30	1
1,1-Dichloroethene	ND		0.0010	0.00029	mg/L			01/25/18 11:30	1
2-Butanone (MEK)	ND		0.0050	0.0013	mg/L			01/25/18 11:30	1
Benzene	ND		0.0010	0.00041	mg/L			01/25/18 11:30	1
Carbon tetrachloride	ND		0.0010	0.00027	mg/L			01/25/18 11:30	1
Chlorobenzene	ND		0.0010	0.00075	mg/L			01/25/18 11:30	1
Chloroform	ND		0.0010	0.00034	mg/L			01/25/18 11:30	1
Tetrachloroethene	ND		0.0010	0.00036	mg/L			01/25/18 11:30	1
Trichloroethene	ND		0.0010	0.00046	mg/L			01/25/18 11:30	1
Vinyl chloride	ND		0.0010	0.00090	mg/L			01/25/18 11:30	1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 480-397236/8
Matrix: Solid
Analysis Batch: 397236

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*94*		*77 - 120*		*01/25/18 11:30*	*1*
4-Bromofluorobenzene (Surr)	*105*		*73 - 120*		*01/25/18 11:30*	*1*
Toluene-d8 (Surr)	*102*		*80 - 120*		*01/25/18 11:30*	*1*
Dibromofluoromethane (Surr)	*102*		*75 - 123*		*01/25/18 11:30*	*1*

Lab Sample ID: LCS 480-397236/6
Matrix: Solid
Analysis Batch: 397236

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2-Dichloroethane	0.0250	0.0256		mg/L		102	75 - 120
1,1-Dichloroethene	0.0250	0.0279		mg/L		111	66 - 127
2-Butanone (MEK)	0.125	0.130		mg/L		104	57 - 140
Benzene	0.0250	0.0274		mg/L		110	71 - 124
Carbon tetrachloride	0.0250	0.0225		mg/L		90	72 - 134
Chlorobenzene	0.0250	0.0278		mg/L		111	80 - 120
Chloroform	0.0250	0.0268		mg/L		107	73 - 127
Tetrachloroethene	0.0250	0.0296		mg/L		118	74 - 122
Trichloroethene	0.0250	0.0273		mg/L		109	74 - 123
Vinyl chloride	0.0250	0.0214		mg/L		86	65 - 133

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*96*		*77 - 120*
4-Bromofluorobenzene (Surr)	*111*		*73 - 120*
Toluene-d8 (Surr)	*103*		*80 - 120*
Dibromofluoromethane (Surr)	*107*		*75 - 123*

Lab Sample ID: MB 480-397428/8
Matrix: Solid
Analysis Batch: 397428

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane	ND		0.0010	0.00021	mg/L			01/26/18 12:32	1
1,1-Dichloroethene	ND		0.0010	0.00029	mg/L			01/26/18 12:32	1
2-Butanone (MEK)	ND		0.0050	0.0013	mg/L			01/26/18 12:32	1
Benzene	ND		0.0010	0.00041	mg/L			01/26/18 12:32	1
Carbon tetrachloride	ND		0.0010	0.00027	mg/L			01/26/18 12:32	1
Chlorobenzene	ND		0.0010	0.00075	mg/L			01/26/18 12:32	1
Chloroform	ND		0.0010	0.00034	mg/L			01/26/18 12:32	1
Tetrachloroethene	ND		0.0010	0.00036	mg/L			01/26/18 12:32	1
Trichloroethene	ND		0.0010	0.00046	mg/L			01/26/18 12:32	1
Vinyl chloride	ND		0.0010	0.00090	mg/L			01/26/18 12:32	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*96*		*77 - 120*		*01/26/18 12:32*	*1*
4-Bromofluorobenzene (Surr)	*107*		*73 - 120*		*01/26/18 12:32*	*1*
Toluene-d8 (Surr)	*104*		*80 - 120*		*01/26/18 12:32*	*1*

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 480-397428/8
Matrix: Solid
Analysis Batch: 397428

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	*97*		*75 - 123*		*01/26/18 12:32*	*1*

Lab Sample ID: LCS 480-397428/5
Matrix: Solid
Analysis Batch: 397428

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2-Dichloroethane	0.0250	0.0252		mg/L		101	75 - 120
1,1-Dichloroethene	0.0250	0.0268		mg/L		107	66 - 127
2-Butanone (MEK)	0.125	0.131		mg/L		104	57 - 140
Benzene	0.0250	0.0271		mg/L		108	71 - 124
Carbon tetrachloride	0.0250	0.0229		mg/L		92	72 - 134
Chlorobenzene	0.0250	0.0272		mg/L		109	80 - 120
Chloroform	0.0250	0.0259		mg/L		104	73 - 127
Tetrachloroethene	0.0250	0.0290		mg/L		116	74 - 122
Trichloroethene	0.0250	0.0266		mg/L		106	74 - 123
Vinyl chloride	0.0250	0.0252		mg/L		101	65 - 133

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*100*		*77 - 120*
4-Bromofluorobenzene (Surr)	*109*		*73 - 120*
Toluene-d8 (Surr)	*103*		*80 - 120*
Dibromofluoromethane (Surr)	*104*		*75 - 123*

Lab Sample ID: LB 480-397113/1-A
Matrix: Solid
Analysis Batch: 397236

Client Sample ID: Method Blank
Prep Type: TCLP

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane	ND		0.010	0.0021	mg/L			01/25/18 12:35	10
1,1-Dichloroethene	ND		0.010	0.0029	mg/L			01/25/18 12:35	10
2-Butanone (MEK)	ND		0.050	0.013	mg/L			01/25/18 12:35	10
Benzene	ND		0.010	0.0041	mg/L			01/25/18 12:35	10
Carbon tetrachloride	ND		0.010	0.0027	mg/L			01/25/18 12:35	10
Chlorobenzene	ND		0.010	0.0075	mg/L			01/25/18 12:35	10
Chloroform	ND		0.010	0.0034	mg/L			01/25/18 12:35	10
Tetrachloroethene	0.00383	J	0.010	0.0036	mg/L			01/25/18 12:35	10
Trichloroethene	ND		0.010	0.0046	mg/L			01/25/18 12:35	10
Vinyl chloride	ND		0.010	0.0090	mg/L			01/25/18 12:35	10

Surrogate	LB %Recovery	LB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*103*		*77 - 120*		*01/25/18 12:35*	*10*
4-Bromofluorobenzene (Surr)	*103*		*73 - 120*		*01/25/18 12:35*	*10*
Toluene-d8 (Surr)	*104*		*80 - 120*		*01/25/18 12:35*	*10*
Dibromofluoromethane (Surr)	*108*		*75 - 123*		*01/25/18 12:35*	*10*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 480-397187/1-A
Matrix: Solid
Analysis Batch: 397295

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 397187

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		170	25	ug/Kg		01/24/18 16:05	01/25/18 22:22	1
Acenaphthylene	ND		170	22	ug/Kg		01/24/18 16:05	01/25/18 22:22	1
Anthracene	ND		170	42	ug/Kg		01/24/18 16:05	01/25/18 22:22	1
Benzo[a]anthracene	ND		170	17	ug/Kg		01/24/18 16:05	01/25/18 22:22	1
Benzo[a]pyrene	ND		170	25	ug/Kg		01/24/18 16:05	01/25/18 22:22	1
Benzo[b]fluoranthene	ND		170	27	ug/Kg		01/24/18 16:05	01/25/18 22:22	1
Benzo[g,h,i]perylene	ND		170	18	ug/Kg		01/24/18 16:05	01/25/18 22:22	1
Benzo[k]fluoranthene	ND		170	22	ug/Kg		01/24/18 16:05	01/25/18 22:22	1
Chrysene	ND		170	38	ug/Kg		01/24/18 16:05	01/25/18 22:22	1
Dibenz(a,h)anthracene	ND		170	30	ug/Kg		01/24/18 16:05	01/25/18 22:22	1
Fluoranthene	ND		170	18	ug/Kg		01/24/18 16:05	01/25/18 22:22	1
Fluorene	ND		170	20	ug/Kg		01/24/18 16:05	01/25/18 22:22	1
Indeno[1,2,3-cd]pyrene	ND		170	21	ug/Kg		01/24/18 16:05	01/25/18 22:22	1
Naphthalene	ND		170	22	ug/Kg		01/24/18 16:05	01/25/18 22:22	1
Pyrene	ND		170	20	ug/Kg		01/24/18 16:05	01/25/18 22:22	1
Phenanthrene	ND		170	25	ug/Kg		01/24/18 16:05	01/25/18 22:22	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*77*		*54 - 120*	*01/24/18 16:05*	*01/25/18 22:22*	*1*
2-Fluorobiphenyl	*88*		*60 - 120*	*01/24/18 16:05*	*01/25/18 22:22*	*1*
2-Fluorophenol (Surr)	*78*		*52 - 120*	*01/24/18 16:05*	*01/25/18 22:22*	*1*
Phenol-d5 (Surr)	*77*		*54 - 120*	*01/24/18 16:05*	*01/25/18 22:22*	*1*
p-Terphenyl-d14 (Surr)	*106*		*65 - 121*	*01/24/18 16:05*	*01/25/18 22:22*	*1*
Nitrobenzene-d5 (Surr)	*77*		*53 - 120*	*01/24/18 16:05*	*01/25/18 22:22*	*1*

Lab Sample ID: LCS 480-397187/2-A
Matrix: Solid
Analysis Batch: 397295

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 397187

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acenaphthene	1640	1420		ug/Kg		87	62 - 120
Acenaphthylene	1640	1400		ug/Kg		85	58 - 121
Anthracene	1640	1480		ug/Kg		90	62 - 120
Benzo[a]anthracene	1640	1590		ug/Kg		97	65 - 120
Benzo[a]pyrene	1640	1420		ug/Kg		86	64 - 120
Benzo[b]fluoranthene	1640	1510		ug/Kg		92	64 - 120
Benzo[g,h,i]perylene	1640	1470		ug/Kg		90	45 - 145
Benzo[k]fluoranthene	1640	1380		ug/Kg		84	65 - 120
Chrysene	1640	1570		ug/Kg		95	64 - 120
Dibenz(a,h)anthracene	1640	1470		ug/Kg		90	54 - 132
Fluoranthene	1640	1500		ug/Kg		91	62 - 120
Fluorene	1640	1450		ug/Kg		88	63 - 120
Indeno[1,2,3-cd]pyrene	1640	1460		ug/Kg		89	56 - 134
Naphthalene	1640	1350		ug/Kg		82	55 - 120
Pyrene	1640	1600		ug/Kg		98	61 - 133
Phenanthrene	1640	1510		ug/Kg		92	60 - 120

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 480-397187/2-A
Matrix: Solid
Analysis Batch: 397295

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 397187

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol (Surr)	*93*		*54 - 120*
2-Fluorobiphenyl	*85*		*60 - 120*
2-Fluorophenol (Surr)	*75*		*52 - 120*
Phenol-d5 (Surr)	*74*		*54 - 120*
p-Terphenyl-d14 (Surr)	*100*		*65 - 121*
Nitrobenzene-d5 (Surr)	*78*		*53 - 120*

Lab Sample ID: 480-130449-3 MS
Matrix: Solid
Analysis Batch: 397295

Client Sample ID: SB-4 (2-4)
Prep Type: Total/NA
Prep Batch: 397187

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Acenaphthene	ND		1830	1610		ug/Kg	☼	88	60 - 120
Acenaphthylene	ND		1830	1600		ug/Kg	☼	88	58 - 121
Anthracene	ND		1830	1680		ug/Kg	☼	92	62 - 120
Benzo[a]anthracene	ND		1830	1720		ug/Kg	☼	94	65 - 120
Benzo[a]pyrene	ND		1830	1580		ug/Kg	☼	86	64 - 120
Benzo[b]fluoranthene	ND		1830	1600		ug/Kg	☼	87	64 - 120
Benzo[g,h,i]perylene	ND		1830	1710		ug/Kg	☼	94	45 - 145
Benzo[k]fluoranthene	ND		1830	1550		ug/Kg	☼	85	65 - 120
Chrysene	ND		1830	1740		ug/Kg	☼	95	64 - 120
Dibenz(a,h)anthracene	ND		1830	1660		ug/Kg	☼	91	54 - 132
Fluoranthene	ND		1830	1610		ug/Kg	☼	88	62 - 120
Fluorene	ND		1830	1620		ug/Kg	☼	89	63 - 120
Indeno[1,2,3-cd]pyrene	ND		1830	1670		ug/Kg	☼	91	56 - 134
Naphthalene	ND		1830	1470		ug/Kg	☼	81	46 - 120
Pyrene	ND		1830	1730		ug/Kg	☼	95	61 - 133
Phenanthrene	ND		1830	1690		ug/Kg	☼	92	60 - 122

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
2,4,6-Tribromophenol (Surr)	*97*		*54 - 120*
2-Fluorobiphenyl	*89*		*60 - 120*
2-Fluorophenol (Surr)	*75*		*52 - 120*
Phenol-d5 (Surr)	*77*		*54 - 120*
p-Terphenyl-d14 (Surr)	*93*		*65 - 121*
Nitrobenzene-d5 (Surr)	*82*		*53 - 120*

Lab Sample ID: 480-130449-3 MSD
Matrix: Solid
Analysis Batch: 397295

Client Sample ID: SB-4 (2-4)
Prep Type: Total/NA
Prep Batch: 397187

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acenaphthene	ND		1830	1560		ug/Kg	☼	85	60 - 120	3	35
Acenaphthylene	ND		1830	1550		ug/Kg	☼	85	58 - 121	3	18
Anthracene	ND		1830	1680		ug/Kg	☼	92	62 - 120	0	15
Benzo[a]anthracene	ND		1830	1780		ug/Kg	☼	97	65 - 120	3	15
Benzo[a]pyrene	ND		1830	1590		ug/Kg	☼	87	64 - 120	1	15
Benzo[b]fluoranthene	ND		1830	1590		ug/Kg	☼	87	64 - 120	0	15

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 480-130449-3 MSD
Matrix: Solid
Analysis Batch: 397295

Client Sample ID: SB-4 (2-4)
Prep Type: Total/NA
Prep Batch: 397187

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzo[g,h,i]perylene	ND		1830	1750		ug/Kg	☼	96	45 - 145	2	15
Benzo[k]fluoranthene	ND		1830	1570		ug/Kg	☼	86	65 - 120	2	22
Chrysene	ND		1830	1780		ug/Kg	☼	98	64 - 120	2	15
Dibenz(a,h)anthracene	ND		1830	1710		ug/Kg	☼	94	54 - 132	3	15
Fluoranthene	ND		1830	1640		ug/Kg	☼	90	62 - 120	2	15
Fluorene	ND		1830	1620		ug/Kg	☼	89	63 - 120	0	15
Indeno[1,2,3-cd]pyrene	ND		1830	1710		ug/Kg	☼	93	56 - 134	2	15
Naphthalene	ND		1830	1470		ug/Kg	☼	80	46 - 120	0	29
Pyrene	ND		1830	1730		ug/Kg	☼	95	61 - 133	0	35
Phenanthrene	ND		1830	1690		ug/Kg	☼	93	60 - 122	0	15

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
2,4,6-Tribromophenol (Surr)	*90*		*54 - 120*
2-Fluorobiphenyl	*83*		*60 - 120*
2-Fluorophenol (Surr)	*77*		*52 - 120*
Phenol-d5 (Surr)	*77*		*54 - 120*
p-Terphenyl-d14 (Surr)	*95*		*65 - 121*
Nitrobenzene-d5 (Surr)	*80*		*53 - 120*

GC/MS VOA

Leach Batch: 397113

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-130449-4	SB-7 (4-6)	TCLP	Solid	1311	
480-130449-4 - DL	SB-7 (4-6)	TCLP	Solid	1311	
LB 480-397113/1-A	Method Blank	TCLP	Solid	1311	

Prep Batch: 397178

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-130449-1	SB-1 (10-12)	Total/NA	Solid	5035A_H	
480-130449-2	SB-3 (6-8)	Total/NA	Solid	5035A_H	
480-130449-4	SB-7 (4-6)	Total/NA	Solid	5035A_H	
480-130449-5	SB-7 (6-8)	Total/NA	Solid	5035A_H	
480-130449-6	SB-8 (4-6)	Total/NA	Solid	5035A_H	
480-130449-7	SB-11 (2-4)	Total/NA	Solid	5035A_H	
MB 480-397178/2-A	Method Blank	Total/NA	Solid	5035A_H	
LCS 480-397178/1-A	Lab Control Sample	Total/NA	Solid	5035A_H	

Analysis Batch: 397230

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-130449-8	TWW-1	Total/NA	Water	8260C	
MB 480-397230/8	Method Blank	Total/NA	Water	8260C	
LCS 480-397230/5	Lab Control Sample	Total/NA	Water	8260C	

Analysis Batch: 397236

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-130449-4	SB-7 (4-6)	TCLP	Solid	8260C	397113
LB 480-397113/1-A	Method Blank	TCLP	Solid	8260C	397113
MB 480-397236/8	Method Blank	Total/NA	Solid	8260C	
LCS 480-397236/6	Lab Control Sample	Total/NA	Solid	8260C	

Analysis Batch: 397378

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-130449-1	SB-1 (10-12)	Total/NA	Solid	8260C	397178
480-130449-2	SB-3 (6-8)	Total/NA	Solid	8260C	397178
480-130449-4	SB-7 (4-6)	Total/NA	Solid	8260C	397178
480-130449-5	SB-7 (6-8)	Total/NA	Solid	8260C	397178
480-130449-6	SB-8 (4-6)	Total/NA	Solid	8260C	397178
480-130449-7	SB-11 (2-4)	Total/NA	Solid	8260C	397178
MB 480-397178/2-A	Method Blank	Total/NA	Solid	8260C	397178
LCS 480-397178/1-A	Lab Control Sample	Total/NA	Solid	8260C	397178

Analysis Batch: 397428

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-130449-4 - DL	SB-7 (4-6)	TCLP	Solid	8260C	397113
MB 480-397428/8	Method Blank	Total/NA	Solid	8260C	
LCS 480-397428/5	Lab Control Sample	Total/NA	Solid	8260C	

GC/MS Semi VOA

Prep Batch: 397187

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-130449-3	SB-4 (2-4)	Total/NA	Solid	3550C	

GC/MS Semi VOA (Continued)

Prep Batch: 397187 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 480-397187/1-A	Method Blank	Total/NA	Solid	3550C	
LCS 480-397187/2-A	Lab Control Sample	Total/NA	Solid	3550C	
480-130449-3 MS	SB-4 (2-4)	Total/NA	Solid	3550C	
480-130449-3 MSD	SB-4 (2-4)	Total/NA	Solid	3550C	

Analysis Batch: 397295

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-130449-3	SB-4 (2-4)	Total/NA	Solid	8270D	397187
MB 480-397187/1-A	Method Blank	Total/NA	Solid	8270D	397187
LCS 480-397187/2-A	Lab Control Sample	Total/NA	Solid	8270D	397187
480-130449-3 MS	SB-4 (2-4)	Total/NA	Solid	8270D	397187
480-130449-3 MSD	SB-4 (2-4)	Total/NA	Solid	8270D	397187

General Chemistry

Analysis Batch: 397013

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-130449-3	SB-4 (2-4)	Total/NA	Solid	Moisture	

Analysis Batch: 397144

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-130449-1	SB-1 (10-12)	Total/NA	Solid	Moisture	
480-130449-2	SB-3 (6-8)	Total/NA	Solid	Moisture	
480-130449-4	SB-7 (4-6)	Total/NA	Solid	Moisture	
480-130449-5	SB-7 (6-8)	Total/NA	Solid	Moisture	
480-130449-6	SB-8 (4-6)	Total/NA	Solid	Moisture	
480-130449-7	SB-11 (2-4)	Total/NA	Solid	Moisture	

Client Sample ID: SB-1 (10-12) — **Lab Sample ID: 480-130449-1**
Date Collected: 01/22/18 08:45 — **Matrix: Solid**
Date Received: 01/23/18 15:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	397144	01/24/18 13:16	CDC	TAL BUF

Client Sample ID: SB-1 (10-12) — **Lab Sample ID: 480-130449-1**
Date Collected: 01/22/18 08:45 — **Matrix: Solid**
Date Received: 01/23/18 15:15 — **Percent Solids: 84.2**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035A_H			397178	01/24/18 15:46	MXS	TAL BUF
Total/NA	Analysis	8260C		1	397378	01/26/18 00:11	AEM	TAL BUF

Client Sample ID: SB-3 ~~(6-8)~~ — **Lab Sample ID: 480-130449-2**
Date Collected: 01/22/18 09:30 — **Matrix: Solid**
Date Received: 01/23/18 15:15

Note: Actual Sample was taken from 4'-4.5'

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	397144	01/24/18 13:16	CDC	TAL BUF

Client Sample ID: SB-3 (6-8) — **Lab Sample ID: 480-130449-2**
Date Collected: 01/22/18 09:30 — **Matrix: Solid**
Date Received: 01/23/18 15:15 — **Percent Solids: 92.2**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035A_H			397178	01/24/18 15:46	MXS	TAL BUF
Total/NA	Analysis	8260C		4	397378	01/26/18 00:34	AEM	TAL BUF

Client Sample ID: SB-4 (2-4) — **Lab Sample ID: 480-130449-3**
Date Collected: 01/22/18 10:00 — **Matrix: Solid**
Date Received: 01/23/18 15:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	397013	01/24/18 07:02	CSW	TAL BUF

Client Sample ID: SB-4 (2-4) — **Lab Sample ID: 480-130449-3**
Date Collected: 01/22/18 10:00 — **Matrix: Solid**
Date Received: 01/23/18 15:15 — **Percent Solids: 90.6**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550C			397187	01/24/18 16:05	ATG	TAL BUF
Total/NA	Analysis	8270D		1	397295	01/26/18 00:10	PJQ	TAL BUF

Client Sample ID: SB-7 (4-6) — **Lab Sample ID: 480-130449-4**
Date Collected: 01/22/18 11:15 — **Matrix: Solid**
Date Received: 01/23/18 15:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			397113	01/24/18 11:13	NMC	TAL BUF
TCLP	Analysis	8260C		10	397236	01/25/18 13:21	ARS	TAL BUF
TCLP	Leach	1311	DL		397113	01/24/18 11:13	NMC	TAL BUF
TCLP	Analysis	8260C	DL	50	397428	01/26/18 13:34	KMN	TAL BUF
Total/NA	Analysis	Moisture		1	397144	01/24/18 13:16	CDC	TAL BUF

Client Sample ID: SB-7 (4-6) — **Lab Sample ID: 480-130449-4**
Date Collected: 01/22/18 11:15 — **Matrix: Solid**
Date Received: 01/23/18 15:15 — **Percent Solids: 84.9**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035A_H			397178	01/24/18 15:46	MXS	TAL BUF
Total/NA	Analysis	8260C		20	397378	01/26/18 00:57	AEM	TAL BUF

Client Sample ID: SB-7 (6-8) — **Lab Sample ID: 480-130449-5**
Date Collected: 01/22/18 11:15 — **Matrix: Solid**
Date Received: 01/23/18 15:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	397144	01/24/18 13:16	CDC	TAL BUF

Client Sample ID: SB-7 (6-8) — **Lab Sample ID: 480-130449-5**
Date Collected: 01/22/18 11:15 — **Matrix: Solid**
Date Received: 01/23/18 15:15 — **Percent Solids: 92.5**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035A_H			397178	01/24/18 15:46	MXS	TAL BUF
Total/NA	Analysis	8260C		2	397378	01/26/18 01:20	AEM	TAL BUF

Client Sample ID: SB-8 (4-6) — **Lab Sample ID: 480-130449-6**
Date Collected: 01/22/18 11:30 — **Matrix: Solid**
Date Received: 01/23/18 15:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	397144	01/24/18 13:16	CDC	TAL BUF

Client Sample ID: SB-8 (4-6) — **Lab Sample ID: 480-130449-6**
Date Collected: 01/22/18 11:30 — **Matrix: Solid**
Date Received: 01/23/18 15:15 — **Percent Solids: 83.8**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035A_H			397178	01/24/18 15:46	MXS	TAL BUF

Lab Chronicle

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 3077-3097 Union Rd

TestAmerica Job ID: 480-130449-1

Client Sample ID: SB-8 (4-6)

Lab Sample ID: 480-130449-6

Date Collected: 01/22/18 11:30
Matrix: Solid
Date Received: 01/23/18 15:15
Percent Solids: 83.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	397378	01/26/18 01:43	AEM	TAL BUF

Client Sample ID: SB-11 (2-4)

Lab Sample ID: 480-130449-7

Date Collected: 01/22/18 13:15
Matrix: Solid
Date Received: 01/23/18 15:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	397144	01/24/18 13:16	CDC	TAL BUF

Client Sample ID: SB-11 (2-4)

Lab Sample ID: 480-130449-7

Date Collected: 01/22/18 13:15
Matrix: Solid
Date Received: 01/23/18 15:15
Percent Solids: 88.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035A_H			397178	01/24/18 15:46	MXS	TAL BUF
Total/NA	Analysis	8260C		2	397378	01/26/18 02:07	AEM	TAL BUF

Client Sample ID: TWW-1

Lab Sample ID: 480-130449-8

Date Collected: 01/22/18 16:00
Matrix: Water
Date Received: 01/23/18 15:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	397230	01/25/18 11:40	KMN	TAL BUF

Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Accreditation/Certification Summary

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 3077-3097 Union Rd

TestAmerica Job ID: 480-130449-1

Laboratory: TestAmerica Buffalo

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
New York	NELAP	2	10026	03-31-18

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
Moisture		Solid	Percent Moisture
Moisture		Solid	Percent Solids

Method Summary

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 3077-3097 Union Rd

TestAmerica Job ID: 480-130449-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL BUF
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL BUF
Moisture	Percent Moisture	EPA	TAL BUF

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Sample Summary

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 3077-3097 Union Rd

TestAmerica Job ID: 480-130449-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-130449-1	SB-1 (10-12)	Solid	01/22/18 08:45	01/23/18 15:15
480-130449-2	SB-3 (6-8)	Solid	01/22/18 09:30	01/23/18 15:15
480-130449-3	SB-4 (2-4)	Solid	01/22/18 10:00	01/23/18 15:15
480-130449-4	SB-7 (4-6)	Solid	01/22/18 11:15	01/23/18 15:15
480-130449-5	SB-7 (6-8)	Solid	01/22/18 11:15	01/23/18 15:15
480-130449-6	SB-8 (4-6)	Solid	01/22/18 11:30	01/23/18 15:15
480-130449-7	SB-11 (2-4)	Solid	01/22/18 13:15	01/23/18 15:15
480-130449-8	TWW-1	Water	01/22/18 16:00	01/23/18 15:15

Note: Actual Sample for SB-3was taken from 4'-4.5'

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228
Phone: 716.691.2600 Fax: 716.691.7991

Chain of Custody Record

239905

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TestAmerica Laboratories, Inc.
TAL-8210 (0713)

480-130449 COC

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: BRYAN MAYBACK	Site Contact:	Date: 1/23
Company Name: TURNKEY ENVIRONMENTAL REST.	Tel/Fax: 716-856-0599	Lab Contact: BRIAN FISCHER	Carrier:
Address: 2558 HAMBURG TURNPIKE	Analysis Turnaround Time		
City/State/Zip: BUFFALO, NY 14218	☐ CALENDAR DAYS ☐ WORKING DAYS		
Phone: 716 856-0599	TAT if different from Below _____		
Fax:	☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (Std. (see email from Brian Fischer))		
Project Name: 3077-3097 UNION RD			
Site:			
PO # T0105-017-010			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	CP51 + TCL VOCs 8260	CP51 SVOCs 8270	TCLP VOCs
SB-1 (10-12)	1/22	845	G	SOIL	2	N	N	X		
SB-3 ~~(6-8)~~		950			2			X		
SB-4 (2-4)		1000			1				X	
SB-7 (4-6)		1115			2			X		X
SB-7 (6-8)		1115			2			X		
SB-8 (4-6)		1130			2			X		
SB-11 (2-4)		1315			2			X		
TWW-1		1600		AQUA	3			X		

Note: Actual Sample for SB-3 was taken from 4'-4.5'

Sample Specific Notes:

Hold Extra Sample Volume for Potential Additional Analysis

Job / SDG No.: 130449 *17437

Lab Use Only: Walk-in Client: Lab Sampling:

COC No: _____ of _____ COCs

Sampler: CHAD SCHUSTER

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: 0.5 Corr'd: _____ | Therm ID No.: 4

	Company	Date/Time		Company	Date/Time
Relinquished by: Chad M Schuster	TURNKEY	1/22/18 1630	Received by:	TA	01/23/18 1200
Relinquished by:	TA	01/23/18 1515	Received by:		1/23/18 1515
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Login Sample Receipt Checklist

Client: Benchmark Env. Eng. & Science, PLLC

Job Number: 480-130449-1

Login Number: 130449

List Source: TestAmerica Buffalo

List Number: 1

Creator: Kinecki, Kenneth P

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	Turnkey
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	N/A	
Chlorine Residual checked.	N/A	

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

TestAmerica Job ID: 480-130541-1
Client Project/Site: Benchmark - 3077-3097 Union Rd
Revision: 1

For:
Benchmark Env. Eng. & Science, PLLC
2558 Hamburg Turnpike
Lackawanna, New York 14218

Attn: Bryan Mayback

Joseph V. Giacomazza

Authorized for release by:
1/30/2018 12:13:10 PM
Joe Giacomazza, Project Management Assistant II
joe.giacomazza@testamericainc.com

Designee for

Brian Fischer, Manager of Project Management
(716)504-9835
brian.fischer@testamericainc.com

LINKS

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Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
*	LCS or LCSD is outside acceptance limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 480-130541-1

Laboratory: TestAmerica Buffalo

Narrative

Job Narrative
480-130541-1

Revision I
Report was revised to change the sample ID's as per client request.

Receipt
The samples were received on 1/24/2018 3:50 PM; the samples arrived in good condition, properly preserved and, where required, on ice.

GC/MS VOA
Method(s) 8260C: The continuing calibration verification (CCV) associated with batch 480-397236 recovered outside acceptance criteria, low biased, for Chloromethane. A reporting limit (RL) standard was analyzed, and the target analyte was detected. Since the associated samples were non-detect for this analyte, the data have been reported. The following samples are impacted: MW-6 (480-130541-1), MW-7 (480-130541-2), MW-8 (480-130541-3) and MW-10 (480-130541-4).

Method(s) 8260C: The laboratory control sample and/or the laboratory control sample duplicate (LCS/LCSD) for analytical batch 480-397236 recovered outside control limits for the following analyte(s): Dichlorodifluoromethane. This analyte has been identified as a poor performing analyte when analyzed using this method; therefore, re-extraction/re-analysis was not performed. The following samples are impacted: MW-6 (480-130541-1), MW-7 (480-130541-2), MW-8 (480-130541-3) and MW-10 (480-130541-4).

Method(s) 8260C: The following sample was diluted to bring the concentration of target analytes within the calibration range: MW-7 (480-130541-2). Elevated reporting limits (RLs) are provided.

Method(s) 8260C: The following sample(s) were collected in properly preserved vials for analysis of volatile organic compounds (VOCs). However, the pH was outside the required criteria when verified by the laboratory, and corrective action was not possible: MW-6 (480-130541-1) and MW-8 (480-130541-3).
The sample was analyzed within 7 days per EPA recommendation.

Method(s) 8260C: The following sample was diluted to bring the concentration of target analytes within the calibration range: MW-7 (480-130541-2). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 3077-3097 Union Rd

TestAmerica Job ID: 480-130541-1

Client Sample ID: TMW-2 — Lab Sample ID: 480-130541-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	7.3	J	10	3.0	ug/L	1		8260C	Total/NA
Carbon disulfide	0.66	J	1.0	0.19	ug/L	1		8260C	Total/NA
cis-1,2-Dichloroethene	9.8		1.0	0.81	ug/L	1		8260C	Total/NA
Cyclohexane	0.39	J	1.0	0.18	ug/L	1		8260C	Total/NA
Ethylbenzene	4.5		1.0	0.74	ug/L	1		8260C	Total/NA
m,p-Xylene	21		2.0	0.66	ug/L	1		8260C	Total/NA
Methylcyclohexane	0.36	J	1.0	0.16	ug/L	1		8260C	Total/NA
o-Xylene	9.0		1.0	0.76	ug/L	1		8260C	Total/NA
Vinyl chloride	3.6		1.0	0.90	ug/L	1		8260C	Total/NA
Xylenes, Total	30		2.0	0.66	ug/L	1		8260C	Total/NA

Client Sample ID: TMW-3 — Lab Sample ID: 480-130541-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	2200		500	410	ug/L	500		8260C	Total/NA
Methylene Chloride	220	J	500	220	ug/L	500		8260C	Total/NA
Trichloroethene	2600		500	230	ug/L	500		8260C	Total/NA
Tetrachloroethene - DL	51000		1000	360	ug/L	1000		8260C	Total/NA

Client Sample ID: TMW-4 — Lab Sample ID: 480-130541-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	37		1.0	0.81	ug/L	1		8260C	Total/NA
Cyclohexane	0.29	J	1.0	0.18	ug/L	1		8260C	Total/NA
Methylcyclohexane	0.43	J	1.0	0.16	ug/L	1		8260C	Total/NA
Tetrachloroethene	22		1.0	0.36	ug/L	1		8260C	Total/NA
trans-1,2-Dichloroethene	3.0		1.0	0.90	ug/L	1		8260C	Total/NA
Trichloroethene	61		1.0	0.46	ug/L	1		8260C	Total/NA
Vinyl chloride	7.7		1.0	0.90	ug/L	1		8260C	Total/NA

Client Sample ID: TMW-5 — Lab Sample ID: 480-130541-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	3.2	J	10	3.0	ug/L	1		8260C	Total/NA
cis-1,2-Dichloroethene	0.90	J	1.0	0.81	ug/L	1		8260C	Total/NA
Tetrachloroethene	0.66	J	1.0	0.36	ug/L	1		8260C	Total/NA
Trichloroethene	2.3		1.0	0.46	ug/L	1		8260C	Total/NA

This Detection Summary does not include radiochemical test results.

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 3077-3097 Union Rd

TestAmerica Job ID: 480-130541-1

Client Sample ID: TMW-2
Date Collected: 01/23/18 12:50
Date Received: 01/24/18 15:50

Lab Sample ID: 480-130541-1
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			01/25/18 16:10	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			01/25/18 16:10	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.31	ug/L			01/25/18 16:10	1
1,1,2-Trichloroethane	ND		1.0	0.23	ug/L			01/25/18 16:10	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			01/25/18 16:10	1
1,1-Dichloroethene	ND		1.0	0.29	ug/L			01/25/18 16:10	1
1,2,4-Trichlorobenzene	ND		1.0	0.41	ug/L			01/25/18 16:10	1
1,2,4-Trimethylbenzene	ND		1.0	0.75	ug/L			01/25/18 16:10	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			01/25/18 16:10	1
1,2-Dibromoethane	ND		1.0	0.73	ug/L			01/25/18 16:10	1
1,2-Dichlorobenzene	ND		1.0	0.79	ug/L			01/25/18 16:10	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			01/25/18 16:10	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			01/25/18 16:10	1
1,3,5-Trimethylbenzene	ND		1.0	0.77	ug/L			01/25/18 16:10	1
1,3-Dichlorobenzene	ND		1.0	0.78	ug/L			01/25/18 16:10	1
1,4-Dichlorobenzene	ND		1.0	0.84	ug/L			01/25/18 16:10	1
2-Butanone (MEK)	ND		10	1.3	ug/L			01/25/18 16:10	1
2-Hexanone	ND		5.0	1.2	ug/L			01/25/18 16:10	1
4-Isopropyltoluene	ND		1.0	0.31	ug/L			01/25/18 16:10	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			01/25/18 16:10	1
Acetone	**7.3**	**J**	10	3.0	ug/L			01/25/18 16:10	1
Benzene	ND		1.0	0.41	ug/L			01/25/18 16:10	1
Bromodichloromethane	ND		1.0	0.39	ug/L			01/25/18 16:10	1
Bromoform	ND		1.0	0.26	ug/L			01/25/18 16:10	1
Bromomethane	ND		1.0	0.69	ug/L			01/25/18 16:10	1
Carbon disulfide	**0.66**	**J**	1.0	0.19	ug/L			01/25/18 16:10	1
Carbon tetrachloride	ND		1.0	0.27	ug/L			01/25/18 16:10	1
Chlorobenzene	ND		1.0	0.75	ug/L			01/25/18 16:10	1
Chloroethane	ND		1.0	0.32	ug/L			01/25/18 16:10	1
Chloroform	ND		1.0	0.34	ug/L			01/25/18 16:10	1
Chloromethane	ND		1.0	0.35	ug/L			01/25/18 16:10	1
cis-1,2-Dichloroethene	**9.8**		1.0	0.81	ug/L			01/25/18 16:10	1
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			01/25/18 16:10	1
Cyclohexane	**0.39**	**J**	1.0	0.18	ug/L			01/25/18 16:10	1
Dibromochloromethane	ND		1.0	0.32	ug/L			01/25/18 16:10	1
Dichlorodifluoromethane	ND	*	1.0	0.68	ug/L			01/25/18 16:10	1
Ethylbenzene	**4.5**		1.0	0.74	ug/L			01/25/18 16:10	1
Isopropylbenzene	ND		1.0	0.79	ug/L			01/25/18 16:10	1
m,p-Xylene	**21**		2.0	0.66	ug/L			01/25/18 16:10	1
Methyl acetate	ND		2.5	1.3	ug/L			01/25/18 16:10	1
Methyl tert-butyl ether	ND		1.0	0.16	ug/L			01/25/18 16:10	1
Methylcyclohexane	**0.36**	**J**	1.0	0.16	ug/L			01/25/18 16:10	1
Methylene Chloride	ND		1.0	0.44	ug/L			01/25/18 16:10	1
n-Butylbenzene	ND		1.0	0.64	ug/L			01/25/18 16:10	1
N-Propylbenzene	ND		1.0	0.69	ug/L			01/25/18 16:10	1
o-Xylene	**9.0**		1.0	0.76	ug/L			01/25/18 16:10	1
sec-Butylbenzene	ND		1.0	0.75	ug/L			01/25/18 16:10	1
Styrene	ND		1.0	0.73	ug/L			01/25/18 16:10	1
tert-Butylbenzene	ND		1.0	0.81	ug/L			01/25/18 16:10	1

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 3077-3097 Union Rd

TestAmerica Job ID: 480-130541-1

Client Sample ID: TMW-2
Date Collected: 01/23/18 12:50
Date Received: 01/24/18 15:50

Lab Sample ID: 480-130541-1
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	ND		1.0	0.36	ug/L			01/25/18 16:10	1
Toluene	ND		1.0	0.51	ug/L			01/25/18 16:10	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			01/25/18 16:10	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			01/25/18 16:10	1
Trichloroethene	ND		1.0	0.46	ug/L			01/25/18 16:10	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			01/25/18 16:10	1
Vinyl chloride	**3.6**		1.0	0.90	ug/L			01/25/18 16:10	1
Xylenes, Total	**30**		2.0	0.66	ug/L			01/25/18 16:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*77 - 120*		*01/25/18 16:10*	*1*
4-Bromofluorobenzene (Surr)	*101*		*73 - 120*		*01/25/18 16:10*	*1*
Toluene-d8 (Surr)	*99*		*80 - 120*		*01/25/18 16:10*	*1*

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 3077-3097 Union Rd

TestAmerica Job ID: 480-130541-1

Client Sample ID: TMW-3
Date Collected: 01/23/18 13:35
Date Received: 01/24/18 15:50

Lab Sample ID: 480-130541-2
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		500	410	ug/L			01/25/18 16:33	500
1,1,2,2-Tetrachloroethane	ND		500	110	ug/L			01/25/18 16:33	500
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		500	160	ug/L			01/25/18 16:33	500
1,1,2-Trichloroethane	ND		500	120	ug/L			01/25/18 16:33	500
1,1-Dichloroethane	ND		500	190	ug/L			01/25/18 16:33	500
1,1-Dichloroethene	ND		500	150	ug/L			01/25/18 16:33	500
1,2,4-Trichlorobenzene	ND		500	210	ug/L			01/25/18 16:33	500
1,2,4-Trimethylbenzene	ND		500	380	ug/L			01/25/18 16:33	500
1,2-Dibromo-3-Chloropropane	ND		500	200	ug/L			01/25/18 16:33	500
1,2-Dibromoethane	ND		500	370	ug/L			01/25/18 16:33	500
1,2-Dichlorobenzene	ND		500	400	ug/L			01/25/18 16:33	500
1,2-Dichloroethane	ND		500	110	ug/L			01/25/18 16:33	500
1,2-Dichloropropane	ND		500	360	ug/L			01/25/18 16:33	500
1,3,5-Trimethylbenzene	ND		500	390	ug/L			01/25/18 16:33	500
1,3-Dichlorobenzene	ND		500	390	ug/L			01/25/18 16:33	500
1,4-Dichlorobenzene	ND		500	420	ug/L			01/25/18 16:33	500
2-Butanone (MEK)	ND		5000	660	ug/L			01/25/18 16:33	500
2-Hexanone	ND		2500	620	ug/L			01/25/18 16:33	500
4-Isopropyltoluene	ND		500	160	ug/L			01/25/18 16:33	500
4-Methyl-2-pentanone (MIBK)	ND		2500	1100	ug/L			01/25/18 16:33	500
Acetone	ND		5000	1500	ug/L			01/25/18 16:33	500
Benzene	ND		500	210	ug/L			01/25/18 16:33	500
Bromodichloromethane	ND		500	200	ug/L			01/25/18 16:33	500
Bromoform	ND		500	130	ug/L			01/25/18 16:33	500
Bromomethane	ND		500	350	ug/L			01/25/18 16:33	500
Carbon disulfide	ND		500	95	ug/L			01/25/18 16:33	500
Carbon tetrachloride	ND		500	140	ug/L			01/25/18 16:33	500
Chlorobenzene	ND		500	380	ug/L			01/25/18 16:33	500
Chloroethane	ND		500	160	ug/L			01/25/18 16:33	500
Chloroform	ND		500	170	ug/L			01/25/18 16:33	500
Chloromethane	ND		500	180	ug/L			01/25/18 16:33	500
cis-1,2-Dichloroethene	**2200**		500	410	ug/L			01/25/18 16:33	500
cis-1,3-Dichloropropene	ND		500	180	ug/L			01/25/18 16:33	500
Cyclohexane	ND		500	90	ug/L			01/25/18 16:33	500
Dibromochloromethane	ND		500	160	ug/L			01/25/18 16:33	500
Dichlorodifluoromethane	ND	*	500	340	ug/L			01/25/18 16:33	500
Ethylbenzene	ND		500	370	ug/L			01/25/18 16:33	500
Isopropylbenzene	ND		500	400	ug/L			01/25/18 16:33	500
m,p-Xylene	ND		1000	330	ug/L			01/25/18 16:33	500
Methyl acetate	ND		1300	650	ug/L			01/25/18 16:33	500
Methyl tert-butyl ether	ND		500	80	ug/L			01/25/18 16:33	500
Methylcyclohexane	ND		500	80	ug/L			01/25/18 16:33	500
Methylene Chloride	**220**	**J**	500	220	ug/L			01/25/18 16:33	500
n-Butylbenzene	ND		500	320	ug/L			01/25/18 16:33	500
N-Propylbenzene	ND		500	350	ug/L			01/25/18 16:33	500
o-Xylene	ND		500	380	ug/L			01/25/18 16:33	500
sec-Butylbenzene	ND		500	380	ug/L			01/25/18 16:33	500
Styrene	ND		500	370	ug/L			01/25/18 16:33	500
tert-Butylbenzene	ND		500	410	ug/L			01/25/18 16:33	500

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 3077-3097 Union Rd

TestAmerica Job ID: 480-130541-1

Client Sample ID: TMW-3
Date Collected: 01/23/18 13:35
Date Received: 01/24/18 15:50

Lab Sample ID: 480-130541-2
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Toluene	ND		500	260	ug/L			01/25/18 16:33	500
trans-1,2-Dichloroethene	ND		500	450	ug/L			01/25/18 16:33	500
trans-1,3-Dichloropropene	ND		500	190	ug/L			01/25/18 16:33	500
Trichloroethene	**2600**		500	230	ug/L			01/25/18 16:33	500
Trichlorofluoromethane	ND		500	440	ug/L			01/25/18 16:33	500
Vinyl chloride	ND		500	450	ug/L			01/25/18 16:33	500
Xylenes, Total	ND		1000	330	ug/L			01/25/18 16:33	500

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*77 - 120*		*01/25/18 16:33*	*500*
4-Bromofluorobenzene (Surr)	*103*		*73 - 120*		*01/25/18 16:33*	*500*
Toluene-d8 (Surr)	*102*		*80 - 120*		*01/25/18 16:33*	*500*

Method: 8260C - Volatile Organic Compounds by GC/MS - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	**51000**		1000	360	ug/L			01/26/18 02:53	1000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*77 - 120*		*01/26/18 02:53*	*1000*
4-Bromofluorobenzene (Surr)	*103*		*73 - 120*		*01/26/18 02:53*	*1000*
Toluene-d8 (Surr)	*102*		*80 - 120*		*01/26/18 02:53*	*1000*

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 3077-3097 Union Rd

TestAmerica Job ID: 480-130541-1

Client Sample ID: TMW-4
Date Collected: 01/23/18 14:15
Date Received: 01/24/18 15:50

Lab Sample ID: 480-130541-3
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			01/25/18 16:57	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			01/25/18 16:57	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.31	ug/L			01/25/18 16:57	1
1,1,2-Trichloroethane	ND		1.0	0.23	ug/L			01/25/18 16:57	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			01/25/18 16:57	1
1,1-Dichloroethene	ND		1.0	0.29	ug/L			01/25/18 16:57	1
1,2,4-Trichlorobenzene	ND		1.0	0.41	ug/L			01/25/18 16:57	1
1,2,4-Trimethylbenzene	ND		1.0	0.75	ug/L			01/25/18 16:57	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			01/25/18 16:57	1
1,2-Dibromoethane	ND		1.0	0.73	ug/L			01/25/18 16:57	1
1,2-Dichlorobenzene	ND		1.0	0.79	ug/L			01/25/18 16:57	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			01/25/18 16:57	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			01/25/18 16:57	1
1,3,5-Trimethylbenzene	ND		1.0	0.77	ug/L			01/25/18 16:57	1
1,3-Dichlorobenzene	ND		1.0	0.78	ug/L			01/25/18 16:57	1
1,4-Dichlorobenzene	ND		1.0	0.84	ug/L			01/25/18 16:57	1
2-Butanone (MEK)	ND		10	1.3	ug/L			01/25/18 16:57	1
2-Hexanone	ND		5.0	1.2	ug/L			01/25/18 16:57	1
4-Isopropyltoluene	ND		1.0	0.31	ug/L			01/25/18 16:57	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			01/25/18 16:57	1
Acetone	ND		10	3.0	ug/L			01/25/18 16:57	1
Benzene	ND		1.0	0.41	ug/L			01/25/18 16:57	1
Bromodichloromethane	ND		1.0	0.39	ug/L			01/25/18 16:57	1
Bromoform	ND		1.0	0.26	ug/L			01/25/18 16:57	1
Bromomethane	ND		1.0	0.69	ug/L			01/25/18 16:57	1
Carbon disulfide	ND		1.0	0.19	ug/L			01/25/18 16:57	1
Carbon tetrachloride	ND		1.0	0.27	ug/L			01/25/18 16:57	1
Chlorobenzene	ND		1.0	0.75	ug/L			01/25/18 16:57	1
Chloroethane	ND		1.0	0.32	ug/L			01/25/18 16:57	1
Chloroform	ND		1.0	0.34	ug/L			01/25/18 16:57	1
Chloromethane	ND		1.0	0.35	ug/L			01/25/18 16:57	1
cis-1,2-Dichloroethene	**37**		1.0	0.81	ug/L			01/25/18 16:57	1
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			01/25/18 16:57	1
Cyclohexane	**0.29**	**J**	1.0	0.18	ug/L			01/25/18 16:57	1
Dibromochloromethane	ND		1.0	0.32	ug/L			01/25/18 16:57	1
Dichlorodifluoromethane	ND	*	1.0	0.68	ug/L			01/25/18 16:57	1
Ethylbenzene	ND		1.0	0.74	ug/L			01/25/18 16:57	1
Isopropylbenzene	ND		1.0	0.79	ug/L			01/25/18 16:57	1
m,p-Xylene	ND		2.0	0.66	ug/L			01/25/18 16:57	1
Methyl acetate	ND		2.5	1.3	ug/L			01/25/18 16:57	1
Methyl tert-butyl ether	ND		1.0	0.16	ug/L			01/25/18 16:57	1
Methylcyclohexane	**0.43**	**J**	1.0	0.16	ug/L			01/25/18 16:57	1
Methylene Chloride	ND		1.0	0.44	ug/L			01/25/18 16:57	1
n-Butylbenzene	ND		1.0	0.64	ug/L			01/25/18 16:57	1
N-Propylbenzene	ND		1.0	0.69	ug/L			01/25/18 16:57	1
o-Xylene	ND		1.0	0.76	ug/L			01/25/18 16:57	1
sec-Butylbenzene	ND		1.0	0.75	ug/L			01/25/18 16:57	1
Styrene	ND		1.0	0.73	ug/L			01/25/18 16:57	1
tert-Butylbenzene	ND		1.0	0.81	ug/L			01/25/18 16:57	1

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 3077-3097 Union Rd

TestAmerica Job ID: 480-130541-1

Client Sample ID: TMW-4
Date Collected: 01/23/18 14:15
Date Received: 01/24/18 15:50

Lab Sample ID: 480-130541-3
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	**22**		1.0	0.36	ug/L			01/25/18 16:57	1
Toluene	ND		1.0	0.51	ug/L			01/25/18 16:57	1
trans-1,2-Dichloroethene	**3.0**		1.0	0.90	ug/L			01/25/18 16:57	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			01/25/18 16:57	1
Trichloroethene	**61**		1.0	0.46	ug/L			01/25/18 16:57	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			01/25/18 16:57	1
Vinyl chloride	**7.7**		1.0	0.90	ug/L			01/25/18 16:57	1
Xylenes, Total	ND		2.0	0.66	ug/L			01/25/18 16:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*77 - 120*		*01/25/18 16:57*	*1*
4-Bromofluorobenzene (Surr)	*103*		*73 - 120*		*01/25/18 16:57*	*1*
Toluene-d8 (Surr)	*102*		*80 - 120*		*01/25/18 16:57*	*1*

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 3077-3097 Union Rd

TestAmerica Job ID: 480-130541-1

Client Sample ID: TMW-5
Date Collected: 01/23/18 15:15
Date Received: 01/24/18 15:50

Lab Sample ID: 480-130541-4
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			01/25/18 17:20	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			01/25/18 17:20	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.31	ug/L			01/25/18 17:20	1
1,1,2-Trichloroethane	ND		1.0	0.23	ug/L			01/25/18 17:20	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			01/25/18 17:20	1
1,1-Dichloroethene	ND		1.0	0.29	ug/L			01/25/18 17:20	1
1,2,4-Trichlorobenzene	ND		1.0	0.41	ug/L			01/25/18 17:20	1
1,2,4-Trimethylbenzene	ND		1.0	0.75	ug/L			01/25/18 17:20	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			01/25/18 17:20	1
1,2-Dibromoethane	ND		1.0	0.73	ug/L			01/25/18 17:20	1
1,2-Dichlorobenzene	ND		1.0	0.79	ug/L			01/25/18 17:20	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			01/25/18 17:20	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			01/25/18 17:20	1
1,3,5-Trimethylbenzene	ND		1.0	0.77	ug/L			01/25/18 17:20	1
1,3-Dichlorobenzene	ND		1.0	0.78	ug/L			01/25/18 17:20	1
1,4-Dichlorobenzene	ND		1.0	0.84	ug/L			01/25/18 17:20	1
2-Butanone (MEK)	ND		10	1.3	ug/L			01/25/18 17:20	1
2-Hexanone	ND		5.0	1.2	ug/L			01/25/18 17:20	1
4-Isopropyltoluene	ND		1.0	0.31	ug/L			01/25/18 17:20	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			01/25/18 17:20	1
Acetone	**3.2**	**J**	10	3.0	ug/L			01/25/18 17:20	1
Benzene	ND		1.0	0.41	ug/L			01/25/18 17:20	1
Bromodichloromethane	ND		1.0	0.39	ug/L			01/25/18 17:20	1
Bromoform	ND		1.0	0.26	ug/L			01/25/18 17:20	1
Bromomethane	ND		1.0	0.69	ug/L			01/25/18 17:20	1
Carbon disulfide	ND		1.0	0.19	ug/L			01/25/18 17:20	1
Carbon tetrachloride	ND		1.0	0.27	ug/L			01/25/18 17:20	1
Chlorobenzene	ND		1.0	0.75	ug/L			01/25/18 17:20	1
Chloroethane	ND		1.0	0.32	ug/L			01/25/18 17:20	1
Chloroform	ND		1.0	0.34	ug/L			01/25/18 17:20	1
Chloromethane	ND		1.0	0.35	ug/L			01/25/18 17:20	1
cis-1,2-Dichloroethene	**0.90**	**J**	1.0	0.81	ug/L			01/25/18 17:20	1
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			01/25/18 17:20	1
Cyclohexane	ND		1.0	0.18	ug/L			01/25/18 17:20	1
Dibromochloromethane	ND		1.0	0.32	ug/L			01/25/18 17:20	1
Dichlorodifluoromethane	ND	*	1.0	0.68	ug/L			01/25/18 17:20	1
Ethylbenzene	ND		1.0	0.74	ug/L			01/25/18 17:20	1
Isopropylbenzene	ND		1.0	0.79	ug/L			01/25/18 17:20	1
m,p-Xylene	ND		2.0	0.66	ug/L			01/25/18 17:20	1
Methyl acetate	ND		2.5	1.3	ug/L			01/25/18 17:20	1
Methyl tert-butyl ether	ND		1.0	0.16	ug/L			01/25/18 17:20	1
Methylcyclohexane	ND		1.0	0.16	ug/L			01/25/18 17:20	1
Methylene Chloride	ND		1.0	0.44	ug/L			01/25/18 17:20	1
n-Butylbenzene	ND		1.0	0.64	ug/L			01/25/18 17:20	1
N-Propylbenzene	ND		1.0	0.69	ug/L			01/25/18 17:20	1
o-Xylene	ND		1.0	0.76	ug/L			01/25/18 17:20	1
sec-Butylbenzene	ND		1.0	0.75	ug/L			01/25/18 17:20	1
Styrene	ND		1.0	0.73	ug/L			01/25/18 17:20	1
tert-Butylbenzene	ND		1.0	0.81	ug/L			01/25/18 17:20	1

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 3077-3097 Union Rd

TestAmerica Job ID: 480-130541-1

Client Sample ID: TMW-5
Date Collected: 01/23/18 15:15
Date Received: 01/24/18 15:50

Lab Sample ID: 480-130541-4
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	**0.66**	**J**	1.0	0.36	ug/L			01/25/18 17:20	1
Toluene	ND		1.0	0.51	ug/L			01/25/18 17:20	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			01/25/18 17:20	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			01/25/18 17:20	1
Trichloroethene	**2.3**		1.0	0.46	ug/L			01/25/18 17:20	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			01/25/18 17:20	1
Vinyl chloride	ND		1.0	0.90	ug/L			01/25/18 17:20	1
Xylenes, Total	ND		2.0	0.66	ug/L			01/25/18 17:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*77 - 120*		*01/25/18 17:20*	*1*
4-Bromofluorobenzene (Surr)	*106*		*73 - 120*		*01/25/18 17:20*	*1*
Toluene-d8 (Surr)	*103*		*80 - 120*		*01/25/18 17:20*	*1*

Surrogate Summary

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 3077-3097 Union Rd

TestAmerica Job ID: 480-130541-1

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
		DCA	BFB	TOL
Lab Sample ID	Client Sample ID	(77-120)	(73-120)	(80-120)
480-130541-1	TMW-2	98	101	99
480-130541-2	TMW-3	95	103	102
480-130541-2 - DL	TMW-3	97	103	102
480-130541-3	TMW-4	100	103	102
480-130541-4	TMW-5	92	106	103
LCS 480-397236/6	Lab Control Sample	96	111	103
LCS 480-397378/4	Lab Control Sample	94	106	104
MB 480-397236/8	Method Blank	94	105	102
MB 480-397378/6	Method Blank	98	104	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 480-397236/8
Matrix: Water
Analysis Batch: 397236

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			01/25/18 11:30	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			01/25/18 11:30	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.31	ug/L			01/25/18 11:30	1
1,1,2-Trichloroethane	ND		1.0	0.23	ug/L			01/25/18 11:30	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			01/25/18 11:30	1
1,1-Dichloroethene	ND		1.0	0.29	ug/L			01/25/18 11:30	1
1,2,4-Trichlorobenzene	ND		1.0	0.41	ug/L			01/25/18 11:30	1
1,2,4-Trimethylbenzene	ND		1.0	0.75	ug/L			01/25/18 11:30	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			01/25/18 11:30	1
1,2-Dibromoethane	ND		1.0	0.73	ug/L			01/25/18 11:30	1
1,2-Dichlorobenzene	ND		1.0	0.79	ug/L			01/25/18 11:30	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			01/25/18 11:30	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			01/25/18 11:30	1
1,3,5-Trimethylbenzene	ND		1.0	0.77	ug/L			01/25/18 11:30	1
1,3-Dichlorobenzene	ND		1.0	0.78	ug/L			01/25/18 11:30	1
1,4-Dichlorobenzene	ND		1.0	0.84	ug/L			01/25/18 11:30	1
2-Butanone (MEK)	ND		10	1.3	ug/L			01/25/18 11:30	1
2-Hexanone	ND		5.0	1.2	ug/L			01/25/18 11:30	1
4-Isopropyltoluene	ND		1.0	0.31	ug/L			01/25/18 11:30	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			01/25/18 11:30	1
Acetone	ND		10	3.0	ug/L			01/25/18 11:30	1
Benzene	ND		1.0	0.41	ug/L			01/25/18 11:30	1
Bromodichloromethane	ND		1.0	0.39	ug/L			01/25/18 11:30	1
Bromoform	ND		1.0	0.26	ug/L			01/25/18 11:30	1
Bromomethane	ND		1.0	0.69	ug/L			01/25/18 11:30	1
Carbon disulfide	ND		1.0	0.19	ug/L			01/25/18 11:30	1
Carbon tetrachloride	ND		1.0	0.27	ug/L			01/25/18 11:30	1
Chlorobenzene	ND		1.0	0.75	ug/L			01/25/18 11:30	1
Chloroethane	ND		1.0	0.32	ug/L			01/25/18 11:30	1
Chloroform	ND		1.0	0.34	ug/L			01/25/18 11:30	1
Chloromethane	ND		1.0	0.35	ug/L			01/25/18 11:30	1
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			01/25/18 11:30	1
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			01/25/18 11:30	1
Cyclohexane	ND		1.0	0.18	ug/L			01/25/18 11:30	1
Dibromochloromethane	ND		1.0	0.32	ug/L			01/25/18 11:30	1
Dichlorodifluoromethane	ND		1.0	0.68	ug/L			01/25/18 11:30	1
Ethylbenzene	ND		1.0	0.74	ug/L			01/25/18 11:30	1
Isopropylbenzene	ND		1.0	0.79	ug/L			01/25/18 11:30	1
m,p-Xylene	ND		2.0	0.66	ug/L			01/25/18 11:30	1
Methyl acetate	ND		2.5	1.3	ug/L			01/25/18 11:30	1
Methyl tert-butyl ether	ND		1.0	0.16	ug/L			01/25/18 11:30	1
Methylcyclohexane	ND		1.0	0.16	ug/L			01/25/18 11:30	1
Methylene Chloride	ND		1.0	0.44	ug/L			01/25/18 11:30	1
n-Butylbenzene	ND		1.0	0.64	ug/L			01/25/18 11:30	1
N-Propylbenzene	ND		1.0	0.69	ug/L			01/25/18 11:30	1
o-Xylene	ND		1.0	0.76	ug/L			01/25/18 11:30	1
sec-Butylbenzene	ND		1.0	0.75	ug/L			01/25/18 11:30	1
Styrene	ND		1.0	0.73	ug/L			01/25/18 11:30	1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 480-397236/8
Matrix: Water
Analysis Batch: 397236

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
tert-Butylbenzene	ND		1.0	0.81	ug/L			01/25/18 11:30	1
Tetrachloroethene	ND		1.0	0.36	ug/L			01/25/18 11:30	1
Toluene	ND		1.0	0.51	ug/L			01/25/18 11:30	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			01/25/18 11:30	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			01/25/18 11:30	1
Trichloroethene	ND		1.0	0.46	ug/L			01/25/18 11:30	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			01/25/18 11:30	1
Vinyl chloride	ND		1.0	0.90	ug/L			01/25/18 11:30	1
Xylenes, Total	ND		2.0	0.66	ug/L			01/25/18 11:30	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*77 - 120*		*01/25/18 11:30*	*1*
4-Bromofluorobenzene (Surr)	*105*		*73 - 120*		*01/25/18 11:30*	*1*
Toluene-d8 (Surr)	*102*		*80 - 120*		*01/25/18 11:30*	*1*

Lab Sample ID: LCS 480-397236/6
Matrix: Water
Analysis Batch: 397236

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	25.0	25.4		ug/L		102	73 - 126
1,1,2,2-Tetrachloroethane	25.0	22.6		ug/L		90	76 - 120
1,1,2-Trichloro-1,2,2-trifluoroethane	25.0	24.6		ug/L		99	61 - 148
1,1,2-Trichloroethane	25.0	25.7		ug/L		103	76 - 122
1,1-Dichloroethane	25.0	27.3		ug/L		109	77 - 120
1,1-Dichloroethene	25.0	27.9		ug/L		111	66 - 127
1,2,4-Trichlorobenzene	25.0	25.6		ug/L		103	79 - 122
1,2,4-Trimethylbenzene	25.0	24.2		ug/L		97	76 - 121
1,2-Dibromo-3-Chloropropane	25.0	14.8		ug/L		59	56 - 134
1,2-Dibromoethane	25.0	25.9		ug/L		104	77 - 120
1,2-Dichlorobenzene	25.0	25.8		ug/L		103	80 - 124
1,2-Dichloroethane	25.0	25.6		ug/L		102	75 - 120
1,2-Dichloropropane	25.0	26.5		ug/L		106	76 - 120
1,3,5-Trimethylbenzene	25.0	24.0		ug/L		96	77 - 121
1,3-Dichlorobenzene	25.0	25.6		ug/L		102	77 - 120
1,4-Dichlorobenzene	25.0	25.6		ug/L		103	80 - 120
2-Butanone (MEK)	125	130		ug/L		104	57 - 140
2-Hexanone	125	120		ug/L		96	65 - 127
4-Isopropyltoluene	25.0	25.0		ug/L		100	73 - 120
4-Methyl-2-pentanone (MIBK)	125	122		ug/L		98	71 - 125
Acetone	125	124		ug/L		99	56 - 142
Benzene	25.0	27.4		ug/L		110	71 - 124
Bromodichloromethane	25.0	24.8		ug/L		99	80 - 122
Bromoform	25.0	21.0		ug/L		84	61 - 132
Bromomethane	25.0	23.5		ug/L		94	55 - 144
Carbon disulfide	25.0	26.4		ug/L		105	59 - 134
Carbon tetrachloride	25.0	22.5		ug/L		90	72 - 134

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 480-397236/6
Matrix: Water
Analysis Batch: 397236

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chlorobenzene	25.0	27.8		ug/L		111	80 - 120
Chloroethane	25.0	24.7		ug/L		99	69 - 136
Chloroform	25.0	26.8		ug/L		107	73 - 127
Chloromethane	25.0	18.5		ug/L		74	68 - 124
cis-1,2-Dichloroethene	25.0	28.3		ug/L		113	74 - 124
cis-1,3-Dichloropropene	25.0	26.2		ug/L		105	74 - 124
Cyclohexane	25.0	26.5		ug/L		106	59 - 135
Dibromochloromethane	25.0	23.0		ug/L		92	75 - 125
Dichlorodifluoromethane	25.0	14.1	*	ug/L		56	59 - 135
Ethylbenzene	25.0	26.9		ug/L		108	77 - 123
Isopropylbenzene	25.0	24.1		ug/L		96	77 - 122
m,p-Xylene	25.0	26.9		ug/L		108	76 - 122
Methyl acetate	50.0	53.8		ug/L		108	74 - 133
Methyl tert-butyl ether	25.0	25.5		ug/L		102	77 - 120
Methylcyclohexane	25.0	27.1		ug/L		109	68 - 134
Methylene Chloride	25.0	26.1		ug/L		105	75 - 124
n-Butylbenzene	25.0	24.0		ug/L		96	71 - 128
N-Propylbenzene	25.0	24.2		ug/L		97	75 - 127
o-Xylene	25.0	28.2		ug/L		113	76 - 122
sec-Butylbenzene	25.0	24.7		ug/L		99	74 - 127
Styrene	25.0	27.0		ug/L		108	80 - 120
tert-Butylbenzene	25.0	25.0		ug/L		100	75 - 123
Tetrachloroethene	25.0	29.6		ug/L		118	74 - 122
Toluene	25.0	26.7		ug/L		107	80 - 122
trans-1,2-Dichloroethene	25.0	27.4		ug/L		110	73 - 127
trans-1,3-Dichloropropene	25.0	24.4		ug/L		97	80 - 120
Trichloroethene	25.0	27.3		ug/L		109	74 - 123
Trichlorofluoromethane	25.0	26.4		ug/L		106	62 - 150
Vinyl chloride	25.0	21.4		ug/L		86	65 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*77 - 120*
4-Bromofluorobenzene (Surr)	*111*		*73 - 120*
Toluene-d8 (Surr)	*103*		*80 - 120*

Lab Sample ID: MB 480-397378/6
Matrix: Water
Analysis Batch: 397378

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			01/25/18 21:06	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			01/25/18 21:06	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.31	ug/L			01/25/18 21:06	1
1,1,2-Trichloroethane	ND		1.0	0.23	ug/L			01/25/18 21:06	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			01/25/18 21:06	1
1,1-Dichloroethene	ND		1.0	0.29	ug/L			01/25/18 21:06	1
1,2,4-Trichlorobenzene	ND		1.0	0.41	ug/L			01/25/18 21:06	1
1,2,4-Trimethylbenzene	ND		1.0	0.75	ug/L			01/25/18 21:06	1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 480-397378/6
Matrix: Water
Analysis Batch: 397378

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			01/25/18 21:06	1
1,2-Dibromoethane	ND		1.0	0.73	ug/L			01/25/18 21:06	1
1,2-Dichlorobenzene	ND		1.0	0.79	ug/L			01/25/18 21:06	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			01/25/18 21:06	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			01/25/18 21:06	1
1,3,5-Trimethylbenzene	ND		1.0	0.77	ug/L			01/25/18 21:06	1
1,3-Dichlorobenzene	ND		1.0	0.78	ug/L			01/25/18 21:06	1
1,4-Dichlorobenzene	ND		1.0	0.84	ug/L			01/25/18 21:06	1
2-Butanone (MEK)	ND		10	1.3	ug/L			01/25/18 21:06	1
2-Hexanone	ND		5.0	1.2	ug/L			01/25/18 21:06	1
4-Isopropyltoluene	ND		1.0	0.31	ug/L			01/25/18 21:06	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			01/25/18 21:06	1
Acetone	ND		10	3.0	ug/L			01/25/18 21:06	1
Benzene	ND		1.0	0.41	ug/L			01/25/18 21:06	1
Bromodichloromethane	ND		1.0	0.39	ug/L			01/25/18 21:06	1
Bromoform	ND		1.0	0.26	ug/L			01/25/18 21:06	1
Bromomethane	ND		1.0	0.69	ug/L			01/25/18 21:06	1
Carbon disulfide	ND		1.0	0.19	ug/L			01/25/18 21:06	1
Carbon tetrachloride	ND		1.0	0.27	ug/L			01/25/18 21:06	1
Chlorobenzene	ND		1.0	0.75	ug/L			01/25/18 21:06	1
Chloroethane	ND		1.0	0.32	ug/L			01/25/18 21:06	1
Chloroform	ND		1.0	0.34	ug/L			01/25/18 21:06	1
Chloromethane	ND		1.0	0.35	ug/L			01/25/18 21:06	1
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			01/25/18 21:06	1
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			01/25/18 21:06	1
Cyclohexane	ND		1.0	0.18	ug/L			01/25/18 21:06	1
Dibromochloromethane	ND		1.0	0.32	ug/L			01/25/18 21:06	1
Dichlorodifluoromethane	ND		1.0	0.68	ug/L			01/25/18 21:06	1
Ethylbenzene	ND		1.0	0.74	ug/L			01/25/18 21:06	1
Isopropylbenzene	ND		1.0	0.79	ug/L			01/25/18 21:06	1
m,p-Xylene	ND		2.0	0.66	ug/L			01/25/18 21:06	1
Methyl acetate	ND		2.5	1.3	ug/L			01/25/18 21:06	1
Methyl tert-butyl ether	ND		1.0	0.16	ug/L			01/25/18 21:06	1
Methylcyclohexane	ND		1.0	0.16	ug/L			01/25/18 21:06	1
Methylene Chloride	0.496	J	1.0	0.44	ug/L			01/25/18 21:06	1
n-Butylbenzene	ND		1.0	0.64	ug/L			01/25/18 21:06	1
N-Propylbenzene	ND		1.0	0.69	ug/L			01/25/18 21:06	1
o-Xylene	ND		1.0	0.76	ug/L			01/25/18 21:06	1
sec-Butylbenzene	ND		1.0	0.75	ug/L			01/25/18 21:06	1
Styrene	ND		1.0	0.73	ug/L			01/25/18 21:06	1
tert-Butylbenzene	ND		1.0	0.81	ug/L			01/25/18 21:06	1
Tetrachloroethene	ND		1.0	0.36	ug/L			01/25/18 21:06	1
Toluene	ND		1.0	0.51	ug/L			01/25/18 21:06	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			01/25/18 21:06	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			01/25/18 21:06	1
Trichloroethene	ND		1.0	0.46	ug/L			01/25/18 21:06	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			01/25/18 21:06	1
Vinyl chloride	ND		1.0	0.90	ug/L			01/25/18 21:06	1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 480-397378/6
Matrix: Water
Analysis Batch: 397378

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Xylenes, Total	ND		2.0	0.66	ug/L			01/25/18 21:06	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*77 - 120*		*01/25/18 21:06*	*1*
4-Bromofluorobenzene (Surr)	*104*		*73 - 120*		*01/25/18 21:06*	*1*
Toluene-d8 (Surr)	*102*		*80 - 120*		*01/25/18 21:06*	*1*

Lab Sample ID: LCS 480-397378/4
Matrix: Water
Analysis Batch: 397378

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	25.0	23.0		ug/L		92	73 - 126
1,1,2,2-Tetrachloroethane	25.0	23.2		ug/L		93	76 - 120
1,1,2-Trichloro-1,2,2-trifluoroethane	25.0	26.2		ug/L		105	61 - 148
1,1,2-Trichloroethane	25.0	26.6		ug/L		106	76 - 122
1,1-Dichloroethane	25.0	24.9		ug/L		100	77 - 120
1,1-Dichloroethene	25.0	25.7		ug/L		103	66 - 127
1,2,4-Trichlorobenzene	25.0	25.9		ug/L		103	79 - 122
1,2,4-Trimethylbenzene	25.0	23.6		ug/L		94	76 - 121
1,2-Dibromo-3-Chloropropane	25.0	17.5		ug/L		70	56 - 134
1,2-Dibromoethane	25.0	26.7		ug/L		107	77 - 120
1,2-Dichlorobenzene	25.0	25.4		ug/L		102	80 - 124
1,2-Dichloroethane	25.0	25.0		ug/L		100	75 - 120
1,2-Dichloropropane	25.0	25.3		ug/L		101	76 - 120
1,3,5-Trimethylbenzene	25.0	23.3		ug/L		93	77 - 121
1,3-Dichlorobenzene	25.0	25.1		ug/L		100	77 - 120
1,4-Dichlorobenzene	25.0	24.8		ug/L		99	80 - 120
2-Butanone (MEK)	125	134		ug/L		107	57 - 140
2-Hexanone	125	123		ug/L		98	65 - 127
4-Isopropyltoluene	25.0	24.3		ug/L		97	73 - 120
4-Methyl-2-pentanone (MIBK)	125	127		ug/L		102	71 - 125
Acetone	125	124		ug/L		99	56 - 142
Benzene	25.0	25.8		ug/L		103	71 - 124
Bromodichloromethane	25.0	22.9		ug/L		92	80 - 122
Bromoform	25.0	22.7		ug/L		91	61 - 132
Bromomethane	25.0	26.6		ug/L		106	55 - 144
Carbon disulfide	25.0	22.7		ug/L		91	59 - 134
Carbon tetrachloride	25.0	20.9		ug/L		84	72 - 134
Chlorobenzene	25.0	26.5		ug/L		106	80 - 120
Chloroethane	25.0	26.7		ug/L		107	69 - 136
Chloroform	25.0	25.2		ug/L		101	73 - 127
Chloromethane	25.0	24.1		ug/L		97	68 - 124
cis-1,2-Dichloroethene	25.0	26.4		ug/L		106	74 - 124
cis-1,3-Dichloropropene	25.0	24.5		ug/L		98	74 - 124
Cyclohexane	25.0	22.9		ug/L		92	59 - 135
Dibromochloromethane	25.0	23.5		ug/L		94	75 - 125

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 480-397378/4
Matrix: Water
Analysis Batch: 397378

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Dichlorodifluoromethane	25.0	24.4		ug/L		98	59 - 135
Ethylbenzene	25.0	25.3		ug/L		101	77 - 123
Isopropylbenzene	25.0	22.9		ug/L		92	77 - 122
m,p-Xylene	25.0	25.9		ug/L		103	76 - 122
Methyl acetate	50.0	49.5		ug/L		99	74 - 133
Methyl tert-butyl ether	25.0	25.5		ug/L		102	77 - 120
Methylcyclohexane	25.0	25.6		ug/L		102	68 - 134
Methylene Chloride	25.0	25.5		ug/L		102	75 - 124
n-Butylbenzene	25.0	23.1		ug/L		92	71 - 128
N-Propylbenzene	25.0	23.0		ug/L		92	75 - 127
o-Xylene	25.0	26.2		ug/L		105	76 - 122
sec-Butylbenzene	25.0	23.4		ug/L		94	74 - 127
Styrene	25.0	26.1		ug/L		105	80 - 120
tert-Butylbenzene	25.0	23.4		ug/L		94	75 - 123
Tetrachloroethene	25.0	27.8		ug/L		111	74 - 122
Toluene	25.0	25.8		ug/L		103	80 - 122
trans-1,2-Dichloroethene	25.0	25.8		ug/L		103	73 - 127
trans-1,3-Dichloropropene	25.0	24.4		ug/L		98	80 - 120
Trichloroethene	25.0	24.6		ug/L		98	74 - 123
Trichlorofluoromethane	25.0	27.4		ug/L		109	62 - 150
Vinyl chloride	25.0	25.9		ug/L		104	65 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*77 - 120*
4-Bromofluorobenzene (Surr)	*106*		*73 - 120*
Toluene-d8 (Surr)	*104*		*80 - 120*

QC Association Summary

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 3077-3097 Union Rd

TestAmerica Job ID: 480-130541-1

GC/MS VOA

Analysis Batch: 397236

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-130541-1	TMW-2	Total/NA	Water	8260C	
480-130541-2	TMW-3	Total/NA	Water	8260C	
480-130541-3	TMW-4	Total/NA	Water	8260C	
480-130541-4	TMW-5	Total/NA	Water	8260C	
MB 480-397236/8	Method Blank	Total/NA	Water	8260C	
LCS 480-397236/6	Lab Control Sample	Total/NA	Water	8260C	

Analysis Batch: 397378

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-130541-2 - DL	TMW-3	Total/NA	Water	8260C	
MB 480-397378/6	Method Blank	Total/NA	Water	8260C	
LCS 480-397378/4	Lab Control Sample	Total/NA	Water	8260C	

Lab Chronicle

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 3077-3097 Union Rd

TestAmerica Job ID: 480-130541-1

Client Sample ID: TMW-2
Date Collected: 01/23/18 12:50
Date Received: 01/24/18 15:50

Lab Sample ID: 480-130541-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	397236	01/25/18 16:10	ARS	TAL BUF

Client Sample ID: TMW-3
Date Collected: 01/23/18 13:35
Date Received: 01/24/18 15:50

Lab Sample ID: 480-130541-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		500	397236	01/25/18 16:33	ARS	TAL BUF
Total/NA	Analysis	8260C	DL	1000	397378	01/26/18 02:53	AEM	TAL BUF

Client Sample ID: TMW-4
Date Collected: 01/23/18 14:15
Date Received: 01/24/18 15:50

Lab Sample ID: 480-130541-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	397236	01/25/18 16:57	ARS	TAL BUF

Client Sample ID: TMW-5
Date Collected: 01/23/18 15:15
Date Received: 01/24/18 15:50

Lab Sample ID: 480-130541-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	397236	01/25/18 17:20	ARS	TAL BUF

Laboratory References:
TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Accreditation/Certification Summary

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 3077-3097 Union Rd

TestAmerica Job ID: 480-130541-1

Laboratory: TestAmerica Buffalo

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
New York	NELAP	2	10026	03-31-18

Method Summary

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 3077-3097 Union Rd

TestAmerica Job ID: 480-130541-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL BUF

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Sample Summary

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 3077-3097 Union Rd

TestAmerica Job ID: 480-130541-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-130541-1	TMW-2	Water	01/23/18 12:50	01/24/18 15:50
480-130541-2	TMW-3	Water	01/23/18 13:35	01/24/18 15:50
480-130541-3	TMW-4	Water	01/23/18 14:15	01/24/18 15:50
480-130541-4	TMW-5	Water	01/23/18 15:15	01/24/18 15:50

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228
Phone: 716.691.2600 Fax: 716.691.7991

Chain of Custody Record

182421

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.

TAL-5210 (0713)

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: B. May back	Site Contact:	Date: 1/23/18	COC No:
Company Name: Turkey Environmental	Tel/Fax: 716-884-1699	Lab Contact: Brian Fischer	Carrier:	of COCs
Address: 3556 Harlem Turkey Suite 360	Analysis Turnaround Time			Sampler:
City/State/Zip: Buffalo, NY 14218	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: 716-856-0599	TAT if different from Below			Walk-in Client:
Fax: 716-856-0583	☐ 2 weeks Std. See			Lab Sampling:
Project Name: 3077-3097 Union Road Phase II	☐ 1 week Email to			Job / SDG No.:
Site:	☐ 2 days Brian Fischer			
PO# Tonawanda-010	☐ 1 day			

480-130541 COC

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	TCL + CP51 VOCs	Sample Specific Notes:
TMW-2	1-23-18	1250	G	W	3	N	N	X	
TMW-3	1-23-18	1335	G	W	3	N	N	X	
TMW-4	1-23-18	1415	G	W	3	N	N	X	
TMW-5	1-23-18	1515	G	W	3	N	N	X	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other:

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments: send to BMayback@benchmarkturkey.com

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ | Therm ID No.:

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Hunter Wakefield	BMTC	1-23-18/1600		TAL	1-24-18 1130
	TAL	1-24-18 1150		TA BUF	1/24/18 1550
	Company	Date/Time	Received in Laboratory by:	Company	Date/Time

BLUE ICE 14.5 #1

TestAmerica Buffalo

10 Hazelwood Drive

Amherst, NY 14228

Phone: 716.691.2600 Fax: 716.691.7991

Chain of Custody Record 182421

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

TAL-8210 (0713)

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: Bryan Mayback	Site Contact:	Date: 1/23/18	COC No:
Company Name: Turnkey Environmental	Tel/Fax: 716-844-1699	Lab Contact: Brian Fischer	Carrier:	____ of ____ COCs
Address: 2558 Hamburg Turnpike, Suite 300	Analysis Turnaround Time			Sampler:
City/State/Zip: Buffalo, New York, 14218	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: 716-856-0599	TAT if different from Below ____			Walk-in Client:
Fax: 716-856-0583	☐ 2 weeks Std. See			Lab Sampling:
Project Name: 3077-3097 Union Road Phase II	☐ 1 week Email TO			
Site:	☐ 2 days Brian Fischer			Job / SDG No.:
PO # To105-017-010	☐ 1 day			

480-130541 COC

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	TCL + CP51 VOCs	Sample Specific Notes:
MW-6	1-23-18	1250	G	W	3	N	N	X	
MW-7	1-23-18	1335	G	W	3	N	N	X	
MW-8	1-23-18	1415	G	W	3	N	N	X	
MW-10	1-23-18	1515	G	W	3	N	N	X	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other ____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for ____ Months

Special Instructions/QC Requirements & Comments: Send to BMayback@benchmarkturnkey.com

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: ____ Corr'd: ____ | Therm ID No.: ____

	Company	Date/Time		Company	Date/Time
Relinquished by: Chester Mackrestor	BMTK	1-23-18/1600	Received by:	TAL	1-24-18 1130
Relinquished by:	TAL	1-24-18 1550	Received by:	TA Buf	1/24/18 1550
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

BLUE ICE 14.5 #1

Login Sample Receipt Checklist

Client: Benchmark Env. Eng. & Science, PLLC

Job Number: 480-130541-1

Login Number: 130541

List Source: TestAmerica Buffalo

List Number: 1

Creator: Williams, Christopher S

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	TURNKEY
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	N/A	
Chlorine Residual checked.	N/A	

Supplemental Phase II Environmental Investigation Report

3077 UNION ROAD
ORCHARD PARK, NEW YORK

January 2019 T0105-017-010

Prepared For:

BENDERSON DEVELOPMENT



Prepared By:

TurnKey Environmental Restoration, LLC

2558 Hamburg Turnpike, Suite 300, Buffalo, New York | phone: (716) 856-0635 | fax: (716) 856-0583

SUPPLEMENTAL PHASE II ENVIRONMENTAL INVESTIGATION REPORT

3077 Union Road
Orchard Park, New York

January 2019 0105-017-010

Prepared for:

Benderson Development Company, LLC
570 Delaware Avenue
Buffalo, New York, 14202

Prepared by:

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, New York 14218

PHASE II ENVIRONMENTAL INVESTIGATION REPORT

3077 Union Road
Orchard Park, New York

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PHASE II ENVIRONMENTAL INVESTIGATION REPORT

3077 Union Road
Orchard Park, New York

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1.0 INTRODUCTION

1.1 Background and Site Description

TurnKey Environmental Restoration, LLC (TurnKey) performed a Supplemental Phase II Environmental Investigation on behalf of Benderson Development Company, LLC at 3077 Union Road in the Town of Orchard Park, Erie County, New York (Site).

The Site is located in a moderately developed residential and commercial area (see Figure 1). 3077 Union Road is comprised of one parcel totaling 17.9 acres. The parcel is supplied with and has access to municipal sanitary sewer, public water, natural-gas and electric. As further detailed below, an existing building on the western portion of the parcel historically included a dry cleaner. Soil and overburden groundwater impacts were identified on-Site by TurnKey as part of a previous Phase II Environmental Investigation.

The purpose of the supplemental Phase II work was to further delineate chlorinated volatile organic compound (cVOC) impacts identified proximate to the western-most existing building during TurnKey's previous Phase II Environmental Investigation, including investigation of bedrock groundwater.

1.2 Previous Studies

TurnKey completed a Phase I Environmental Site Assessment of a greater property that included the 3077 Union Road Parcel in September 2017.

A dry cleaner and septic system were identified on a 1967 property survey map that was reviewed by TurnKey in the Town of Orchard Park municipal records. The dry cleaner was formerly located within a portion of a vacant strip plaza building on the western portion of 3077 Union Road. In addition, historic operations included automotive repair and equipment repair/maintenance.

Due to the history of dry cleaning with use of a private septic system, automotive repair and the equipment repair/maintenance, TurnKey completed a Phase II Environmental Investigation.

The initial Phase II Investigation consisted of 16 soil borings (SB-1 through SB-16) with five piezometers (PZ-1 through PZ-5) installed. Laboratory analytical results indicated cVOC-impacted soil and groundwater east of the former dry cleaner. Specifically, tetrachloroethene (PCE) and its degradation compounds trichloroethene (TCE) and cis-1,2-

dichloroethene (cis-1,2-DCE) exceeded Part 375 Unrestricted Soil Cleanup Objectives (USCOs), Residential SCOs (RSCOs) and/or Protection of Groundwater SCOs in soil samples collected from four soil borings (SB-3, SB-7, SB-8 and SB-11). PCE and/or its degradation compounds TCE, cis-1,2 DCE and vinyl chloride (VC) exceeded GWQS in overburden groundwater at piezometers PZ-2, PZ-3 and PZ-4.

2.0 SITE INVESTIGATION ACTIVITIES

2.1 Drilling and Monitoring Well Installation Activities

Between December 19, 2018 and December 21, 2018, TurnKey's subcontractor, Earth Dimensions, Inc., mobilized an auger rig (Dierich D120) to the Site. Continuous split spoon soil sampling was completed in overburden soil at four locations (MW-1, MW-1D, MW-2D and MW-4D) until bedrock equipment refusal was encountered in competent bedrock at depths ranging between 6.5 feet below ground surface (fbgs) and 12.5 fbgs were reached. Upon bedrock refusal, MW-1 located at the northwest corner of the existing building (down-gradient direction), was converted into an overburden groundwater monitoring well constructed of 2-inch I.D. flush-joint Schedule 40 PVC solid riser and machine slotted screen (0.010-inch slot size). Overburden well MW-1 was finished with a lockable J-plug and a flush-mount road box.

Upon refusal on competent bedrock at sample locations MW-1D, MW-2D and MW-4D, the augers were sealed with hydrated bentonite chips at the overburden/bedrock interface and a temporary casing was installed and sealed with bentonite at top of rock. Rock coring and rock retrieval activities were completed using a NQ-2 core barrel until total depths between 19 fbgs and 23 fbgs were reached. Upon reaching the target depth, bedrock monitoring wells constructed of 2-inch I.D. flush-joint Schedule 40 PVC solid riser and machine slotted screen (0.010-inch slot size) were installed with the screened section located in bedrock beneath the weathered bedrock unit. Silica sand filter pack (size #0) was installed from the base of the well to approximately two feet above the top of the screen. A bentonite chip seal was then installed in the remaining annulus to mitigate the potential for downhole grout contamination. The newly installed bedrock monitoring wells were completed with flush-mount road boxes, and lockable J-plugs with keyed-alike locks.

Bedrock well locations (MW-1D, MW-2D and MW-4D) were chosen to assess bedrock groundwater conditions within and down-gradient of the suspected cVOC source area. Overburden monitoring well (MW-1) was installed to assess overburden groundwater down-gradient of the source area. Investigation locations (current and historic) are shown on Figure 2.

The sample cores from overburden and bedrock drilling were retrieved from each investigation location to allow for field characterization of the subsurface lithology and

collection of soil samples by TurnKey's Environmental Scientist. All field observations, including lithology, depths, photoionization detector (PID) scan results, etc., at each investigation location are summarized in the Soil Boring Log with Well Completion Details provided in Appendix A. Photographs taken during the work are included in Appendix B.

2.2 Monitoring Well Development and Groundwater Sampling Activities

The four newly installed monitoring wells were developed to remove the fines from the filter pack and well casing using dedicated disposable polyethylene bailers for surging and a non-dedicated submersible pump for purging in accordance with New York State Department of Environmental Conservation (NYSDEC) and Benchmark-TurnKey Field Operating Procedures (FOPs) prior to sampling. Field parameters including pH, oxidation-reduction potential (ORP), dissolved oxygen (DO), temperature, turbidity, and specific conductance were measured periodically (i.e., every well volume or as necessary) during development. Field measurements continued until they became stable. Stability was defined as variation between measurements of approximately 10 percent or less with no overall upward or downward trend in the measurements. Each well was developed until it went dry or 10 well volumes were removed.

After approx. 24 hours following development, groundwater samples were collected from the newly installed monitoring wells using a peristaltic pump with dedicated tubing and/or a dedicated bailer subsequent to purging a minimum of three well volumes from each well. In addition, groundwater samples were collected from each existing piezometer (PZ-2 through PZ-5) subsequent to purging a minimum of three well volumes from each well. Note that PZ-1 was removed during the initial investigation. Eight groundwater samples were placed in pre-cleaned laboratory provided sample bottles, cooled to 4 °C in the field, and transported under chain-of-custody to Alpha for analysis of Target Compound List (TCL) plus Commissioner Policy-51 (CP-51) VOCs. Groundwater field forms are included in Appendix C.

3.0 INVESTIGATION FINDINGS

3.1 Site Geology/Hydrogeology

The overburden geology observed during the soil boring investigation is generally described as mixtures of sand, silt, clay and/or gravel overlying bedrock (see Soil Boring Logs in Appendix A).

Overburden groundwater levels measured in piezometers prior to sampling ranged from near surface at 0.10 feet below top of riser (fbTOR) to 2.69 fbTOR. Overburden groundwater elevations were measured from each monitoring well using survey equipment to assess the groundwater flow direction at the Site. As shown on Figure 3, overburden groundwater level measurements relative to USGS vertical datum suggest a northwesterly groundwater flow direction, which is consistent with topography in the area of the Site.

Bedrock, encountered between 6.5 fbgs and 12.5 fbgs during the supplemental drilling activities, consisted of one to two feet of weathered shale atop fractured Windom Shale bedrock (see Soil Boring Logs in Appendix A). A bedrock contour map indicating a bedrock dip in a northwesterly direction is provided as Figure 4.

Bedrock groundwater levels measured in bedrock wells prior to sampling ranged between 4.25 fbTOR and 7.1 fbTOR. As shown on Figure 5, bedrock groundwater level measurements relative to USGS vertical datum suggest a northwesterly groundwater flow direction.

3.2 Field Observations

Overburden soil samples from the supplemental soil boring investigation were observed and scanned via headspace screening for volatile organics using a PID. No PID readings in overburden soil exceeded background (0.0 parts per million, ppm) except for PID readings between 3 fbgs and 5 fbgs at MW-4D, the highest of which was 17 ppm at five fbgs. No visual or olfactory concerns were identified during overburden drilling.

Regarding bedrock groundwater, a sulfur-like odor and a slight sheen were noted on groundwater during sampling of MW-2D and MW-4D. No visual or olfactory concerns were identified during overburden groundwater sampling activities.

3.3 Groundwater Analytical Results

Overburden (current and historic) and bedrock groundwater sample results are summarized on Table 1 with comparison to Class GA Groundwater Quality Standards (GWQS) per NYSDEC Technical and Operational Guidance Series (T.O.G.S 1.1.1). A copy of the complete laboratory analytical data package is included in Appendix D.

As summarized on Table 1, cVOC concentrations in overburden groundwater at piezometers PZ-2 through PZ-5 have fluctuated since the historic sampling event in January 2018; however, when compared to the current January 2019 sampling event, the concentrations generally exceed their respective GWQS at the same level of magnitude (total cVOCs ranged between 13.4 ug/L to 56,020 ug/L in January 2018 and between 6.23 ug/L to 38,100 ug/L in January 2019 with the highest concentrations of note at PZ-3). VOCs were not detected in the newly installed overburden monitoring well MW-1, except for acetone detected at a concentration significantly below its GWQS.

VOCs were not detected or were detected at concentrations below GWQS, in bedrock groundwater at wells MW-1D, MW-2D and MW-4D except for vinyl chloride at MW-2D, which was detected at a concentration of 4.7 micrograms per liter (ug/L), which slightly exceeds its GWQS of 2 ug/L.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the historic and supplemental Phase II Investigations at the Site, TurnKey offers the following conclusions and recommendations:

- The Site is currently unoccupied and includes a vacant commercial structure that formerly included a dry cleaner in at least 1967.
- TurnKey's initial Phase II completed at the Site in January 2018 identified cVOC-impacts in overburden soil as high as 122 mg/kg and overburden groundwater as high as 56,020 ug/L east of the former dry cleaner. Overburden total cVOC concentrations were as high as 38,100 ug/L during the supplemental overburden groundwater sampling activities in January 2019.
- Based on the results of supplemental Phase II activities, VOCs in bedrock groundwater were not detected or were at concentrations significantly below GWQS except for a vinyl chloride concentration of 4.7 ug/L at MW-2D, which slightly exceeds its GWQS of 2 ug/L.
- In conclusion, cVOC-impacted soil and overburden groundwater is present on-Site, which will require remediation.
- Based on the findings, the Site is a good candidate for the New York Brownfield Cleanup Program (BCP).

5.0 LIMITATIONS

This report has been prepared for the exclusive use of Benderson Development Company, LLC. The contents of this report are limited to information available at the time of the Site investigation activities and to data referenced herein, and assume all referenced historic information sources to be true and accurate. The findings herein may be relied upon only at the discretion of Benderson Development Company, LLC. Use of or reliance on this report or its findings by any other person or entity is prohibited without written permission of TurnKey Environmental Restoration, LLC.

TABLE

TABLE 1

SUMMARY OF OVERBURDEN AND BEDROCK GROUNDWATER ANALYTICAL RESULTS
SUPPLEMENTAL PHASE II ENVIRONMENTAL INVESTIGATION
3077 UNION ROAD
ORCHARD PARK, NY

PARAMETER[1]	GWQS[2]	Sample ID												
		PZ-1 (removed)	MW-1	PZ-2	PZ-2	PZ-3 - DL	PZ-3 - DL	PZ-4	PZ-4	PZ-5	PZ-5	MW-1D	MW-2D	MW-4D
		1/22/2018	12/26/2018	1/23/2018	1/2/2019	1/23/2018	1/2/2019	1/23/2018	1/2/2019	1/23/2018	1/2/2019	12/26/2018	12/26/2018	12/26/2018
		Overburden Wells										Bedrock Wells		
Volatile Organic Compounds (VOCs) - ug/L														
1,1-Dichloroethene	**0.33**	ND	ND	ND	ND	ND	ND	ND	**2.9**	ND	ND	ND	ND	ND
2-Butanone (MEK)	--	ND	ND	ND	7.9	ND	ND	ND	ND	ND	6.7	ND	ND	ND
Acetone	**50**	5	9.6	7.3	49	ND	ND	ND	ND	3.2	**54**	1.9 J	ND	ND
Carbon disulfide	**--**	0.46	ND	0.66	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	**5**	ND	ND	**9.8**	1.3 J	**2200**	**2100**	**37**	**600**	0.9	1.5 J	ND	ND	0.7 J
Cyclohexane	**--**	0.18	ND	0.39	ND	ND	ND	0.29	ND	ND	ND	1.9 J	ND	1.4 J
Ethylbenzene	**5**	ND	ND	4.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylcyclohexane	**--**	ND	ND	0.36	ND	ND	ND	0.43	ND	ND	ND	2.7 J	ND	ND
Methylene chloride	**5**	ND	ND	ND	ND	**220**	ND	ND	ND	ND	ND	ND	0.65 J	2.4 J
Tetrachloroethene	**5**	ND	ND	ND	4.5	**51000**	**34000**	**22**	**95**	0.66	**14**	ND	ND	0.47 J
trans-1,2-Dichloroethene	**5**	ND	ND	ND	ND	ND	ND	3	**31**	ND	ND	ND	ND	ND
Trichloroethene	**5**	ND	ND	ND	ND	**2600**	**2000**	**61**	**380**	2.3	4.2	ND	ND	0.46 J
Vinyl chloride	**2**	ND	ND	**3.6**	0.43 J	ND	ND	**7.7**	**160**	ND	ND	ND	**4.7**	1.6
Total Xylenes	**5**	ND	ND	**30**	ND	ND	ND	ND	ND	ND	ND	0.86 J	ND	ND
Total VOCs	**--**	5.64	ND	56.61	ND	56020	ND	131.42	ND	7.06	ND	ND	ND	ND
Total cVOCs	**--**	0	0	13.4	6.23	56020	38100	130.7	1268.9	3.86	19.7	0	5.35	5.63

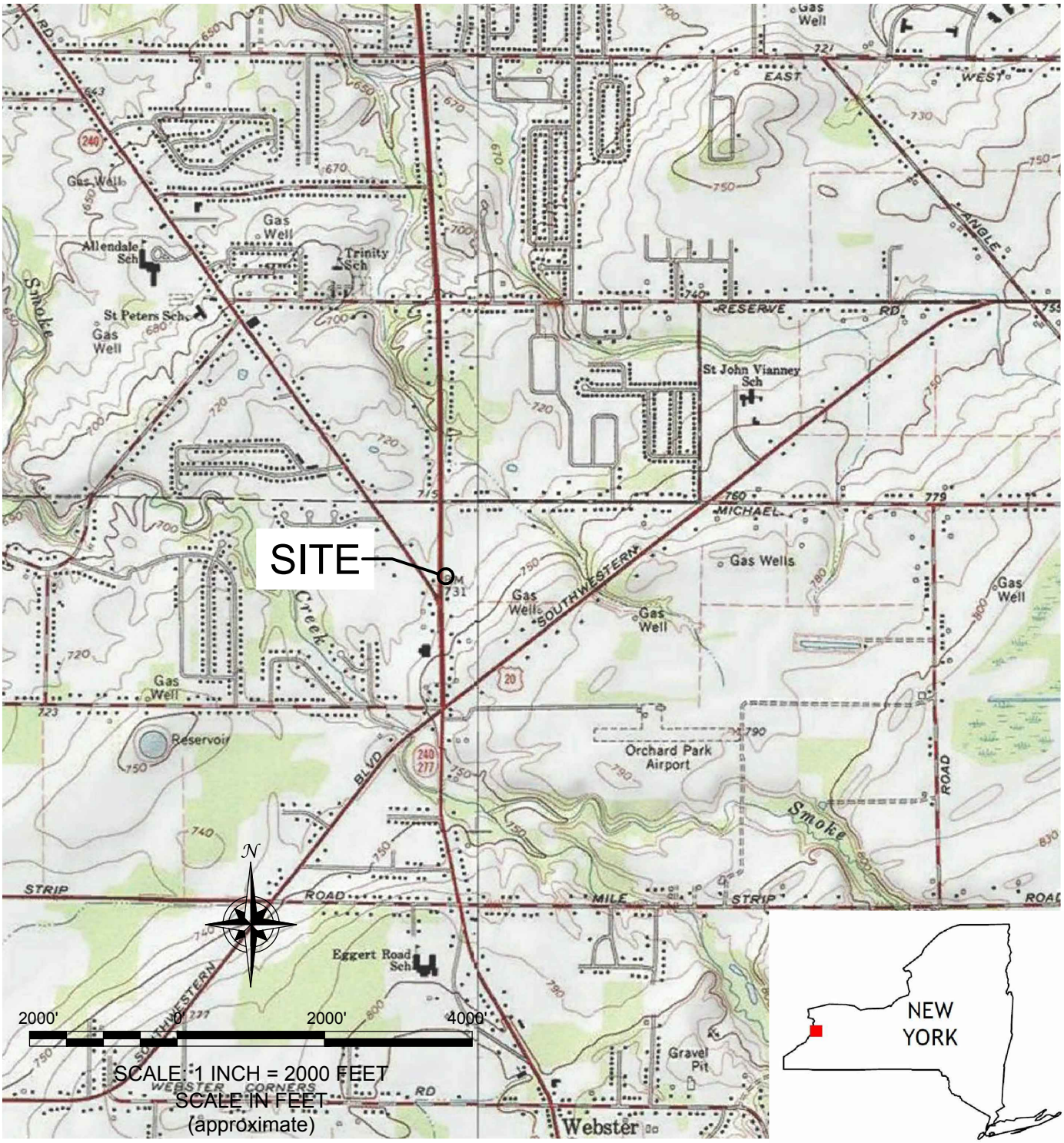
Notes:
1. Only those parameters detected at a minimum of one sample location are presented in this table; other compounds were reported as non-detect.
2. Regulatory limits are NYSDEC Class "GA" Groundwater Quality Standards (GWQS) and Guidance Values and Groundwater Effluent Limitations.

Definitions:
ND = Parameter not detected above laboratory detection limit.
"--" = No value available for the parameter; Parameter not analyzed for.
J = Estimated value; result is less than the sample quantitation limit but greater than zero.
DL = Indicates a dilution, re-analysis, re-extraction, or additional initial metals/anion analysis of the sample.
Bold = Result exceeds NYSDEC Groundwater Quality Standards.

FIGURES

F:\CAD\TurnKey\Benderson\3077 Union Road and Associated Parcels\Phase II\Figure 1 - Site Location and Vicinity Map.dwg

FIGURE 1



TurnKey Environmental Restoration, LLC

2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635

PROJECT NO.: T0105-017-010

DATE: JANUARY 2018

DRAFTED BY: CMS

SITE LOCATION AND VICINITY MAP

PHASE II ENVIRONMENTAL INVESTIGATION

3077-3097 UNION ROAD

ORCHARD PARK, NEW YORK

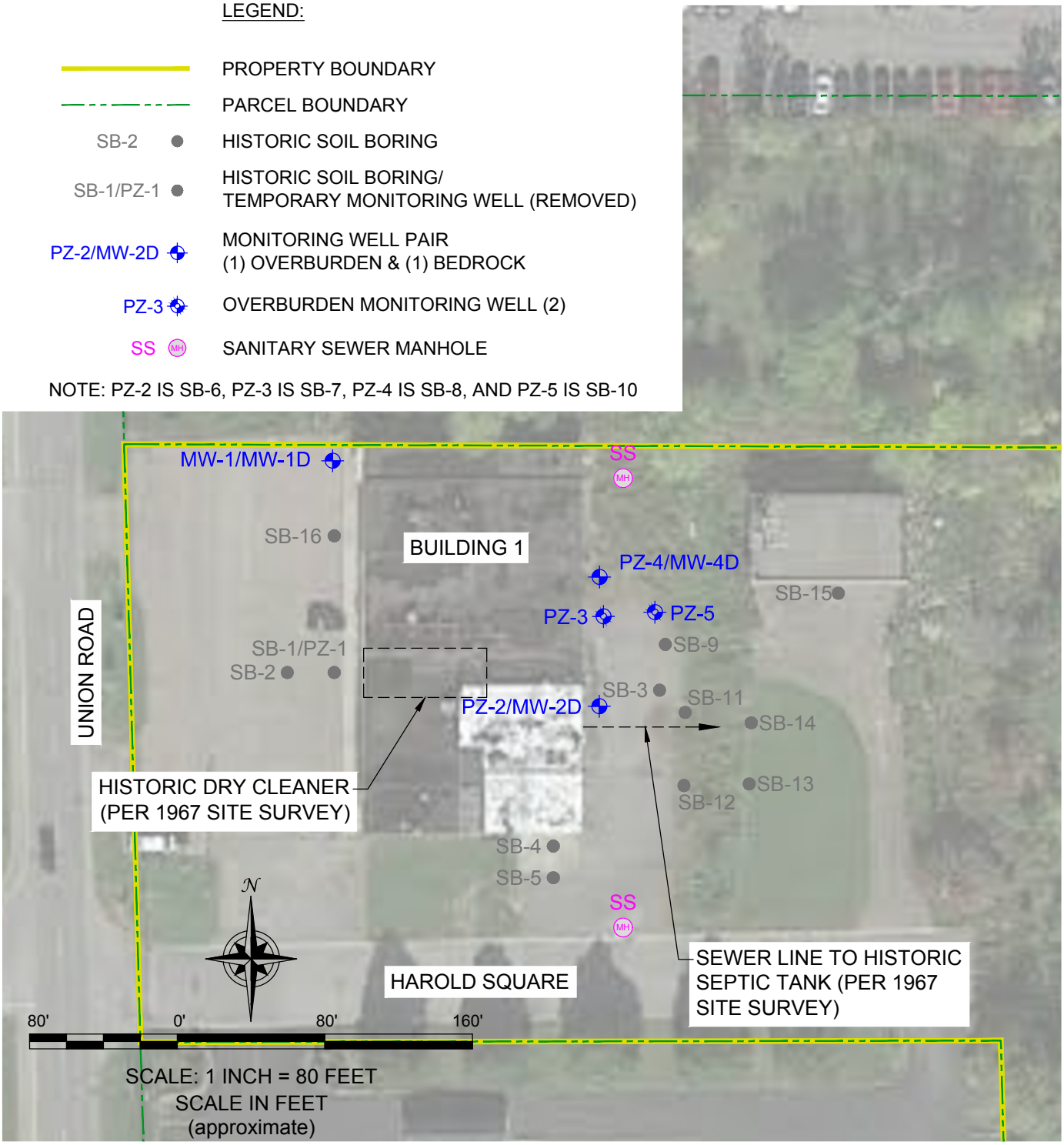
PREPARED FOR

BENDERSON DEVELOPMENT COMPANY

DISCLAIMER:
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F:\CAD\TurnKey\Benderson\3077 Union Road and Associated Parcels\Phase II\Figure 2 - Investigation Locations_rev.dwg

FIGURE 2



TURNKEY ENVIRONMENTAL RESTORATION, LLC

2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635

PROJECT NO.: T0105-017-010

DATE: JANUARY 2019

DRAFTED BY: CMC

INVESTIGATION LOCATIONS

PHASE II ENVIRONMENTAL INVESTIGATION

3077 UNION ROAD

ORCHARD PARK, NEW YORK

PREPARED FOR

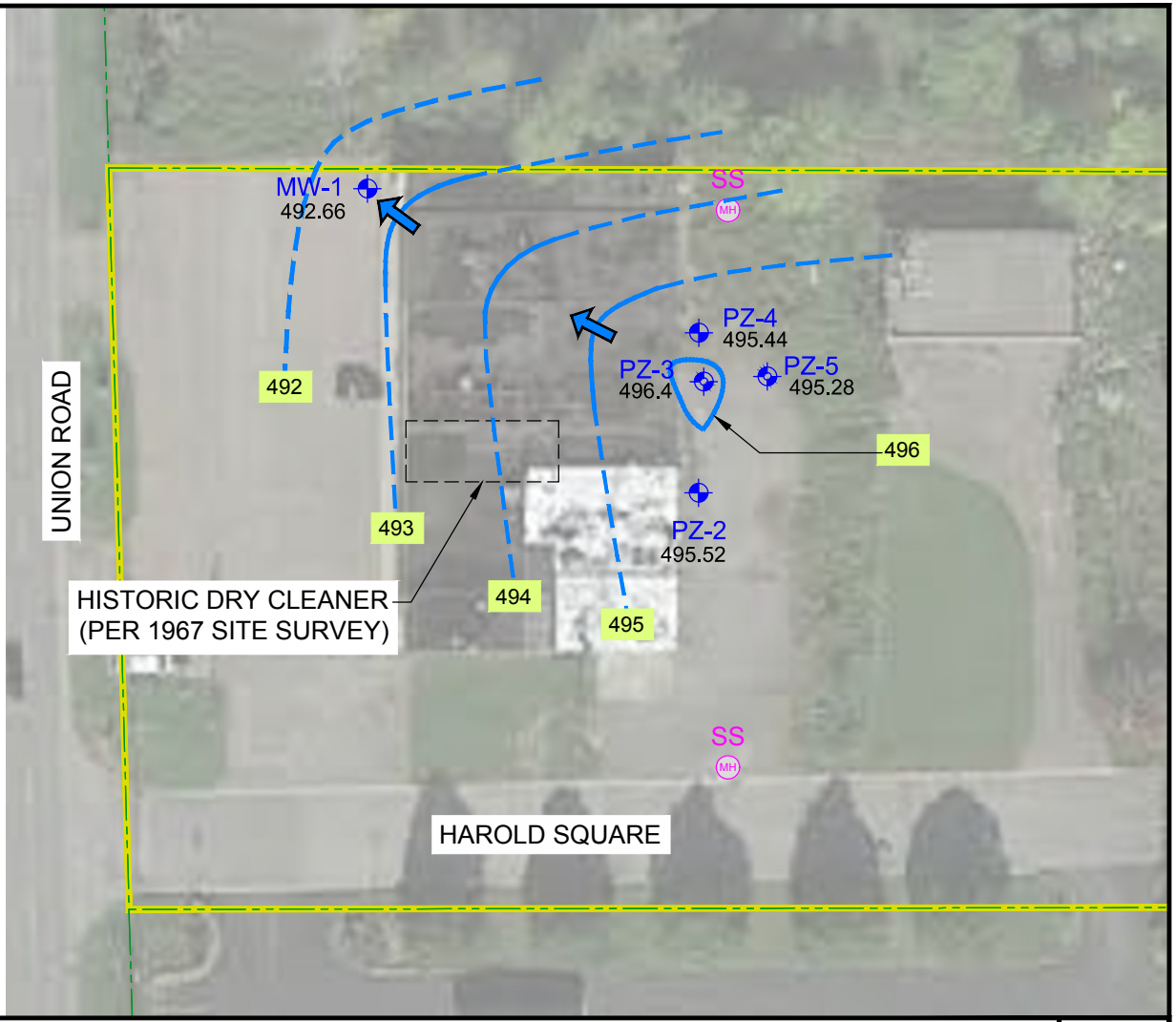
BENDERSON DEVELOPMENT COMPANY

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F:\CAD\TurnKey\Benderson\3077 Union Road and Associated Parcels\Phase II\Figure 3 - Overburden GW Isopotential Map.dwg

LEGEND:

- PROPERTY BOUNDARY
- PARCEL BOUNDARY
- MW-1 492.66 — MONITORING WELL
- PZ-3 496.4 — OVERBURDEN MONITORING WELL (2)
- SS — SANITARY SEWER MANHOLE
- 484 — GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
- GROUNDWATER FLOW DIRECTION



N

60' 0' 60' 120'

SCALE: 1 INCH = 60 FEET
SCALE IN FEET
(approximate)

TURNKEY ENVIRONMENTAL RESTORATION, LLC

2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635

PROJECT NO.: T0105-017-010

DATE: JANUARY 2019

DRAFTED BY: CMC

OVERBURDEN GROUNDWATER ISOPOTENTIAL MAP

PHASE II ENVIRONMENTAL INVESTIGATION

3077 UNION ROAD

ORCHARD PARK, NEW YORK

PREPARED FOR

BENDERSON DEVELOPMENT COMPANY

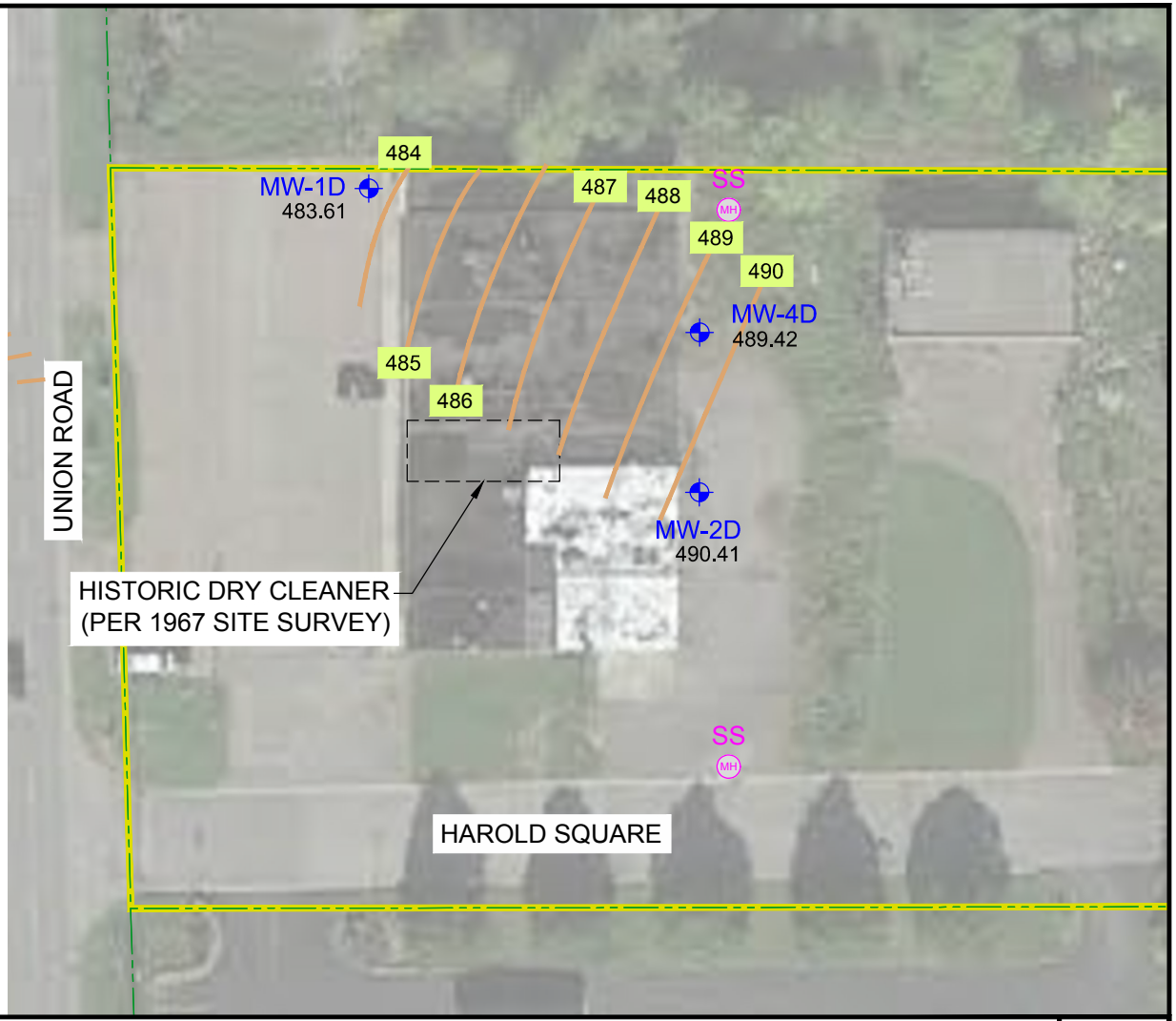
FIGURE 3

DISCLAIMER:
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F:\CAD\TurnKey\Benderson\3077 Union Road and Associated Parcels\Phase II\Figure 4 - Bedrock Contour Map.dwg

LEGEND:

- PROPERTY BOUNDARY
- PARCEL BOUNDARY
- SS (MH) SANITARY SEWER MANHOLE
- MW-2 487.2 BEDROCK WELL WITH BEDROCK ELEVATION
- 484 BEDROCK ELEVATION CONTOUR FROM AUGERED BORING/WELL LOCATIONS



N

60' 0' 60' 120'

SCALE: 1 INCH = 60 FEET
SCALE IN FEET
(approximate)

TURNKEY ENVIRONMENTAL RESTORATION, LLC

2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635

PROJECT NO.: T0105-017-010

DATE: JANUARY 2019

DRAFTED BY: CMC

BEDROCK CONTOUR MAP

PHASE II ENVIRONMENTAL INVESTIGATION

3077 UNION ROAD

ORCHARD PARK, NEW YORK

PREPARED FOR

BENDERSON DEVELOPMENT COMPANY

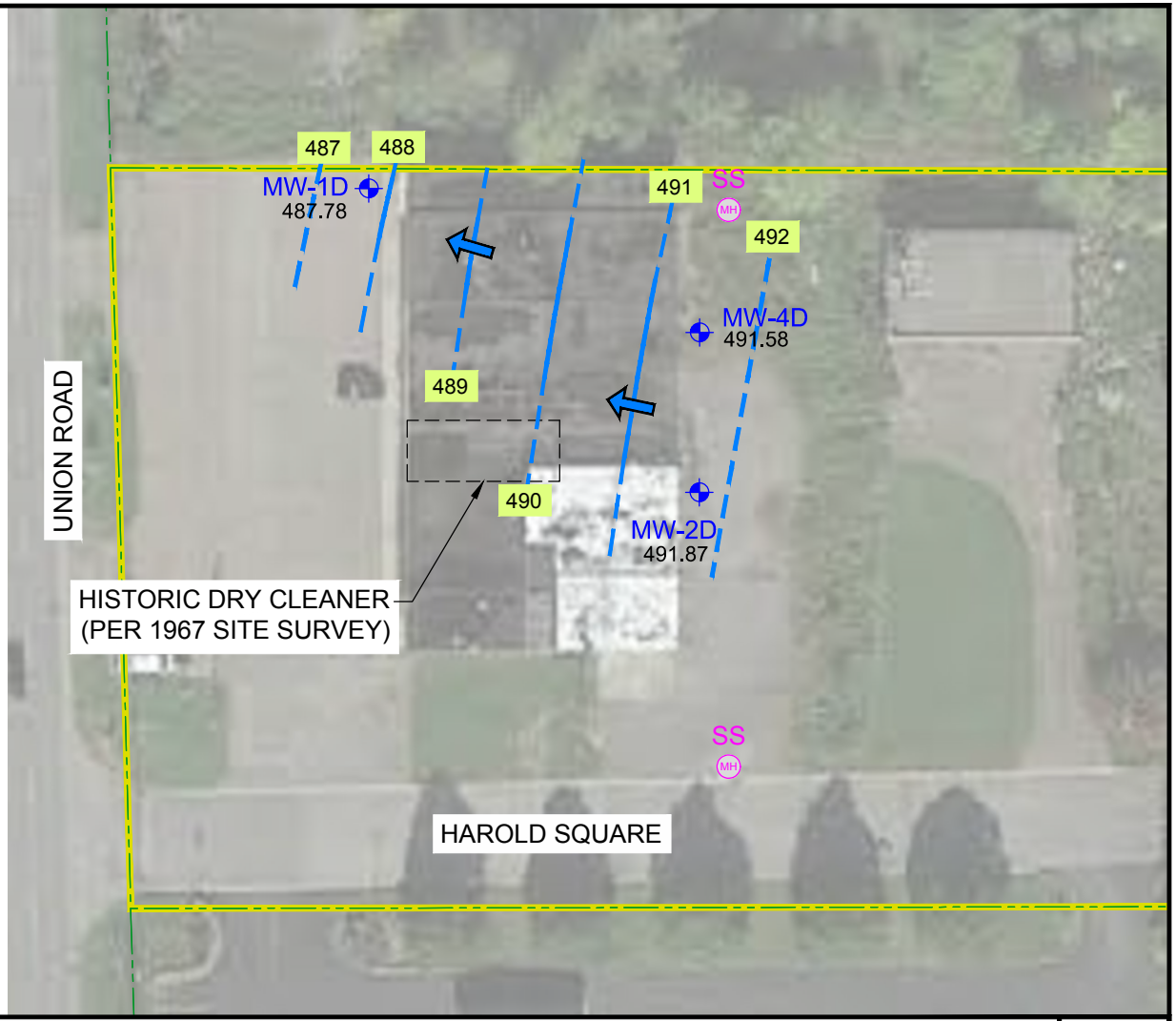
FIGURE 4

DISCLAIMER:
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F:\CAD\TurnKey\Benderson\3077 Union Road and Associated Parcels\Phase II\Figure 5 - Bedrock GW Isopotential.dwg

LEGEND:

- PROPERTY BOUNDARY
- PARCEL BOUNDARY
- MW-2D 491.87 — BEDROCK WELL WITH GROUNDWATER ELEVATION
- SS — SANITARY SEWER MANHOLE
- 484 — GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
- GROUNDWATER FLOW DIRECTION



N

60' 0' 60' 120'

SCALE: 1 INCH = 60 FEET
SCALE IN FEET
(approximate)

TURNKEY ENVIRONMENTAL RESTORATION, LLC

2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635

PROJECT NO.: T0105-017-010

DATE: JANUARY 2019

DRAFTED BY: CMC

BEDROCK GROUNDWATER ISOPOTENTIAL MAP

PHASE II ENVIRONMENTAL INVESTIGATION

3077 UNION ROAD

ORCHARD PARK, NEW YORK

PREPARED FOR

BENDERSON DEVELOPMENT COMPANY

FIGURE 5

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APPENDIX A

SOIL BORING LOGS WITH WELL COMPLETION DETAILS

Project No: 105-017-010

Borehole Number: MW-1

Project: Supplemental Phase II

A.K.A.:

Client: Benderson Development Company

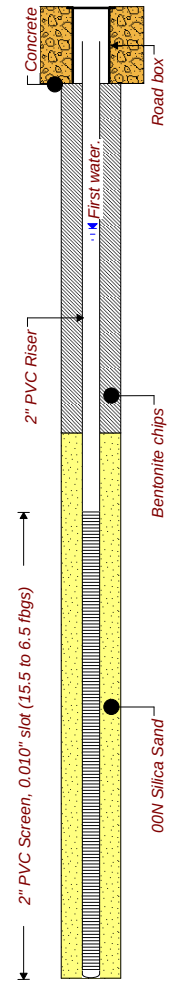
Logged By: TAB

Site Location: Orchard Park, New York

Checked By:

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 – 12.5 – 25)	Lab Sample	Well Completion Details or Remarks
0.0	495.2 / 0.0	Ground Surface							
	494.8 / 0.4	***Asphalt***							
		See boring log for MW-1D.							
5.0									
10.0									
	484.2 / 11.0	***Silt with Sand*** Brown, moist to wet (8.0 fbgs), mostly non-plastic fines, some fine sand, few fine gravels (sub-rounded), very dense.	S1	100 / 5	1.3				
	482.7 / 12.5	***Bedrock (weathered)*** Dark grey, dry, highley fissel shale, very weak, fine grained thinly bedded, easliy breaks. Spoon refusal at 13.0 fbgs.	S2	100 / 4	0.0				
	482.2 / 13.0	End of Borehole							
15.0									



Drilled By: Earth Dimensions, inc.
Drill Rig Type: Dierich D120
Drill Method: 4 1/4-inch hollow stem auger.
Comments:
Drill Date(s): 12/19/18 - 12/20/18

Hole Size: eight inch.
Stick-up: Flushmount.
Datum: Assumed 500 ft elevation.

Sheet: 1 of 1

Project No: 105-017-010

Borehole Number: MW-1D

Project: Supplemental Phase II

A.K.A.:

Client: Benderson Development Company

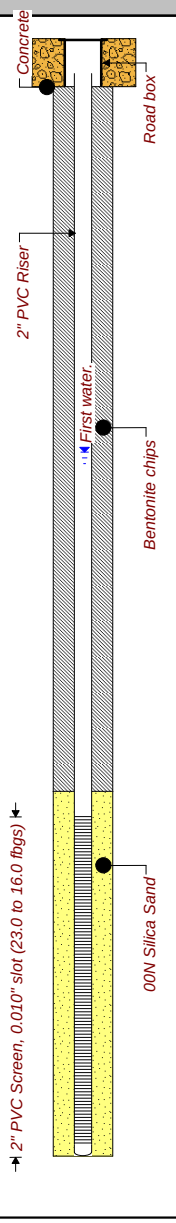
Logged By: TAB

Site Location: Orchard, Park New York

Checked By:

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm	Lab Sample	Well Completion Details or Remarks
0.0	495.6 / 0.0	Ground Surface					0 – 12.5 – 25		
	494.6 / 1.0	***Asphalt***							
		Sub-base Dark grey, moist mostly coarse gravel (angular), with fill (slag), loose.	S1	51	1.1		0.0		
	492.6 / 3.0	***Fill*** Black, moist, mostly fine sand with some fine gravel, with slag concrete and brick.	S2	50	1.2		0.0		
5.0		***Lean CLay with Sand*** Dark grey/grey, moist, mostly low to medium plasticity fines, little fine sand, stiff, massive.	S3	15	1.6		0.0		
	489.6 / 6.0	***Silt with Sand*** Brown, moist to wet (8.0 fbgs), mostly non-plastic fines, some fine sand, few fine gravels (sub-rounded), very dense.	S4	43	1.6		0.0.		
			S5	94	1.1		0.0		
10.0	485.6 / 10.0	As above grey, with intermitent shale bedding.	S6	121	1.8		0.0		
	483.6 / 12.0	***Bedrock (weathered)*** Dark grey, dry, highley fissel shale, very weak, fine grained thinly bedded, easliy breaks.	S7	100/2	0.8		0.0		
	482.6 / 13.0	***Bedrock (Windom Shale)*** Run #1 (13.0 to 18.0fbgs) Recovery = 90.5% RQD = 16.97% Very poor. 13.0 to 14.5 fbgs - highly fractured. 14.5 to 16.3 fbgs - Broken to moderatley fractured. 16.3 to 18.0 fbgs- Highley fractured.	Run #1					No water loss.	
15.0	477.6 / 18.0	Run #2 (18.0 to 23.0 fbgs) Recovery = 92.8% RQD = 41.0% Poor. 18.0 to 23.0 fbgs - broken to moderatley fractured.	Run #2						
20.0	472.6 / 23.0	End of Borehole							



Drilled By: Earth Dimensions, inc.
Drill Rig Type: Dierich D120
Drill Method: Continuous split spoon followed by NQ-2 core barrel
Comments:
Drill Date(s): 12/19/18 - 12/20/18

Hole Size: six inch.
Stick-up: Flushmount.
Datum: Assumed 500 ft elevation.

Sheet: 1 of 1

Project No: 105-017-010

Borehole Number: MW-2D

Project: Supplemental Phase II

A.K.A.:

Client: Benderson Development Company

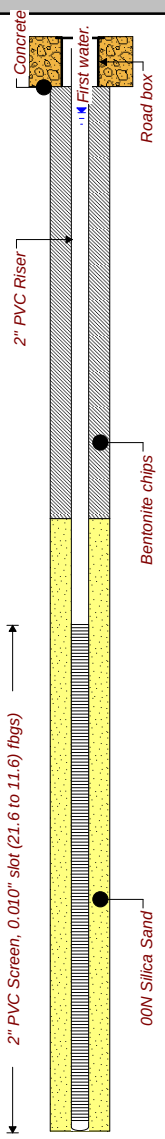
Logged By: TAB

Site Location: Orchard Park, New York

Checked By:

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs (ppm)	Lab Sample	Well Completion Details or Remarks
0.0	496.6 0.0	Ground Surface							
	495.6 1.0	***Fill*** Brown, moist to wet (1.5 fbgs), mostly non-plasticty fines some fine sand, few fine gravel (shale fragments and sub-rounded).	S1	15	1.2		0.0		
	494.6 2.0	***Lean Clay with Sand*** Dark grey/grey, moist, mostly low to medium plasticity fines, little fine sand, stiff, massive.	S2	39	1.3		0.0		
5.0	492.6 4.0	As above, wet, with little fine gravel (shale fragments)	S3	95	1.2		0.0		
	490.1 6.5		S4	100 4	0.0		0.0.		
		Bedrock (Windom Shale) Run #1 (6.5 to 11.5 fbgs) Recovery = 78% RQD = 15.6% Very poor. 6.5 to 11.5 fbgs - intensely fractured, weathered.	Run #1				0.0 0.0		
10.0	485.1 11.5						0.0		
		Run #2 (11.5 to 16.5 fbgs) Recovery = 95.0% RQD = 15.79% Very Poor. 11.5 to 16.5 fbgs - Intensley fractured, weathered.	Run #2				0.0	No water loss.	
15.0	480.1 16.5	Run #3 (16.5 to 21.6fbgs) Recovery = 100% RQD = 83.33% Good. 16.5.to 18.5 fbgs - moderatly fractured. 18.5 to 21.6 fbgs - slightly fractured.	Run #3						
20.0	475.0 21.6	End of Borehole							



Drilled By: Earth Dimensions, inc.
Drill Rig Type: Dierich D120
Drill Method: Continuous split spoon followed by NQ-2 core barrel
Comments:
Drill Date(s): 12/20/18

Hole Size: six inch.
Stick-up: Flushmount.
Datum: Assumed 500 ft elevation.

Sheet: 1 of 1

Project No: 105-017-010

Borehole Number: MW-4D

Project: Supplemental Phase II

A.K.A.:

Client: Benderson Development Company

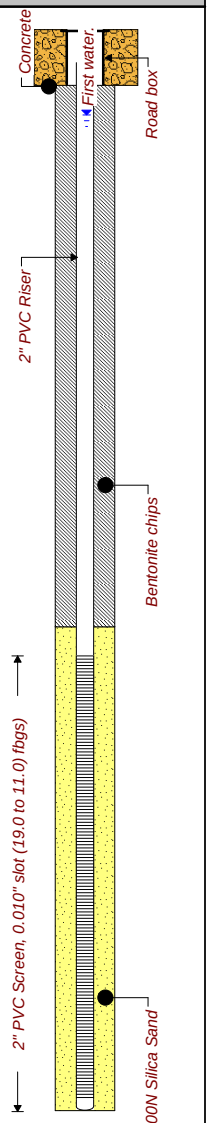
Logged By: TAB

Site Location: Orchard Park, New York

Checked By:

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs (ppm)	Lab Sample	Well Completion Details or Remarks
0.0	496.4 / 0.0	Ground Surface							
	495.4 / 1.0	***Fill*** Brown, moist to wet (1.5 fbgs), mostly non-plasticty fines some fine sand, few fine gravel (shale fragments and sub-rounded).	S1	17	1.3		0.0		
	494.4 / 2.0	***Lean Clay with Sand*** Dark grey/grey, moist, mostly low to medium plasticity fines, little fine sand, stiff, massive. As above.	S2	14	1.3		2.2		
5.0	492.4 / 4.0	***Silt with sand*** Grey, moist, mostly non-plastic fines, with some sand, with few fin gravels (shale fragments), medium dense.	S3	18	1.9		17.0		
	490.4 / 6.0	As above.	S4	28	0.8		0.0.		
	489.4 / 7.0	***Bedrock (weathered)*** Dark grey, dry, highley fissel shale, very weak, fine grained thinly bedded, easliy breaks.	S5	100/5	0.8		0.0		
10.0	487.4 / 9.0	***Bedrock (Windom Shale)*** Run #1 (9.0 to 19.0 fbgs) Recovery = 93% RQD = 38.8% poor. 9.0 to 15.0 fbgs - intensely fractured, weathered. 15.0 to 17.0fbgs - moderatley fractured. 17.0 to 19.0fbgs - Slighlty Fractured.	Run #1					No water loss.	
15.0									
	477.4 / 19.0	End of Borehole							
20.0									



Drilled By: Earth Dimensions, inc.
Drill Rig Type: Dierich D120
Drill Method: Continuous split spoon followed by NQ-2 core barrel
Comments:
Drill Date(s): 12/21/18

Hole Size: six inch.
Stick-up: Flushmount.
Datum: Assumed 500 ft elevation.

Sheet: 1 of 1

APPENDIX B

PHOTO LOG

SITE PHOTOGRAPHS

Photo 1:



Photo 2:



Photo 3:



Photo 4:



Photo 1: Advancement of MW-1D (looking east).

Photo 2: Typical fill soils from MW-1D.

Photo 3 NQ2 Core barrel coring bedrock through 6-inch temporary well casing (looking east).

Photo 4: MW-1D Windom Shale bedrock core, RUN #1.

APPENDIX C

GROUNDWATER FIELD FORMS

TurnKey Environmental Restoration, LLC

EQUIPMENT CALIBRATION LOG

PROJECT INFORMATION:

Project Name: 3077 Union Rd

Project No.:

Client:

Date: 12/24/18

Instrument Source: ☒ BM ☐ Rental

METER TYPE	UNITS	TIME	MAKE/MODEL	SERIAL NUMBER	CAL. BY	STANDARD	POST CAL. READING	SETTINGS
☒ pH meter	units	7:34	Myron L Company Ultra Meter 6P	6213516 ☐ 6243084 ☒ 6212375 ☐ 6243003 ☐ 6223973 ☐	CNK	4.00 7.00 10.01	4.00 7.06 10.05	4.00 7.01 10.00
☒ Turbidity meter	NTU	7:55	Hach 2100P or 2100Q Turbidimeter	06120C020523 (P) ☐ 13120C030432 (Q) ☒ 17110C062619 (Q) ☐	CNK	10 NTU verification <0.4 20 100 800	10.3	10.0
☒ Sp. Cond. meter	uS mS	7:47	Myron L Company Ultra Meter 6P	6213516 ☐ 6243084 ☒ 6212375 ☐ 6243003 ☐ 6223973 ☐	CNK	7000 mS @ 25 °C	6996	7000
☐ PID	ppm		MinRAE 2000			open air zero ____ ppm Iso. Gas		MIBK response factor = 1.0
☒ Dissolved Oxygen	ppm	7:30	HACH Model HQ30d	080700023281 ☐ 100500041867 ☐ 140200100319 ☒	CNK	100% Satuartion	100%	98.8%
☐ Particulate meter	mg/m³					zero air		
☐ Radiation Meter	uR/H					background area		

ADDITIONAL REMARKS:

PREPARED BY: CNK **DATE:** 12/24/18

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

GROUNDWATER FIELD FORM

Project Name: 3077 Union Rd Date: 12/24/18

Location: Project No.: Field Team:

Well No. MW-1D			Diameter (inches): 2"			Sample Date / Time: —			
Product Depth (fbTOR):			Water Column (ft): 17.2			DTW when sampled:			
DTW (static) (fbTOR): 5.51			One Well Volume (gal): 2.80			Purpose: ☒ Development ☐ Sample ☐ Purge & Sample			
Total Depth (fbTOR): 22.71			Total Volume Purged (gal): 3.5			Purge Method: Bailer			
Time	Water Level (fbTOR)	Acc. Volume (gallons)	pH (units)	Temp. (deg. C)	SC (uS)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Appearance & Odor
0900	0 Initial	0	7.13	17.0	1695	606	—	83	turbid, no odor
0920	1 20.59	2.8	7.50	11.0	1624	>1000	—	51	very turbid, no odor
0935	2 DRY	3.5	7.65	7.6	1611	>1000		50	very turbid, no odor
	3								
	4								
	5								
	6								
	7								
	8								
	9								
	10								
Sample Information:									
	S1								
	S2								

Sl. cond. 1564 →

Well No. MW-1			Diameter (inches): 2"			Sample Date / Time: —			
Product Depth (fbTOR):			Water Column (ft): 9.49			DTW when sampled:			
DTW (static) (fbTOR): 2.57			One Well Volume (gal): 1.55			Purpose: ☒ Development ☐ Sample ☐ Purge & Sample			
Total Depth (fbTOR): 12.06			Total Volume Purged (gal): 3.0			Purge Method: Bailer			
Time	Water Level (fbTOR)	Acc. Volume (gallons)	pH (units)	Temp. (deg. C)	SC (uS)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Appearance & Odor
0948	0 Initial	0	7.49	9.0	1458	318	—	52	turbid, no odor
0956	1 8.3	1.5	7.46	10.2	1379	231	—	46	turbid, no odor
1009	2 DRY	3.0	7.61	10.1	1247	71000	—	34	very turbid, no odor
	3								
	4								
	5								
	6								
	7								
	8								
	9								
	10								
Sample Information:									
	S1								
	S2								

REMARKS:

Note: All water level measurements are in feet, distance from top of riser.

Volume Calculation

Diam.	Vol. (g/ft)
1"	0.041
2"	0.163
4"	0.653
6"	1.469

Stabilization Criteria

Parameter	Criteria
pH	± 0.1 unit
SC	± 3%
Turbidity	± 10%
DO	± 0.3 mg/L
ORP	± 10 mV

PREPARED BY: CNK

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

GROUNDWATER FIELD FORM

Project Name: 3071 Union Rd Date: 12/24/10

Location: Project No.: Field Team:

Well No. MW-2D			Diameter (inches): 2"			Sample Date / Time: —			
Product Depth (fbTOR):			Water Column (ft): 17.09			DTW when sampled: —			
DTW (static) (fbTOR): 4.29			One Well Volume (gal): 2.79			Purpose: ☒ Development ☐ Sample ☐ Purge & Sample			
Total Depth (fbTOR): 21.38			Total Volume Purged (gal): 30			Purge Method: Bailer			
Time	Water Level (fbTOR)	Acc. Volume (gallons)	pH (units)	Temp. (deg. C)	SC (uS)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Appearance & Odor
1043	0 Initial	0	7.51	8.4	12.46	177	—	-179	turbid, no odor
1051	1 8.75	3.0	7.39	10.3	1403	>1000	—	-212	very turbid, no odor
1104	2 8.56	6.0	7.46	10.0	1553	>1000	—	-200	"
112	3 8.85	9.0	7.49	8.3	1565	>1000	—	-185	turbid, no odor
1124	4 8.91	12.0	7.41	8.5	1570	831	—	-182	"
1138	5 8.84	15.0	7.53	9.4	1545	759	—	-175	"
1157	6 8.98	18.0	7.48	9.1	1586	936	—	-172	"
1210	7 10.56	21.0	7.46	10.0	1604	>1000	—	-167	very turbid, no odor
1220	8 10.00	24.0	7.40	10.9	1601	>1000	—	-171	"
1226	9 10.32	27.0	7.38	10.6	1623	>1000	—	-170	"
1234	10 10.38	30.0	7.37	10.4	1652	880	—	-165	turbid, no odor
Sample Information:									
	S1								
	S2								

Well No.			Diameter (inches):			Sample Date / Time:			
Product Depth (fbTOR):			Water Column (ft):			DTW when sampled:			
DTW (static) (fbTOR):			One Well Volume (gal):			Purpose: ☐ Development ☐ Sample ☐ Purge & Sample			
Total Depth (fbTOR):			Total Volume Purged (gal):			Purge Method:			
Time	Water Level (fbTOR)	Acc. Volume (gallons)	pH (units)	Temp. (deg. C)	SC (uS)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Appearance & Odor
	0 Initial								
	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								
	9								
	10								
Sample Information:									
	S1								
	S2								

REMARKS:

Note: All water level measurements are in feet, distance from top of riser.

Volume Calculation

Diam.	Vol. (g/ft)
1"	0.041
2"	0.163
4"	0.653
6"	1.469

Stabilization Criteria

Parameter	Criteria
pH	± 0.1 unit
SC	± 3%
Turbidity	± 10%
DO	± 0.3 mg/L
ORP	± 10 mV

PREPARED BY: CNL

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

GROUNDWATER FIELD FORM

Project Name: 3077 Union Rd Date:
Location: Project No.: Field Team: 12/24/18

Well No. MW-4D			Diameter (inches): 2"		Sample Date / Time: —
Product Depth (fbTOR):			Water Column (ft): 13.03		DTW when sampled: —
DTW (static) (fbTOR): 4.97			One Well Volume (gal): 2.22		Purpose: ☒ Development ☐ Sample ☐ Purge & Sample
Total Depth (fbTOR): 18.00			Total Volume Purged (gal): 19.25		Purge Method: Bailer

Time	Water Level (fbTOR)	Acc. Volume (gallons)	pH (units)	Temp. (deg. C)	SC (uS)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Appearance & Odor
	0 Initial								
1254	1 13.70	2.25	7.54	9.8	1194	>1000	—	-219	very turbid, sulfur odor
1258	2 DRY	4.5	7.53	11.6	1172	>1000	—	-232	"
1304	3 16.11	6.75	7.51	11.5	1383	>1000	—	-244	"
1313	4 14.81	[illegible]	7.51	11.0	1464	>1000	—	-250	"
1319	5 DRY	8.00	7.60	11.4	1462	>1000	—	-240	"
1325	6 DRY	10.25	7.53	11.4	1479	>1000	—	-243	"
1333	7 15.28	12.5	7.53	10.7	1524	>1000	—	-249	"
1340	8 DRY	14.75	7.50	11.0	1550	>1000	—	-242	"
1347	9 15.36	17.0	7.51	11.1	1577	>1000	—	-242	"
1353	10 14.31	19.25	7.64	8.3	1552	>1000	—	-236	"
Sample Information:									
	S1								
	S2								

Acc Vol 9.25 →

Well No.			Diameter (inches):		Sample Date / Time:
Product Depth (fbTOR):			Water Column (ft):		DTW when sampled:
DTW (static) (fbTOR):			One Well Volume (gal):		Purpose: ☐ Development ☐ Sample ☐ Purge & Sample
Total Depth (fbTOR):			Total Volume Purged (gal):		Purge Method:

Time	Water Level (fbTOR)	Acc. Volume (gallons)	pH (units)	Temp. (deg. C)	SC (uS)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Appearance & Odor
	0 Initial								
	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								
	9								
	10								
Sample Information:									
	S1								
	S2								

REMARKS:

Note: All water level measurements are in feet, distance from top of riser.

Volume Calculation

Diam.	Vol. (g/ft)
1"	0.041
2"	0.163
4"	0.653
6"	1.469

Stabilization Criteria

Parameter	Criteria
pH	± 0.1 unit
SC	± 3%
Turbidity	± 10%
DO	± 0.3 mg/L
ORP	± 10 mV

PREPARED BY: CNK

TurnKey Environmental Restoration, LLC

EQUIPMENT CALIBRATION LOG

PROJECT INFORMATION:

Project Name: 3077 Union Rd

Project No.:

Client:

Date: 12/26/18

Instrument Source: ☒ BM ☐ Rental

METER TYPE	UNITS	TIME	MAKE/MODEL	SERIAL NUMBER	CAL. BY	STANDARD	POST CAL. READING	SETTINGS
☒ pH meter	units	0836	Myron L Company Ultra Meter 6P	6213516 ☐ 6243084 ☒ 6212375 ☐ 6243003 ☐ 6223973 ☐	CNK	4.00 7.00 10.01	4.03 7.06 9.95	4.0 7.0 10.0
☒ Turbidity meter	NTU	0843	Hach 2100P or 2100Q Turbidimeter	06120C020523 (P) ☐ 13120C030432 (Q) ☒ 17110C062619 (Q) ☐	CNK	10 NTU verification <0.4 20 100 800	10.4	10.0
☒ Sp. Cond. meter	uS mS	0841	Myron L Company Ultra Meter 6P	6213516 ☐ 6243084 ☒ 6212375 ☐ 6243003 ☐ 6223973 ☐	CNK	7000 mS @ 25 °C	7001	7000
☐ PID	ppm		MinRAE 2000			open air zero ____ ppm Iso. Gas		MIBK response factor = 1.0
☒ Dissolved Oxygen	ppm	0831	HACH Model HQ30d	080700023281 ☐ 100500041867 ☐ 140200100319 ☒	CNK	100% Satuartion	100%	101.4%
☐ Particulate meter	mg/m^3					zero air		
☐ Radiation Meter	uR/H					background area		

ADDITIONAL REMARKS:

PREPARED BY: CNK **DATE:** 12/26/18

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

GROUNDWATER FIELD FORM

Project Name: 3077 U.S. 1 Rd Date: 12/26/18

Location: Project No.: Field Team:

Well No. MW-11S			Diameter (inches): 2"			Sample Date / Time: 12/26/18 1313			
Product Depth (fbTOR):			Water Column (ft): 15.63			DTW when sampled: 18.25			
DTW (static) (fbTOR): 7.10			One Well Volume (gal): 2.55			Purpose: ☐ Development ☒ Sample ☐ Purge & Sample			
Total Depth (fbTOR): 22.73			Total Volume Purged (gal): 3.0			Purge Method: ~~Geo Flow~~ Bailer			
Time	Water Level (fbTOR)	Acc. Volume (gallons)	pH (units)	Temp. (deg. C)	SC (uS)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Appearance & Odor
	0 Initial								
0958	1 20.30	2.5	7.16	9.4	1469	708	7.40	28	turbid, no odor
1002	2 DRY	3.0	7.37	11.1	1483	71000	7.15	18	very turbid, no odor
	3								
	4								
	5								
	6								
	7								
	8								
	9								
	10								
Sample Information:									
1313	S1 18.75	3.0	7.61	10.3	1452	7.67	8.99	-110	clear, no odor
	S2								

Well No. MW-1			Diameter (inches): 2"			Sample Date / Time: 12/26/18 1310			
Product Depth (fbTOR):			Water Column (ft): 9.39			DTW when sampled: 6.75			
DTW (static) (fbTOR): 2.64			One Well Volume (gal): 1.53			Purpose: ☐ Development ☒ Sample ☐ Purge & Sample			
Total Depth (fbTOR): 12.03			Total Volume Purged (gal): 2.25			Purge Method: Bailer			
Time	Water Level (fbTOR)	Acc. Volume (gallons)	pH (units)	Temp. (deg. C)	SC (uS)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Appearance & Odor
	0 Initial								
1009	1 10.35	1.5	7.48	10.9	1253	>1000	5.07	30	very turbid, no odor
1011	2 DRY	2.25	7.45	10.7	1189	>1000	5.05	42	"
	3								
	4								
	5								
	6								
	7								
	8								
	9								
	10								
Sample Information: 2.25			7.37	[illegible]	[illegible]				
1310	S1 10.75	[illegible]	[illegible]	9.5	1251	24.5	5.51	-123	clear, no odor
	S2								

REMARKS:

Note: All water level measurements are in feet, distance from top of riser.

Volume Calculation

Diam.	Vol. (g/ft)
1"	0.041
2"	0.163
4"	0.653
6"	1.469

Stabilization Criteria

Parameter	Criteria
pH	± 0.1 unit
SC	± 3%
Turbidity	± 10%
DO	± 0.3 mg/L
ORP	± 10 mV

PREPARED BY: CNK

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

GROUNDWATER FIELD FORM

Project Name: 3077 Union Rd Date: 12/26/18

Location: Project No.: Field Team:

Well No. MW-2D | Diameter (inches): 2" | Sample Date / Time: 12/26/18 1045

Product Depth (fbTOR): — | Water Column (ft): 16.55 | DTW when sampled: 6.52

DTW (static) (fbTOR): 4.83 79 | One Well Volume (gal): 2.70 | Purpose: ☐ Development ☒ Sample ☐ Purge & Sample

Total Depth (fbTOR): 21.38 | Total Volume Purged (gal): 2.50 | Purge Method: Low Flow

Time		Water Level (fbTOR)	Acc. Volume (gallons)	pH (units)	Temp. (deg. C)	SC (uS)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Appearance & Odor
1035	0	Initial	0.25	7.23	9.0	1157	141	0.69	-225	SL Turb SL odor sheen
1037	1	6.91	0.5	7.22	10.2	1127	251	1.13	-257	"
1039	2	6.52	1.0	7.24	10.8	1203	438	0.55	-255	SL Turb, sulfur odor, brine sheen
1041	3	6.52	1.5	7.26	10.9	1246	27.8	0.81	-251	"
1045	4	6.54	2.5	7.25	11.5	1262	19.2	0.65	-247	"
	5									
	6									
	7									
	8									
	9									
	10									
Sample Information:										
1049	S1	6.52	2.75	7.27	11.2	1265	17.5	0.74	-245	clear, sulfur odor, sheen
	S2									

Well No. MW-4D | Diameter (inches): 2" | Sample Date / Time: 12/26/18

Product Depth (fbTOR): | Water Column (ft): 14.33 | DTW when sampled: 6.54

DTW (static) (fbTOR): 4.25 | One Well Volume (gal): 2.33 | Purpose: ☐ Development ☒ Sample ☐ Purge & Sample

Total Depth (fbTOR): 18.58 | Total Volume Purged (gal): 1.75 | Purge Method: Low Flow

Time		Water Level (fbTOR)	Acc. Volume (gallons)	pH (units)	Temp. (deg. C)	SC (uS)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Appearance & Odor
1112	0	Initial	0	7.41	8.7	1439	157	1.17	-237	SL turbid, sulfur odor
1114	1	6.46	0.5	7.36	11.0	1439	51.1	0.78	-238	SL turb, sulfur odor, no sheen
1116	2	6.48	1.5	7.34	11.5	1450	68.2	1.01	-234	" , no sheen
1119	3	6.48	1.75	7.32	11.6	1449	64.5	0.9	-234	" , slight sheen
~~1121~~	4	~~6.54~~	~~1.75~~							
	5									
	6									
	7									
	8									
	9									
	10									
Sample Information:										
1121	S1	6.54	2.75	7.31	11.5	1456	44.4	0.69	-239	SL turb, no odor, no sheen
	S2									

REMARKS:

Note: All water level measurements are in feet, distance from top of riser.

Volume Calculation

Diam.	Vol. (g/ft)
1"	0.041
2"	0.163
4"	0.653
6"	1.469

Stabilization Criteria

Parameter	Criteria
pH	± 0.1 unit
SC	± 3%
Turbidity	± 10%
DO	± 0.3 mg/L
ORP	± 10 mV

PREPARED BY: CN IK

TurnKey Environmental Restoration LLC

EQUIPMENT CALIBRATION LOG

PROJECT INFORMATION:

Project Name: 3077 Union Rd

Project No.:

Client: Benusson

Date: 12/31/12

Instrument Source: ☐ BM ☐ Rental

METER TYPE	UNITS	TIME	MAKE/MODEL	SERIAL NUMBER	CAL. BY	STANDARD	POST CAL. READING	SETTINGS
☒ pH meter	units	900	Myron L Company Ultra Meter 6P	6213516 ☐ 6243084 ☒ 6212375 ☐ 6243003 ☐ 6223973 ☐	TAB	4.00	3.99	4.0
						7.00	7.05	7.0
						10.01	9.54	10.0
☒ Turbidity meter	NTU	901	Hach 2100P or 2100Q Turbidimeter	06120C020523 (P) ☐ 13120C030432 (Q) ☒ 17110C062619 (Q) ☐	TAB	10 NTU verification	9.43	10.0
						<0.4		
						20		
						100		
						800		
☒ Sp. Cond. meter	uS mS	901	Myron L Company Ultra Meter 6P	6213516 ☐ 6243084 ☒ 6212375 ☐ 6243003 ☐ 6223973 ☐	TAB	7.000 mS @ 25 °C	7.003	7.000
☐ PID	ppm		MinRAE 2000			open air zero		MIBK response factor = 1.0
						____ ppm Iso. Gas		
☒ Dissolved Oxygen	ppm	900	HACH Model HQ30d	080700023281 ☐ 100500041867 ☐ 140200100319 ☒	TAB	100% Satuartion	✓	
☐ Particulate meter	mg/m³					zero air		
☐ Radiation Meter	uR/H					background area		

ADDITIONAL REMARKS:

PREPARED BY: **DATE:** 12/31/12

GROUNDWATER FIELD FORM

Project Name: 3077 Union Rd Date: 12/31/19

Location: Orchard Park Project No.: Field Team: TAB

Well No. PZ-2	Diameter (inches): 1"	Sample Date / Time: 12/31/19 + 1/2/19
Product Depth (fbTOR): —	Water Column (ft): 4.07	DTW when sampled:
DTW (static) (fbTOR): 1.64	One Well Volume (gal): .16	Purpose: ☐ Development ☐ Sample ☒ Purge & Sample
Total Depth (fbTOR): 5.71	Total Volume Purged (gal): 0.50	Purge Method: Peristaltic + Mini bailer

Time		Water Level (fbTOR)	Acc. Volume (gallons)	pH (units)	Temp. (deg. C)	SC (uS)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Appearance & Odor
	0	Initial	>0.25	Water was Extremely turbid, Was Trying						
	1	DRY		To clear Sediment out Prior to collecting						
	2			any Readings. Well was purged Dry						
	3									
	4									
	5									
	6									
	7									
	8									
	9									
	10									

Sample Information: Well went Dry During 1 well volume

1/2/19 1000	S1	Insufficient	water	For	Readings		
	S2						

Well No. PZ-3	Diameter (inches): 1"	Sample Date / Time: 12/31/19 + 1/2/19
Product Depth (fbTOR): ~~0.00~~	Water Column (ft): 7.63	DTW when sampled:
DTW (static) (fbTOR): 0.10	One Well Volume (gal): 0.31	Purpose: ☐ Development ☐ Sample ☒ Purge & Sample
Total Depth (fbTOR): 7.73	Total Volume Purged (gal): 0.93	Purge Method: Peristaltic + Mini Bailer

Time		Water Level (fbTOR)	Acc. Volume (gallons)	pH (units)	Temp. (deg. C)	SC (uS)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Appearance & Odor
1643	0	Initial	>0.25	6.77	7.3	1555	51.2	3.82	272	Light brown wood
1646	1	–	0.25	7.23	6.0	1367	68.8	3.23	219	"
1650	2	DRY	0.5	7.18	7.1	1603	44.0	3.51	186	
	3									
	4									
	5									
	6									
	7									
	8									
	9									
	10									

12/19

Sample Information:

1/2/19 1030	S1	Insufficient	water	For	Readings		
	S2						

REMARKS:

Note: All measurements are in feet, distance from top of riser.

Volume Calculation

Diam.	Vol. (g/ft)
1"	0.041
2"	0.163
4"	0.653
6"	1.469

Stabilization Criteria

Parameter	Criteria
pH	± 0.1 unit
SC	± 3%
Turbidity	± 10%
DO	± 0.3 mg/L
ORP	± 10 mV

PREPARED BY: TAB

GROUNDWATER FIELD FORM

Project Name: 3077 Union R2 Date: 12/31/18

Location: Orchard Park Project No.: Field Team: TA+B

Well No. PZ-4			Diameter (inches): 1"			Sample Date / Time: 1/2/19			
Product Depth (fbTOR): —			Water Column (ft): 5.43			DTW when sampled:			
DTW (static) (fbTOR): 6.65			One Well Volume (gal): 0.22			Purpose: ☐ Development ☐ Sample ☐ Purge & Sample			
Total Depth (fbTOR): 6.08			Total Volume Purged (gal): 0.25			Purge Method: Peristaltic + mini-Bailer			
Time	Water Level (fbTOR)	Acc. Volume (gallons)	pH (units)	Temp. (deg. C)	SC (uS)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Appearance & Odor
12/31 1125	0 Initial	>0.25	7.08	7.0	1376	>1000	2.46	6	Turbid No Odor
1127	1 DRY	0.25	7.14	6.3	1166	>1000	3.00	-45	"
	2								
	3								
	4								
	5								
	6								
	7								
	8								
	9								
	10								
Sample Information:									
1/2/19 1100	S1	Influent water for Readings							
	S2								

Well No. PZ-5			Diameter (inches): 1"			Sample Date / Time:			
Product Depth (fbTOR):			Water Column (ft): 5.58			DTW when sampled:			
DTW (static) (fbTOR): 1.14			One Well Volume (gal): 0.22			Purpose: ☐ Development ☐ Sample ☐ Purge & Sample			
Total Depth (fbTOR): 6.58			Total Volume Purged (gal):			Purge Method:			
Time	Water Level (fbTOR)	Acc. Volume (gallons)	pH (units)	Temp. (deg. C)	SC (uS)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Appearance & Odor
12/31 1105	0 Initial	>0.25	7.32	7.3	1267	>1000	3.80	143	Turbid No Odor
1108	1 —	0.27	7.43	6.6	1135	>1000	4.62	143	"
1110	2 DRY	0.4	7.44	6.6	1154	>1000	4.35	144	"
	3								
	4								
	5								
	6								
	7								
	8								
	9								
	10								
Sample Information:									
1/2/19 1130	S1	Influent water for Readings							
	S2								

REMARKS:

Note: All measurements are in feet, distance from top of riser.

Volume Calculation

Diam.	Vol. (g/ft)
1"	0.041
2"	0.163
4"	0.653
6"	1.469

Stabilization Criteria

Parameter	Criteria
pH	± 0.1 unit
SC	± 3%
Turbidity	± 10%
DO	± 0.3 mg/L
ORP	± 10 mV

PREPARED BY: TA+B

APPENDIX D

LABORATORY ANALYTICAL DATA SUMMARY PACKAGE

ANALYTICAL REPORT

Lab Number:	L1900104
Client:	Turnkey Environmental Restoration, LLC 2558 Hamburg Turnpike Suite 300 Buffalo, NY 14218
ATTN:	Bryan Mayback
Phone:	(716) 856-0599
Project Name:	3077 UNION RD.
Project Number:	T0105-017-010
Report Date:	01/09/19

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: 3077 UNION RD.
Project Number: T0105-017-010

Lab Number: L1900104
Report Date: 01/09/19

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1900104-01	PZ-2	WATER	3077 UNION RD.	01/02/19 10:00	01/02/19
L1900104-02	PZ-3	WATER	3077 UNION RD.	01/02/19 10:30	01/02/19
L1900104-03	PZ-4	WATER	3077 UNION RD.	01/02/19 11:00	01/02/19
L1900104-04	PZ-5	WATER	3077 UNION RD.	01/02/19 11:30	01/02/19

Project Name: 3077 UNION RD. **Lab Number:** L1900104
Project Number: T0105-017-010 **Report Date:** 01/09/19

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name:	3077 UNION RD.	**Lab Number:**	L1900104
Project Number:	T0105-017-010	**Report Date:**	01/09/19

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Kelly Stenstrom

Title: Technical Director/Representative Date: 01/09/19

ORGANICS

VOLATILES

Project Name: 3077 UNION RD.
Lab Number: L1900104
Project Number: T0105-017-010
Report Date: 01/09/19

SAMPLE RESULTS

Lab ID: L1900104-01
Client ID: PZ-2
Sample Location: 3077 UNION RD.

Date Collected: 01/02/19 10:00
Date Received: 01/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 01/04/19 11:54
Analyst: RR

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	ND		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	4.5		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	0.43	J	ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1

Project Name: 3077 UNION RD. **Lab Number:** L1900104

Project Number: T0105-017-010 **Report Date:** 01/09/19

SAMPLE RESULTS

Lab ID: L1900104-01 Date Collected: 01/02/19 10:00

Client ID: PZ-2 Date Received: 01/02/19

Sample Location: 3077 UNION RD. Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
Methyl tert butyl ether	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	1.3	J	ug/l	2.5	0.70	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	49		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	7.9		ug/l	5.0	1.9	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
n-Butylbenzene	ND		ug/l	2.5	0.70	1
sec-Butylbenzene	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Isopropylbenzene	ND		ug/l	2.5	0.70	1
p-Isopropyltoluene	ND		ug/l	2.5	0.70	1
n-Propylbenzene	ND		ug/l	2.5	0.70	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.70	1
Methyl Acetate	ND		ug/l	2.0	0.23	1
Cyclohexane	ND		ug/l	10	0.27	1
1,4-Dioxane	ND		ug/l	250	61.	1
Freon-113	ND		ug/l	2.5	0.70	1
Methyl cyclohexane	ND		ug/l	10	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	102		70-130

Project Name: 3077 UNION RD. **Lab Number:** L1900104

Project Number: T0105-017-010 **Report Date:** 01/09/19

SAMPLE RESULTS

Lab ID: L1900104-02 D
Client ID: PZ-3
Sample Location: 3077 UNION RD.

Date Collected: 01/02/19 10:30
Date Received: 01/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 01/04/19 12:49
Analyst: RR

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	1000	280	400
1,1-Dichloroethane	ND		ug/l	1000	280	400
Chloroform	ND		ug/l	1000	280	400
Carbon tetrachloride	ND		ug/l	200	54.	400
1,2-Dichloropropane	ND		ug/l	400	55.	400
Dibromochloromethane	ND		ug/l	200	60.	400
1,1,2-Trichloroethane	ND		ug/l	600	200	400
Tetrachloroethene	34000		ug/l	200	72.	400
Chlorobenzene	ND		ug/l	1000	280	400
Trichlorofluoromethane	ND		ug/l	1000	280	400
1,2-Dichloroethane	ND		ug/l	200	53.	400
1,1,1-Trichloroethane	ND		ug/l	1000	280	400
Bromodichloromethane	ND		ug/l	200	77.	400
trans-1,3-Dichloropropene	ND		ug/l	200	66.	400
cis-1,3-Dichloropropene	ND		ug/l	200	58.	400
Bromoform	ND		ug/l	800	260	400
1,1,2,2-Tetrachloroethane	ND		ug/l	200	67.	400
Benzene	ND		ug/l	200	64.	400
Toluene	ND		ug/l	1000	280	400
Ethylbenzene	ND		ug/l	1000	280	400
Chloromethane	ND		ug/l	1000	280	400
Bromomethane	ND		ug/l	1000	280	400
Vinyl chloride	ND		ug/l	400	28.	400
Chloroethane	ND		ug/l	1000	280	400
1,1-Dichloroethene	ND		ug/l	200	68.	400
trans-1,2-Dichloroethene	ND		ug/l	1000	280	400
Trichloroethene	2000		ug/l	200	70.	400
1,2-Dichlorobenzene	ND		ug/l	1000	280	400

Project Name: 3077 UNION RD. **Lab Number:** L1900104

Project Number: T0105-017-010 **Report Date:** 01/09/19

SAMPLE RESULTS

Lab ID: L1900104-02 D Date Collected: 01/02/19 10:30

Client ID: PZ-3 Date Received: 01/02/19

Sample Location: 3077 UNION RD. Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/l	1000	280	400
1,4-Dichlorobenzene	ND		ug/l	1000	280	400
Methyl tert butyl ether	ND		ug/l	1000	280	400
p/m-Xylene	ND		ug/l	1000	280	400
o-Xylene	ND		ug/l	1000	280	400
cis-1,2-Dichloroethene	2100		ug/l	1000	280	400
Styrene	ND		ug/l	1000	280	400
Dichlorodifluoromethane	ND		ug/l	2000	400	400
Acetone	ND		ug/l	2000	580	400
Carbon disulfide	ND		ug/l	2000	400	400
2-Butanone	ND		ug/l	2000	780	400
4-Methyl-2-pentanone	ND		ug/l	2000	400	400
2-Hexanone	ND		ug/l	2000	400	400
Bromochloromethane	ND		ug/l	1000	280	400
1,2-Dibromoethane	ND		ug/l	800	260	400
n-Butylbenzene	ND		ug/l	1000	280	400
sec-Butylbenzene	ND		ug/l	1000	280	400
1,2-Dibromo-3-chloropropane	ND		ug/l	1000	280	400
Isopropylbenzene	ND		ug/l	1000	280	400
p-Isopropyltoluene	ND		ug/l	1000	280	400
n-Propylbenzene	ND		ug/l	1000	280	400
1,2,3-Trichlorobenzene	ND		ug/l	1000	280	400
1,2,4-Trichlorobenzene	ND		ug/l	1000	280	400
1,3,5-Trimethylbenzene	ND		ug/l	1000	280	400
1,2,4-Trimethylbenzene	ND		ug/l	1000	280	400
Methyl Acetate	ND		ug/l	800	94.	400
Cyclohexane	ND		ug/l	4000	110	400
1,4-Dioxane	ND		ug/l	100000	24000	400
Freon-113	ND		ug/l	1000	280	400
Methyl cyclohexane	ND		ug/l	4000	160	400

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	101		70-130

Project Name: 3077 UNION RD.
Lab Number: L1900104
Project Number: T0105-017-010
Report Date: 01/09/19

SAMPLE RESULTS

Lab ID: L1900104-03 D
Client ID: PZ-4
Sample Location: 3077 UNION RD.

Date Collected: 01/02/19 11:00
Date Received: 01/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 01/04/19 13:17
Analyst: MAB

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	12	3.5	5
1,1-Dichloroethane	ND		ug/l	12	3.5	5
Chloroform	ND		ug/l	12	3.5	5
Carbon tetrachloride	ND		ug/l	2.5	0.67	5
1,2-Dichloropropane	ND		ug/l	5.0	0.68	5
Dibromochloromethane	ND		ug/l	2.5	0.74	5
1,1,2-Trichloroethane	ND		ug/l	7.5	2.5	5
Tetrachloroethene	95		ug/l	2.5	0.90	5
Chlorobenzene	ND		ug/l	12	3.5	5
Trichlorofluoromethane	ND		ug/l	12	3.5	5
1,2-Dichloroethane	ND		ug/l	2.5	0.66	5
1,1,1-Trichloroethane	ND		ug/l	12	3.5	5
Bromodichloromethane	ND		ug/l	2.5	0.96	5
trans-1,3-Dichloropropene	ND		ug/l	2.5	0.82	5
cis-1,3-Dichloropropene	ND		ug/l	2.5	0.72	5
Bromoform	ND		ug/l	10	3.2	5
1,1,2,2-Tetrachloroethane	ND		ug/l	2.5	0.84	5
Benzene	ND		ug/l	2.5	0.80	5
Toluene	ND		ug/l	12	3.5	5
Ethylbenzene	ND		ug/l	12	3.5	5
Chloromethane	ND		ug/l	12	3.5	5
Bromomethane	ND		ug/l	12	3.5	5
Vinyl chloride	160		ug/l	5.0	0.36	5
Chloroethane	ND		ug/l	12	3.5	5
1,1-Dichloroethene	2.9		ug/l	2.5	0.84	5
trans-1,2-Dichloroethene	31		ug/l	12	3.5	5
Trichloroethene	380		ug/l	2.5	0.88	5
1,2-Dichlorobenzene	ND		ug/l	12	3.5	5

Project Name: 3077 UNION RD. **Lab Number:** L1900104

Project Number: T0105-017-010 **Report Date:** 01/09/19

SAMPLE RESULTS

Lab ID: L1900104-03 D Date Collected: 01/02/19 11:00
Client ID: PZ-4 Date Received: 01/02/19
Sample Location: 3077 UNION RD. Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/l	12	3.5	5
1,4-Dichlorobenzene	ND		ug/l	12	3.5	5
Methyl tert butyl ether	ND		ug/l	12	3.5	5
p/m-Xylene	ND		ug/l	12	3.5	5
o-Xylene	ND		ug/l	12	3.5	5
cis-1,2-Dichloroethene	600		ug/l	12	3.5	5
Styrene	ND		ug/l	12	3.5	5
Dichlorodifluoromethane	ND		ug/l	25	5.0	5
Acetone	ND		ug/l	25	7.3	5
Carbon disulfide	ND		ug/l	25	5.0	5
2-Butanone	ND		ug/l	25	9.7	5
4-Methyl-2-pentanone	ND		ug/l	25	5.0	5
2-Hexanone	ND		ug/l	25	5.0	5
Bromochloromethane	ND		ug/l	12	3.5	5
1,2-Dibromoethane	ND		ug/l	10	3.2	5
n-Butylbenzene	ND		ug/l	12	3.5	5
sec-Butylbenzene	ND		ug/l	12	3.5	5
1,2-Dibromo-3-chloropropane	ND		ug/l	12	3.5	5
Isopropylbenzene	ND		ug/l	12	3.5	5
p-Isopropyltoluene	ND		ug/l	12	3.5	5
n-Propylbenzene	ND		ug/l	12	3.5	5
1,2,3-Trichlorobenzene	ND		ug/l	12	3.5	5
1,2,4-Trichlorobenzene	ND		ug/l	12	3.5	5
1,3,5-Trimethylbenzene	ND		ug/l	12	3.5	5
1,2,4-Trimethylbenzene	ND		ug/l	12	3.5	5
Methyl Acetate	ND		ug/l	10	1.2	5
Cyclohexane	ND		ug/l	50	1.4	5
1,4-Dioxane	ND		ug/l	1200	300	5
Freon-113	ND		ug/l	12	3.5	5
Methyl cyclohexane	ND		ug/l	50	2.0	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	101		70-130

Project Name: 3077 UNION RD.
Lab Number: L1900104
Project Number: T0105-017-010
Report Date: 01/09/19

SAMPLE RESULTS

Lab ID: L1900104-04
Client ID: PZ-5
Sample Location: 3077 UNION RD.

Date Collected: 01/02/19 11:30
Date Received: 01/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 01/04/19 12:22
Analyst: RR

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	ND		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	14		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Trichloroethene	4.2		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1

Project Name: 3077 UNION RD. **Lab Number:** L1900104

Project Number: T0105-017-010 **Report Date:** 01/09/19

SAMPLE RESULTS

Lab ID: L1900104-04 Date Collected: 01/02/19 11:30

Client ID: PZ-5 Date Received: 01/02/19

Sample Location: 3077 UNION RD. Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
Methyl tert butyl ether	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	1.5	J	ug/l	2.5	0.70	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	54		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	6.7		ug/l	5.0	1.9	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
n-Butylbenzene	ND		ug/l	2.5	0.70	1
sec-Butylbenzene	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Isopropylbenzene	ND		ug/l	2.5	0.70	1
p-Isopropyltoluene	ND		ug/l	2.5	0.70	1
n-Propylbenzene	ND		ug/l	2.5	0.70	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.70	1
Methyl Acetate	ND		ug/l	2.0	0.23	1
Cyclohexane	ND		ug/l	10	0.27	1
1,4-Dioxane	ND		ug/l	250	61.	1
Freon-113	ND		ug/l	2.5	0.70	1
Methyl cyclohexane	ND		ug/l	10	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	102		70-130

Project Name: 3077 UNION RD. **Lab Number:** L1900104

Project Number: T0105-017-010 **Report Date:** 01/09/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 01/04/19 08:39
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-04 Batch: WG1194835-5					
Methylene chloride	ND		ug/l	2.5	0.70
1,1-Dichloroethane	ND		ug/l	2.5	0.70
Chloroform	ND		ug/l	2.5	0.70
Carbon tetrachloride	ND		ug/l	0.50	0.13
1,2-Dichloropropane	ND		ug/l	1.0	0.14
Dibromochloromethane	ND		ug/l	0.50	0.15
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50
Tetrachloroethene	ND		ug/l	0.50	0.18
Chlorobenzene	ND		ug/l	2.5	0.70
Trichlorofluoromethane	ND		ug/l	2.5	0.70
1,2-Dichloroethane	ND		ug/l	0.50	0.13
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70
Bromodichloromethane	ND		ug/l	0.50	0.19
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14
Bromoform	ND		ug/l	2.0	0.65
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17
Benzene	ND		ug/l	0.50	0.16
Toluene	ND		ug/l	2.5	0.70
Ethylbenzene	ND		ug/l	2.5	0.70
Chloromethane	ND		ug/l	2.5	0.70
Bromomethane	ND		ug/l	2.5	0.70
Vinyl chloride	ND		ug/l	1.0	0.07
Chloroethane	ND		ug/l	2.5	0.70
1,1-Dichloroethene	ND		ug/l	0.50	0.17
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70
Trichloroethene	ND		ug/l	0.50	0.18
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70

Project Name: 3077 UNION RD. **Lab Number:** L1900104

Project Number: T0105-017-010 **Report Date:** 01/09/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 01/04/19 08:39
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-04 Batch: WG1194835-5					
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70
Methyl tert butyl ether	ND		ug/l	2.5	0.70
p/m-Xylene	ND		ug/l	2.5	0.70
o-Xylene	ND		ug/l	2.5	0.70
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70
Styrene	ND		ug/l	2.5	0.70
Dichlorodifluoromethane	ND		ug/l	5.0	1.0
Acetone	ND		ug/l	5.0	1.5
Carbon disulfide	ND		ug/l	5.0	1.0
2-Butanone	ND		ug/l	5.0	1.9
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0
2-Hexanone	ND		ug/l	5.0	1.0
Bromochloromethane	ND		ug/l	2.5	0.70
1,2-Dibromoethane	ND		ug/l	2.0	0.65
n-Butylbenzene	ND		ug/l	2.5	0.70
sec-Butylbenzene	ND		ug/l	2.5	0.70
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70
Isopropylbenzene	ND		ug/l	2.5	0.70
p-Isopropyltoluene	ND		ug/l	2.5	0.70
n-Propylbenzene	ND		ug/l	2.5	0.70
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.70
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.70
Methyl Acetate	ND		ug/l	2.0	0.23
Cyclohexane	ND		ug/l	10	0.27
1,4-Dioxane	ND		ug/l	250	61.
Freon-113	ND		ug/l	2.5	0.70
Methyl cyclohexane	ND		ug/l	10	0.40

Project Name: 3077 UNION RD. **Lab Number:** L1900104

Project Number: T0105-017-010 **Report Date:** 01/09/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 01/04/19 08:39
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-04 Batch: WG1194835-5					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	100		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: 3077 UNION RD.

Project Number: T0105-017-010

Lab Number: L1900104

Report Date: 01/09/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-04 Batch: WG1194835-3 WG1194835-4								
Methylene chloride	100		100		70-130	0		20
1,1-Dichloroethane	100		100		70-130	0		20
Chloroform	100		100		70-130	0		20
Carbon tetrachloride	100		98		63-132	2		20
1,2-Dichloropropane	98		99		70-130	1		20
Dibromochloromethane	100		98		63-130	2		20
1,1,2-Trichloroethane	100		100		70-130	0		20
Tetrachloroethene	100		99		70-130	1		20
Chlorobenzene	100		100		75-130	0		20
Trichlorofluoromethane	96		93		62-150	3		20
1,2-Dichloroethane	98		99		70-130	1		20
1,1,1-Trichloroethane	100		99		67-130	1		20
Bromodichloromethane	98		98		67-130	0		20
trans-1,3-Dichloropropene	98		98		70-130	0		20
cis-1,3-Dichloropropene	100		100		70-130	0		20
Bromoform	100		99		54-136	1		20
1,1,2,2-Tetrachloroethane	100		100		67-130	0		20
Benzene	98		98		70-130	0		20
Toluene	99		100		70-130	1		20
Ethylbenzene	99		98		70-130	1		20
Chloromethane	**61**	Q	**63**	Q	64-130	3		20
Bromomethane	**28**	Q	**25**	Q	39-139	11		20
Vinyl chloride	96		95		55-140	1		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: 3077 UNION RD.
Project Number: T0105-017-010

Lab Number: L1900104
Report Date: 01/09/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-04 Batch: WG1194835-3 WG1194835-4								
Chloroethane	130		120		55-138	8		20
1,1-Dichloroethene	98		98		61-145	0		20
trans-1,2-Dichloroethene	100		100		70-130	0		20
Trichloroethene	99		99		70-130	0		20
1,2-Dichlorobenzene	100		97		70-130	3		20
1,3-Dichlorobenzene	100		100		70-130	0		20
1,4-Dichlorobenzene	100		98		70-130	2		20
Methyl tert butyl ether	110		100		63-130	10		20
p/m-Xylene	100		100		70-130	0		20
o-Xylene	100		100		70-130	0		20
cis-1,2-Dichloroethene	100		100		70-130	0		20
Styrene	90		90		70-130	0		20
Dichlorodifluoromethane	73		72		36-147	1		20
Acetone	77		71		58-148	8		20
Carbon disulfide	99		98		51-130	1		20
2-Butanone	97		89		63-138	9		20
4-Methyl-2-pentanone	100		94		59-130	6		20
2-Hexanone	92		85		57-130	8		20
Bromochloromethane	100		110		70-130	10		20
1,2-Dibromoethane	100		100		70-130	0		20
n-Butylbenzene	98		94		53-136	4		20
sec-Butylbenzene	100		95		70-130	5		20
1,2-Dibromo-3-chloropropane	98		96		41-144	2		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: 3077 UNION RD.

Project Number: T0105-017-010

Lab Number: L1900104

Report Date: 01/09/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-04 Batch: WG1194835-3 WG1194835-4								
Isopropylbenzene	99		96		70-130	3		20
p-Isopropyltoluene	98		94		70-130	4		20
n-Propylbenzene	100		97		69-130	3		20
1,2,3-Trichlorobenzene	95		93		70-130	2		20
1,2,4-Trichlorobenzene	96		91		70-130	5		20
1,3,5-Trimethylbenzene	100		97		64-130	3		20
1,2,4-Trimethylbenzene	99		96		70-130	3		20
Methyl Acetate	95		91		70-130	4		20
Cyclohexane	98		94		70-130	4		20
1,4-Dioxane	152		116		56-162	**27**	Q	20
Freon-113	100		100		70-130	0		20
Methyl cyclohexane	100		94		70-130	6		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	100		101		70-130
Toluene-d8	100		101		70-130
4-Bromofluorobenzene	96		95		70-130
Dibromofluoromethane	100		102		70-130

Project Name: 3077 UNION RD.
Project Number: T0105-017-010

Lab Number: L1900104
Report Date: 01/09/19

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1900104-01A	Vial HCl preserved	A	NA		4.2	Y	Absent		NYTCL-8260-R2(14)
L1900104-01B	Vial HCl preserved	A	NA		4.2	Y	Absent		NYTCL-8260-R2(14)
L1900104-01C	Vial HCl preserved	A	NA		4.2	Y	Absent		NYTCL-8260-R2(14)
L1900104-02A	Vial HCl preserved	A	NA		4.2	Y	Absent		NYTCL-8260-R2(14)
L1900104-02B	Vial HCl preserved	A	NA		4.2	Y	Absent		NYTCL-8260-R2(14)
L1900104-02C	Vial HCl preserved	A	NA		4.2	Y	Absent		NYTCL-8260-R2(14)
L1900104-03A	Vial HCl preserved	A	NA		4.2	Y	Absent		NYTCL-8260-R2(14)
L1900104-03B	Vial HCl preserved	A	NA		4.2	Y	Absent		NYTCL-8260-R2(14)
L1900104-03C	Vial HCl preserved	A	NA		4.2	Y	Absent		NYTCL-8260-R2(14)
L1900104-04A	Vial HCl preserved	A	NA		4.2	Y	Absent		NYTCL-8260-R2(14)
L1900104-04B	Vial HCl preserved	A	NA		4.2	Y	Absent		NYTCL-8260-R2(14)
L1900104-04C	Vial HCl preserved	A	NA		4.2	Y	Absent		NYTCL-8260-R2(14)

*Values in parentheses indicate holding time in days

Project Name:	3077 UNION RD.	**Lab Number:**	L1900104
Project Number:	T0105-017-010	**Report Date:**	01/09/19

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample¿s toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1	- The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Report Format: DU Report with 'J' Qualifiers

Project Name:	3077 UNION RD.	**Lab Number:**	L1900104
Project Number:	T0105-017-010	**Report Date:**	01/09/19

Data Qualifiers

A - Spectra identified as "Aldol Condensation Product".

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	3077 UNION RD.	**Lab Number:**	L1900104
Project Number:	T0105-017-010	**Report Date:**	01/09/19

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.

EPA 6860: SCM: Perchlorate

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

ALPHA ANALYTICAL

NEW YORK CHAIN OF CUSTODY

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page: 1 of 1

Date Rec'd in Lab: 1/3/19

ALPHA Job #: L1900104

Client Information

Client: TURNKEY ENV. REST.
Address: 2558 HAMBURG TPKE
Phone: 716-856-0599
Fax:
Email: b.mayback@turnkeyllc.com

Project Information

Project Name: 3077 UNION RD
Project Location: 3077 UNION RD
Project #: T0105-017-013
(Use Project name as Project #)
Project Manager: BRYAN MAYBACK
ALPHAQuote #:

Turn-Around Time

Standard: X
Rush (only if pre approved):
Due Date:
# of Days:

Deliverables

ASP-A
ASP-B
EQuIS (1 File)
EQuIS (4 File)
Other

Regulatory Requirement

NY TOGS
NY Part 375
AWQ Standards
NY CP-51
NY Restricted Use
Other
NY Unrestricted Use
NYC Sewer Discharge

Billing Information

Same as Client Info: X
PO #

Disposal Site Information

Please identify below location of applicable disposal facilities.
Disposal Facility:
NJ
NY: X
Other:

These samples have been previously analyzed by Alpha

Other project specific requirements/comments:

Please specify Metals or TAL.

ANALYSIS

TCL + CP51 VOCs

Sample Filtration
Done
Lab to do
Preservation
Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	TCL + CP51 VOCs	Sample Specific Comments	Total Bottle
00104-01	PZ-2	1/2/19	1000	AQUA	CS	X		5
-02	PZ-3		1030			X		3
-03	PZ-4		1100			X		3
-04	PZ-5		1130			X		3

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Container Type: V
Preservative: B

Relinquished By:	Date/Time	Received By:	Date/Time
Chad M Schmidt	1/2/19 1235	FedEx-AAL	1/2/19 1235
FedEx-AAL	1/2/19 1235		1/3/19 0045

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-25 HC (rev. 30-Sept-2013)

ANALYTICAL REPORT

Lab Number:	L1853200
Client:	Turnkey Environmental Restoration, LLC 2558 Hamburg Turnpike Suite 300 Buffalo, NY 14218
ATTN:	Bryan Mayback
Phone:	(716) 856-0599
Project Name:	3077 UNION RD.
Project Number:	0105-017-010
Report Date:	01/07/19

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: 3077 UNION RD.
Project Number: 0105-017-010

Lab Number: L1853200
Report Date: 01/07/19

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1853200-01	MW-1	WATER	ORCHARD PARK, NY	12/26/18 13:10	12/27/18
L1853200-02	MW-1D	WATER	ORCHARD PARK, NY	12/26/18 13:13	12/27/18
L1853200-03	MW-2D	WATER	ORCHARD PARK, NY	12/26/18 10:49	12/27/18
L1853200-04	MW-4D	WATER	ORCHARD PARK, NY	12/26/18 11:21	12/27/18

Project Name: 3077 UNION RD.
Project Number: 0105-017-010

Lab Number: L1853200
Report Date: 01/07/19

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name:	3077 UNION RD.	**Lab Number:**	L1853200
Project Number:	0105-017-010	**Report Date:**	01/07/19

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Amita Naik

Title: Technical Director/Representative Date: 01/07/19

ORGANICS

VOLATILES

Project Name: 3077 UNION RD.
Project Number: 0105-017-010
Lab Number: L1853200
Report Date: 01/07/19

SAMPLE RESULTS

Lab ID: L1853200-01
Client ID: MW-1
Sample Location: ORCHARD PARK, NY

Date Collected: 12/26/18 13:10
Date Received: 12/27/18
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 01/03/19 10:43
Analyst: RR

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	ND		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1

Project Name: 3077 UNION RD. **Lab Number:** L1853200

Project Number: 0105-017-010 **Report Date:** 01/07/19

SAMPLE RESULTS

Lab ID: L1853200-01 Date Collected: 12/26/18 13:10

Client ID: MW-1 Date Received: 12/27/18

Sample Location: ORCHARD PARK, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
Methyl tert butyl ether	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	9.6		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
n-Butylbenzene	ND		ug/l	2.5	0.70	1
sec-Butylbenzene	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Isopropylbenzene	ND		ug/l	2.5	0.70	1
p-Isopropyltoluene	ND		ug/l	2.5	0.70	1
n-Propylbenzene	ND		ug/l	2.5	0.70	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.70	1
Methyl Acetate	ND		ug/l	2.0	0.23	1
Cyclohexane	ND		ug/l	10	0.27	1
1,4-Dioxane	ND		ug/l	250	61.	1
Freon-113	ND		ug/l	2.5	0.70	1
Methyl cyclohexane	ND		ug/l	10	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	103		70-130

Project Name: 3077 UNION RD.
Project Number: 0105-017-010
Lab Number: L1853200
Report Date: 01/07/19

SAMPLE RESULTS

Lab ID: L1853200-02
Client ID: MW-1D
Sample Location: ORCHARD PARK, NY
Date Collected: 12/26/18 13:13
Date Received: 12/27/18
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 01/03/19 11:11
Analyst: RR

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	ND		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1

Project Name: 3077 UNION RD. **Lab Number:** L1853200

Project Number: 0105-017-010 **Report Date:** 01/07/19

SAMPLE RESULTS

Lab ID: L1853200-02 Date Collected: 12/26/18 13:13

Client ID: MW-1D Date Received: 12/27/18

Sample Location: ORCHARD PARK, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
Methyl tert butyl ether	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	0.86	J	ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	1.9	J	ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
n-Butylbenzene	ND		ug/l	2.5	0.70	1
sec-Butylbenzene	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Isopropylbenzene	ND		ug/l	2.5	0.70	1
p-Isopropyltoluene	ND		ug/l	2.5	0.70	1
n-Propylbenzene	ND		ug/l	2.5	0.70	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.70	1
Methyl Acetate	ND		ug/l	2.0	0.23	1
Cyclohexane	1.9	J	ug/l	10	0.27	1
1,4-Dioxane	ND		ug/l	250	61.	1
Freon-113	ND		ug/l	2.5	0.70	1
Methyl cyclohexane	2.7	J	ug/l	10	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	103		70-130

Project Name: 3077 UNION RD.
Lab Number: L1853200
Project Number: 0105-017-010
Report Date: 01/07/19

SAMPLE RESULTS

Lab ID: L1853200-03
Client ID: MW-2D
Sample Location: ORCHARD PARK, NY

Date Collected: 12/26/18 10:49
Date Received: 12/27/18
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 01/03/19 11:39
Analyst: RR

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	ND		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	4.7		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1

Project Name: 3077 UNION RD. **Lab Number:** L1853200

Project Number: 0105-017-010 **Report Date:** 01/07/19

SAMPLE RESULTS

Lab ID: L1853200-03 Date Collected: 12/26/18 10:49

Client ID: MW-2D Date Received: 12/27/18

Sample Location: ORCHARD PARK, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
Methyl tert butyl ether	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	ND		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
n-Butylbenzene	ND		ug/l	2.5	0.70	1
sec-Butylbenzene	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Isopropylbenzene	ND		ug/l	2.5	0.70	1
p-Isopropyltoluene	ND		ug/l	2.5	0.70	1
n-Propylbenzene	ND		ug/l	2.5	0.70	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.70	1
Methyl Acetate	ND		ug/l	2.0	0.23	1
Cyclohexane	ND		ug/l	10	0.27	1
1,4-Dioxane	ND		ug/l	250	61.	1
Freon-113	ND		ug/l	2.5	0.70	1
Methyl cyclohexane	0.65	J	ug/l	10	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	104		70-130

Project Name: 3077 UNION RD.
Project Number: 0105-017-010
Lab Number: L1853200
Report Date: 01/07/19

SAMPLE RESULTS

Lab ID: L1853200-04
Client ID: MW-4D
Sample Location: ORCHARD PARK, NY
Date Collected: 12/26/18 11:21
Date Received: 12/27/18
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 01/03/19 12:06
Analyst: RR

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	ND		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	0.47	J	ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	1.6		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Trichloroethene	0.46	J	ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1

Project Name: 3077 UNION RD. **Lab Number:** L1853200

Project Number: 0105-017-010 **Report Date:** 01/07/19

SAMPLE RESULTS

Lab ID: L1853200-04 Date Collected: 12/26/18 11:21

Client ID: MW-4D Date Received: 12/27/18

Sample Location: ORCHARD PARK, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
Methyl tert butyl ether	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	0.70	J	ug/l	2.5	0.70	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	ND		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
n-Butylbenzene	ND		ug/l	2.5	0.70	1
sec-Butylbenzene	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Isopropylbenzene	ND		ug/l	2.5	0.70	1
p-Isopropyltoluene	ND		ug/l	2.5	0.70	1
n-Propylbenzene	ND		ug/l	2.5	0.70	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.70	1
Methyl Acetate	ND		ug/l	2.0	0.23	1
Cyclohexane	1.4	J	ug/l	10	0.27	1
1,4-Dioxane	ND		ug/l	250	61.	1
Freon-113	ND		ug/l	2.5	0.70	1
Methyl cyclohexane	2.4	J	ug/l	10	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	105		70-130

Project Name: 3077 UNION RD. **Lab Number:** L1853200

Project Number: 0105-017-010 **Report Date:** 01/07/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 01/03/19 08:51
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-04 Batch: WG1194453-5					
Methylene chloride	ND		ug/l	2.5	0.70
1,1-Dichloroethane	ND		ug/l	2.5	0.70
Chloroform	ND		ug/l	2.5	0.70
Carbon tetrachloride	ND		ug/l	0.50	0.13
1,2-Dichloropropane	ND		ug/l	1.0	0.14
Dibromochloromethane	ND		ug/l	0.50	0.15
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50
Tetrachloroethene	ND		ug/l	0.50	0.18
Chlorobenzene	ND		ug/l	2.5	0.70
Trichlorofluoromethane	ND		ug/l	2.5	0.70
1,2-Dichloroethane	ND		ug/l	0.50	0.13
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70
Bromodichloromethane	ND		ug/l	0.50	0.19
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14
Bromoform	ND		ug/l	2.0	0.65
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17
Benzene	ND		ug/l	0.50	0.16
Toluene	ND		ug/l	2.5	0.70
Ethylbenzene	ND		ug/l	2.5	0.70
Chloromethane	ND		ug/l	2.5	0.70
Bromomethane	ND		ug/l	2.5	0.70
Vinyl chloride	ND		ug/l	1.0	0.07
Chloroethane	ND		ug/l	2.5	0.70
1,1-Dichloroethene	ND		ug/l	0.50	0.17
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70
Trichloroethene	ND		ug/l	0.50	0.18
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70

Project Name: 3077 UNION RD. **Lab Number:** L1853200

Project Number: 0105-017-010 **Report Date:** 01/07/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 01/03/19 08:51
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-04 Batch: WG1194453-5					
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70
Methyl tert butyl ether	ND		ug/l	2.5	0.70
p/m-Xylene	ND		ug/l	2.5	0.70
o-Xylene	ND		ug/l	2.5	0.70
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70
Styrene	ND		ug/l	2.5	0.70
Dichlorodifluoromethane	ND		ug/l	5.0	1.0
Acetone	ND		ug/l	5.0	1.5
Carbon disulfide	ND		ug/l	5.0	1.0
2-Butanone	ND		ug/l	5.0	1.9
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0
2-Hexanone	ND		ug/l	5.0	1.0
Bromochloromethane	ND		ug/l	2.5	0.70
1,2-Dibromoethane	ND		ug/l	2.0	0.65
n-Butylbenzene	ND		ug/l	2.5	0.70
sec-Butylbenzene	ND		ug/l	2.5	0.70
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70
Isopropylbenzene	ND		ug/l	2.5	0.70
p-Isopropyltoluene	ND		ug/l	2.5	0.70
n-Propylbenzene	ND		ug/l	2.5	0.70
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.70
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.70
Methyl Acetate	ND		ug/l	2.0	0.23
Cyclohexane	ND		ug/l	10	0.27
1,4-Dioxane	ND		ug/l	250	61.
Freon-113	ND		ug/l	2.5	0.70
Methyl cyclohexane	ND		ug/l	10	0.40

Project Name: 3077 UNION RD. **Lab Number:** L1853200

Project Number: 0105-017-010 **Report Date:** 01/07/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 01/03/19 08:51
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-04 Batch: WG1194453-5					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	105		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: 3077 UNION RD.

Project Number: 0105-017-010

Lab Number: L1853200

Report Date: 01/07/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-04 Batch: WG1194453-3 WG1194453-4								
Methylene chloride	100		100		70-130	0		20
1,1-Dichloroethane	100		100		70-130	0		20
Chloroform	100		100		70-130	0		20
Carbon tetrachloride	100		100		63-132	0		20
1,2-Dichloropropane	100		99		70-130	1		20
Dibromochloromethane	100		100		63-130	0		20
1,1,2-Trichloroethane	100		110		70-130	10		20
Tetrachloroethene	100		100		70-130	0		20
Chlorobenzene	100		100		75-130	0		20
Trichlorofluoromethane	100		100		62-150	0		20
1,2-Dichloroethane	100		100		70-130	0		20
1,1,1-Trichloroethane	100		100		67-130	0		20
Bromodichloromethane	100		97		67-130	3		20
trans-1,3-Dichloropropene	100		98		70-130	2		20
cis-1,3-Dichloropropene	100		96		70-130	4		20
Bromoform	100		100		54-136	0		20
1,1,2,2-Tetrachloroethane	110		110		67-130	0		20
Benzene	100		98		70-130	2		20
Toluene	100		100		70-130	0		20
Ethylbenzene	100		99		70-130	1		20
Chloromethane	70		66		64-130	6		20
Bromomethane	**30**	Q	**25**	Q	39-139	18		20
Vinyl chloride	110		100		55-140	10		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: 3077 UNION RD.
Project Number: 0105-017-010

Lab Number: L1853200
Report Date: 01/07/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-04 Batch: WG1194453-3 WG1194453-4								
Chloroethane	**140**	Q	130		55-138	7		20
1,1-Dichloroethene	100		98		61-145	2		20
trans-1,2-Dichloroethene	110		100		70-130	10		20
Trichloroethene	100		99		70-130	1		20
1,2-Dichlorobenzene	100		99		70-130	1		20
1,3-Dichlorobenzene	100		100		70-130	0		20
1,4-Dichlorobenzene	100		99		70-130	1		20
Methyl tert butyl ether	100		110		63-130	10		20
p/m-Xylene	105		105		70-130	0		20
o-Xylene	105		100		70-130	5		20
cis-1,2-Dichloroethene	100		100		70-130	0		20
Styrene	95		95		70-130	0		20
Dichlorodifluoromethane	79		76		36-147	4		20
Acetone	83		84		58-148	1		20
Carbon disulfide	100		99		51-130	1		20
2-Butanone	100		100		63-138	0		20
4-Methyl-2-pentanone	100		110		59-130	10		20
2-Hexanone	97		100		57-130	3		20
Bromochloromethane	110		100		70-130	10		20
1,2-Dibromoethane	100		100		70-130	0		20
n-Butylbenzene	100		97		53-136	3		20
sec-Butylbenzene	100		99		70-130	1		20
1,2-Dibromo-3-chloropropane	100		100		41-144	0		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: 3077 UNION RD.

Project Number: 0105-017-010

Lab Number: L1853200

Report Date: 01/07/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-04 Batch: WG1194453-3 WG1194453-4								
Isopropylbenzene	100		96		70-130	4		20
p-Isopropyltoluene	100		96		70-130	4		20
n-Propylbenzene	100		96		69-130	4		20
1,2,3-Trichlorobenzene	97		98		70-130	1		20
1,2,4-Trichlorobenzene	99		95		70-130	4		20
1,3,5-Trimethylbenzene	100		97		64-130	3		20
1,2,4-Trimethylbenzene	100		96		70-130	4		20
Methyl Acetate	96		96		70-130	0		20
Cyclohexane	100		100		70-130	0		20
1,4-Dioxane	122		98		56-162	**22**	Q	20
Freon-113	110		110		70-130	0		20
Methyl cyclohexane	110		100		70-130	10		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	101		102		70-130
Toluene-d8	100		101		70-130
4-Bromofluorobenzene	96		92		70-130
Dibromofluoromethane	102		103		70-130

Project Name: 3077 UNION RD.
Project Number: 0105-017-010

Lab Number: L1853200
Report Date: 01/07/19

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1853200-01A	Vial HCl preserved	A	NA		2.4	Y	Absent		NYTCL-8260-R2(14)
L1853200-01B	Vial HCl preserved	A	NA		2.4	Y	Absent		NYTCL-8260-R2(14)
L1853200-01C	Vial HCl preserved	A	NA		2.4	Y	Absent		NYTCL-8260-R2(14)
L1853200-02A	Vial HCl preserved	A	NA		2.4	Y	Absent		NYTCL-8260-R2(14)
L1853200-02B	Vial HCl preserved	A	NA		2.4	Y	Absent		NYTCL-8260-R2(14)
L1853200-02C	Vial HCl preserved	A	NA		2.4	Y	Absent		NYTCL-8260-R2(14)
L1853200-03A	Vial HCl preserved	A	NA		2.4	Y	Absent		NYTCL-8260-R2(14)
L1853200-03B	Vial HCl preserved	A	NA		2.4	Y	Absent		NYTCL-8260-R2(14)
L1853200-03C	Vial HCl preserved	A	NA		2.4	Y	Absent		NYTCL-8260-R2(14)
L1853200-04A	Vial HCl preserved	A	NA		2.4	Y	Absent		NYTCL-8260-R2(14)
L1853200-04B	Vial HCl preserved	A	NA		2.4	Y	Absent		NYTCL-8260-R2(14)
L1853200-04C	Vial HCl preserved	A	NA		2.4	Y	Absent		NYTCL-8260-R2(14)

*Values in parentheses indicate holding time in days

Project Name:	3077 UNION RD.	**Lab Number:**	L1853200
Project Number:	0105-017-010	**Report Date:**	01/07/19

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample¿s toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1	- The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Report Format: DU Report with 'J' Qualifiers

Project Name:	3077 UNION RD.	**Lab Number:**	L1853200
Project Number:	0105-017-010	**Report Date:**	01/07/19

Data Qualifiers

A - Spectra identified as "Aldol Condensation Product".

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	3077 UNION RD.	**Lab Number:**	L1853200
Project Number:	0105-017-010	**Report Date:**	01/07/19

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.

EPA 6860: SCM: Perchlorate

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

NEW YORK CHAIN OF CUSTODY

ALPHA ANALYTICAL

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 1 of 1

Date Rec'd in Lab: 12/28/18

ALPHA Job #: L1853200

Client Information

Client: Terrakey Environmental Res
Address: 2558 Hamburg Turnpike
Lackawanna NY 14218
Phone: (716) 810-8350
Fax: (716) 558-0583
Email: TBehrendt@Terrakeyllc.com

Project Information

Project Name: 3077 Union Rd
Project Location: Orchard Park NY
Project # 0105-017-010
(Use Project name as Project #) [X]
Project Manager: Bryan Maybeck
ALPHAQuote #:

Turn-Around Time

Standard [X] Due Date:
Rush (only if pre approved) [ ] # of Days:

Deliverables

[ ] ASP-A [ ] ASP-B
[ ] EQuIS (1 File) [ ] EQuIS (4 File)
[ ] Other

Regulatory Requirement

[ ] NY TOGS [ ] NY Part 375
[ ] AWQ Standards [ ] NY CP-51
[ ] NY Restricted Use [ ] Other
[ ] NY Unrestricted Use
[ ] NYC Sewer Discharge

Billing Information

[ ] Same as Client Info
PO #

Disposal Site Information

Please identify below location of applicable disposal facilities.
Disposal Facility:
[ ] NJ [ ] NY
[ ] Other:

These samples have been previously analyzed by Alpha [ ]

Other project specific requirements/comments:

Please specify Metals or TAL.

ANALYSIS

TCL+CP-51 VOC 8260

Sample Filtration
[ ] Done
[ ] Lab to do
Preservation
[ ] Lab to do
(Please Specify below)

Total Bottle

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	Sample Specific Comments
53200-01	MW-1	12/26/18	1310	Water	TAB	3
-02	MW-1D		1313			3
-03	MW-2D		1049			3
-04	MW-4D		1121			3

Container Type: V
Preservative: B

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	12/26/18 1530	[signature]	12/27/18 11:55
J. Dawson FAX	12/27/18 12:30	[signature]	12/28/18 01:00

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-25 HC (rev. 30-Sept-2013)

APPENDIX C

FIELD OPERATING PROCEDURES

(PROVIDED ON CD)

FIELD OPERATING PROCEDURES

Abandonment of Borehole Procedures

FOP 001.1

ABANDONMENT OF BOREHOLE PROCEDURE

PURPOSE

Soil borings that are not completed as monitoring wells will be plugged by filling the holes with a cement/bentonite grout. Field staff will calculate the borehole volume and compare it to the final installed volume of grout to evaluate whether bridging or loss to the formation has occurred. These calculations and the actual volume placed will be noted on the Boring Log.

PROCEDURE

1. Determine most suitable seal materials. Grout specifications generally have mixture ratios as follows:

   Grout Slurry Composition (% Weight)

1.5 to 3.0%	-	Bentonite (Quick Gel)
40 to 60 %	-	Cement (Portland Type I)
40 to 60 %	-	Potable Water

2. Calculate the volume of the borehole base on the bit or auger head diameter plus 10% and determine the volume of grout to be emplaced. Generally, the total mixed volume is the borehole volume plus 20%.

3. Identify the equipment to be used for the preparation and mixing of the grout. Ensure the volume of the tanks to be used for mixing has been measured adequately. Document these volumes on the Well Abandonment/Decommissioning Log (sample attached).

4. Identify the source of the water to be used for the grout and determine its suitability for use. In particular, water with high sulfate, or chloride levels or heated water should not be used. These types of waters can cause operational difficulties or modify the set-up for the grout.

5. Identify the equipment to be used for emplacing the grout. Ensure that the pump to be used has adequate pressure to enable complete return to surface.

6. Identify the volumes to be pumped at each stage or in total if only one stage is to be used.

7. Prepare the borehole abandonment plan and discuss the plan and activities with the drilling contractor prior to beginning any mixing activities.

8. Begin mixing the grout to be emplaced.

9. Record the type and amount of materials used during the mixing operation. Ensure the ratios are within specifications tolerance.

10. Begin pumping the grout through the return line bypass system to confirm all pump and surface fittings are secure.

11. Initiate downhole pumping from the bottom of the borehole. Record the times and volumes emplaced on the Well Abandonment/Decommissioning Log (sample attached).

12. Document the return circulation of grout. This may be facilitated by using a colored dye or other tagging method if a mudded borehole condition exists prior to grout injection.

13. Identify what procedures will be used for grouting in the upper 3 feet. When casing exists in the borehole, decisions are required as to the timing for removal and final disposition of the casing. Generally, it will not be removed prior to grouting because of the potential for difficult access and loss of circulation in the upper soil or rock layers. Accordingly, when cement return is achieved at surface, the casing is commonly removed and the borehole is topped off with grout or soils. If casing removal is not possible or not desired, the casing left in place should be cut off at a depth of 5 feet or greater below ground surface. If casing is not present during grouting, the grout level in the borehole is topped off after the rods or tremie pipe is removed.

14. Clear and clean the surface near the borehole.

15. The uppermost five feet of the borehole at the land surface should be filled with material physically similar to the natural soils. The surface of the borehole should be restored to the condition of the area surrounding the borehole. For example, concrete or asphalt will be patched with concrete or asphalt of the same type and thickness, grassed areas will be seeded, and topsoil will be used in other areas. All solid waste materials generated during the decommissioning process must be disposed of properly.

16. A follow-up check at each site should be made within one week to 10 days of completion. It should be noted that on occasion, the grout and/or surface material may settle over several days. If settling occurs, additional material physically similar to surrounding materials (i.e., asphalt, concrete, or soil) must be used to match the existing grade.

17. Document borehole and/or well/piezometer decommissioning activities on a Well Abandonment/Decommissioning Log (sample attached).

ATTACHMENTS

Well Abandonment/Decommissioning Log (sample)

REFERENCES

ASTM D 5299: *Guide for Decommissioning of Ground Water Wells, Vadose Zone Monitoring Devices, Boreholes, and Other Devices for Environmental Activities.*

NYSDEC, July 1988, *Drilling and Monitoring Well Installation Guidance Manual.*

NYSDEC, November 2009, *CP-43: Groundwater Monitoring Well Decommissioning Policy.*

Driscoll, F.G., 1987, *Groundwater and Wells*, Johnson Division, St. Paul, Minnesota, 1089 p.

WELL ABANDONMENT/ DECOMMISSIONING LOG

PROJECT INFORMATION	WELL INFORMATION
Project Name:	WELL I.D.:
Client:	Stick-up (fags):
Project Job Number:	Total Depth (fbgs):
Date:	Screen Interval (fbgs):
Weather:	Well Material:
	Diameter (inches):
BM/TK Personnel:	
Drilling Company:	Drilling Company Personnel:
Drill Rig Type:	

DECOMMISSIONING PROCEDURES

Time	Description of Field Activities

SAMPLE

PREPARED BY: DATE:

TurnKey Environmental Restoration, LLC

FIELD OPERATING PROCEDURES

Abandonment of Monitoring Wells Procedure

FOP 002.0

ABANDONMENT OF MONITORING WELLS PROCEDURE

PURPOSE

This guideline presents a method for the abandonment and decommissioning of wells that are no longer reliable as competent monitors of formation groundwater. Well abandonment and decommissioning is required in order to remove a potential pathway for the vertical migration of impacted groundwater and/or surface water.

PROCEDURE

1. Examine the existing well to be abandoned/decommissioned and review well construction detail information (if applicable) to determine well depth,, screened interval, diameter, material of composition and other construction details. Establish appropriate equipment requirements for removal of the well.

2. Determine the most suitable seal materials as discussed in the next section.

3. Attempt to remove the well using a drilling rig, by using the following procedures:
    - Attaching the winch line to the well to see if it can be removed by pulling;
    - Using the rig's hydraulics to advance casing incrementally;
    - If a cable tool rig is available, bump back the casing using the cathead and drive block.

3. Upon removal of the well, ream the borehole by advancing the augers approximately one foot beyond the total depth of the well. Rotate the augers at a speed sufficient to remove the construction materials (i.e., filter pack, bentonite seal, etc.) from the borehole annulus (if possible). Backfill the resulting borehole with cement/bentonite grout, by tremie method, to approximately one foot below ground surface. Fill the remaining borehole to match the existing grade elevation and material of construction (i.e., clean native soil, concrete or asphalt, as necessary). Go to Step 10.

4. If the well cannot be removed from the borehole over-drill the borehole and well to approximately two (2) feet below the well depth. Upon reaching the desired depth, remove the well from within the augers and go back to Step 3.

5. If the borehole cannot be reamed out using conventional drilling techniques (i.e., over-drilled), remove or puncture the base plate of the well screen using the drill rig and associated equipment by pounding with the drill rods. Upon filling the well with grout by tremie method, slowly pull the well from the ground surface to allow the grout to evacuate through the bottom of the well to fill the void space created by removal of the well casing. Continue adding grout mix to the well casing, as necessary, to fill the void space to approximately one foot below ground surface. Fill the remaining borehole to match the existing grade elevation and material of construction (i.e., clean native soil, concrete or asphalt, as necessary). Go to Step 10.

   If the driller is unsuccessful at removing or puncturing the base plate of the well due, in part, to well construction materials (i.e., stainless steel or black iron), go to Step 6.

6. Insert a tremie pipe down the well to the bottom and pump a cement/bentonite grout mixture to a depth one to two feet above the top of the screen.

7. Perform a hydraulic pressure test on the portion of the well casing above the grouted screen section. Allow the grout to set up for a period not less than 72 hours before pressure testing of the grouted interval. Place a pneumatic packer a maximum of 4.5 feet above the top of the slotted screen section of the well. The infiltration pressure applied to the packer shall not exceed the pressure rating of the well casing material. If the interval between the top of the grout and the bottom of the packer is not saturated, potable water will be used to fill the interval. A gauge pressure of 5 psig at the well head shall be applied to the interval for a period of 5 minutes to allow for temperature stabilization. After 5 minutes, the pressure will be maintained at 5 psig for 30 minutes. The grout seal shall be considered acceptable if the total loss of water to the seal does not exceed 0.5 gallons over a 30-minute period.

8. If the grout seal is determined to be unacceptable, tremie grout an additional 5 feet of well riser above the failing interval and retest as specified above (see Step 7).

9. If the grout seal is determined to be acceptable, tremie grout the remainder of the well until grout displaces all formation water and a grout return is visible in the well at the surface. Cut off well casing at a depth of five feet or greater below ground surface and backfill the remaining borehole to match the existing grade elevation and material of construction (i.e., clean native soil, concrete or asphalt, as necessary).

10. Record all well construction details and abandonment procedures on the **Well Abandonment/Decommissioning Log** (sample attached).

CEMENT/BENTONITE GROUT MIXTURE

The cement/bentonite grout mixture identified below is generally considered the most suitable seal material for monitoring well advancement and abandonment. Grout specifications generally have mixture ratios as follows:

Grout Slurry Composition (% Weight)

1.5 to 3.0% - Bentonite (Quick Gel)
40 to 60% - Cement (Portland Type I)
40 to 60% - Potable Water

MISCELLANEOUS

All removed well materials (PVC, stainless steel, steel pipe) should be decontaminated (if necessary) as per the project specific **Drilling and Excavation Equipment Decontamination FOP** and removed from the site. The project manager will determine the destination of final disposal for all well materials. All drill cuttings (depending on site protocol) should be placed in DOT-approved 55-gallon drums, labeled and sampled in

accordance with TurnKey's field operating procedure **Management of Investigation-Derived Waste** in order to determine proper removal and disposal procedures. The drilling subcontractor will provide any potable water utilized during this field activity from a known and reliable source (see Notes section).

ATTACHMENTS

Well Abandonment/Decommissioning Log (sample)

REFERENCES

New York State Department of Environmental Conservation, July 1988, *Drilling and Monitoring Well Installation Guidance Manual.*

Driscoll, F.G., 1987, *Groundwater and Wells*, Johnson Division, St. Paul, Minnesota, p. 1089.

TurnKey FOPs:

018 Drilling/Excavation Equipment Decontamination Protocols
032 Management of Investigation-Derived Waste

NOTES

Tap water may be used from any municipal water treatment system. The use of an untreated potable water supply is not an acceptable substitute.

WELL ABANDONMENT/ DECOMMISSIONING LOG

PROJECT INFORMATION	WELL INFORMATION
Project Name:	WELL I.D.:
Client:	Stick-up (fags):
Project Job Number:	Total Depth (fbgs):
Date:	Screen Interval (fbgs):
Weather:	Well Material:
	Diameter (inches):
BM/TK Personnel:	
Drilling Company:	Drilling Company Personnel:
Drill Rig Type:	

DECOMMISSIONING PROCEDURES

Time	Description of Field Activities

SAMPLE

PREPARED BY: DATE:

FIELD OPERATING PROCEDURES

Air Rotary Drilling Procedure

FOP 003.0

AIR ROTARY DRILLING PROCEDURE

PURPOSE

This guideline presents a standard method of subsurface drilling in bedrock or extremely resistant unconsolidated soils using air rotary drilling techniques.

PROCEDURE

1. Advance boring to top of competent bedrock as per TurnKey's Hollow Stem Auger (HSA) Drilling Procedures FOP and/or the Overburden Casing Installation Procedures FOP, or approved other as per the project work plan.

2. Rock drilling is performed using air as the primary drilling fluid. Water present in the formation assists the drilling process. A large compressor supplies air that is piped through a dual filter system to a swivel hose connected to the top of the Kelly or drill pipe. The dual filters remove oil that may enter the air stream at the compressor. The secondary filter should be inspected periodically to determine if oil is passing the primary filter. If this occurs, the primary and secondary filters should be replaced.

3. The cuttings and formation water are blown from the bottom of the borehole and are channeled by the dissipator (an enclosed hood located at the borehole surface) through flexible hosing to a covered 55-gallon D.O.T.-approved drum.

4. Advance the boring into consolidated materials by standard rock coring procedures using a triple was core barrel of NX or HQ size. Log bedrock core in accordance with TurnKey's FOP 043: Rock Core Classification Procedure. Temporary casing may be used if circulation of drill water is desired.

5. Perform packer permeability testing at this stage if the project requires such testing as per TurnKey's FOP 042: Pressure Packer Test Procedure.

6. Continue advancing boring alternating between air rotary drilling (3 7/8-inch roller bit or other size as required) and core sample collection (typically in 5-foot increments or as the formation allows).

7. Verify borehole depth using a weighted measuring tape.

8. Air monitoring is performed in accordance with the site Health and Safety Plan (HASP).

9. Record all information in the Project Field Book and on the appropriate project field forms.

ATTACHMENTS

none

REFERENCES

TurnKey FOPs:

026 Hollow Stem Auger (HSA) Drilling Procedures
041 Overburden Casing Installation Procedures
042 Pressure Packer Test Procedure
043 Rock Core Classification Procedure

TurnKey Environmental Restoration, LLC

FIELD OPERATING PROCEDURES

Calibration & Maintenance of Combustible Gas/Oxygen Meter

FOP 006.0

CALIBRATION AND MAINTENANCE OF COMBUSTIBLE GAS/OXYGEN METER

PURPOSE

This procedure presents a method for calibration of the GasTech GT402 four-gas meter. The GasTech GT402 is a portable instrument designed primarily for detection of combustible gases and of oxygen deficiency in ambient air and confined workspaces, such as natural gas or depleted oxygen in utility manholes. The GasTech GT402 monitors an environment for hydrocarbons (LEL/ppm), oxygen (O_2), carbon monoxide (CO) and hydrogen sulfide (H_2S). The meter detects gas by a sample-drawing method utilizing up to four internal sensors plugged into assigned molded flow block receptacles. During operation, the GasTech GT402 alerts the user with visual and audible alarms whenever a monitored gas reaches the preset alarm level. The GasTech GT402 has an internal pump that continually draws the atmosphere sample into the external probe and hose, then into the monitor to the sensor(s).

The information included below is equipment manufacturer- and model-specific, however, accuracy, calibration, and maintenance procedures for this type of portable equipment are typically similar. The information below pertains to GasTech GT402. The actual equipment to be used in the field will be equivalent or similar. The unit selected for use in the field will be used to measure methane gas, hydrogen sulfide gas, Lower Explosive Limit (LEL), and percent oxygen. As always, consult the manufacturers operations manual prior to conducting this procedure to confirm accuracy.

START-UP PROCEDURE

Perform the following steps to start up the GasTech GT402 gas monitor and adjust internal circuits to "fresh air" readings (demand zero). Read this entire section before turning on the meter.

WARNING

Perform the following start-up procedure in a "fresh air" environment only (environment known to be free of toxic gases, combustible gases, and of normal oxygen content).

1. If you are using Ni-Cd batteries, make sure the batteries are fully charged before you continue this procedure.

2. Press the **ON/OFF** button once, then release the button. The display momentarily shows the software version of your monitor and the number of data logging hours that remain in memory. During the warm-up period, the gas readings stabilize for the installed sensors. You can hear the pump operating, and the words **WARMING UP** are displayed. The red LED flashes slowly during warm-up. Allow one minute for the display to stabilize and the LED to stop flashing. The GT sounds a periodic beep, and the display shows the words **WARMUP COMPLETE** when the meter completes initial warm-up.

WARNING

Do not perform the next step in the monitoring area. This can place you in potential danger if hazardous conditions exist.

3. Press and hold the **ADJUST/ENTER** button to adjust the monitor to "fresh air" readings. When the display reads "**DONE. THANK YOU"**, release the button.

4. Verify that the meter displays the correct fresh air reading for each of the meter's channels. The table below lists the correct fresh air reading for **all** channels available for the meter.

Channel	Fresh Air Reading
% LEL	000
% Oxygen	20.9
Carbon Monoxide (ppm)	000
Hydrogen Sulfide (ppm)	000

5. Exhale over the inlet of the probe. The O_2 reading decreases.

6. Continue exhaling over the probe until the O_2 reading decreases to **19.5%** or below.

7. Verify that the alarm activates when the O_2 reading decreases to **19.5%**. The buzzer sounds, the O_2 reading flashes, and the display flashes "**ALRM"** when the alarm activates.

8. Verify that the O_2 reading returns to **20.9%**. The gas reading flashes until it increases above 19.5%.

9. To turn the GT Series gas monitor off, press the **ON/OFF** button and hold it down while the GT sounds five audible beeps. The monitor automatically shuts off. Release the button.

10. If your GT uses rechargeable Ni-Cd batteries, the batteries must be fully charged before each use. When using alkaline batteries with your GT, for best possible operation you may choose to install fresh batteries before each use.

CALIBRATION PROCEDURE

Perform the following steps to calibrate the GasTech GT402 gas monitor and adjust internal circuits to "fresh air" readings (demand zero). Read this entire section before calibrating the meter.

CAUTION

Calibrate the GasTech GT402 gas monitor in a "fresh air" environment (known to be of normal oxygen content and free of toxic or combustible gases). Do not begin calibration unless you can verify that you are in a "fresh air" environment.

1. Verify that the calibrating area contains a level surface to set the meter and calibration kit accessories.

2. Turn on the meter in accordance with the Start-Up Procedure previously discussed. Enter the Function program and verify that the Battery Capacity screen displays at least three bars. Attach the probe to the inlet fitting on the meter.

3. Carefully screw the threaded end of the regulator into the gas cylinder.

4. Attach the sample tubing over the fitting on the regulator.

5. Press the **ADJUST/ENTER** button. The display shows the main screen.

6. Press the **RESET** and **BACK LITE/-** buttons simultaneously three times. The meter displays:

Version N.NN

Calibrate

Setting the Zero Readings

NOTE: During a zeroing operation, an exclamation point (!) may appear at the beginning of the second line of the display reading when the reading is centered in the zero range. The "!" symbol represents the optimum reading.

1. Press the ADJUST/ENTER button. The GT displays:

   Zero Gas

   NNN PPM H2S

2. Use the FUNC./+ or BACK LITE/- buttons to adjust the display reading to 000 PPM H2S.

3. Press the ADJUST/ENTER button to save this zero setting. The GT displays:

   Zero Gas

   NNNN PPM COMB

4. Use the **FUNC./+** or **BACK LITE/-** buttons to adjust the display reading to **0000 PPM COMB**.

5. Press the **ADJUST/ENTER** button to save this zero setting. The GT displays:

   Zero Gas

   NNN PPM CO

6. Use the **FUNC./+** or **BACK LITE/-** buttons to adjust the display reading to **000 PPM CO**.

7. Press the **ADJUST/ENTER** button to save this zero setting. The GT displays:

Zero Gas

NN.N %VOL OXY

8. Attach the tubing from the regulator to the probe tube. The GT will draw gas from the gas cylinder.

9. Allow at least one minute, then use the **FUNC./+** or **BACK LITE/-** buttons to adjust the display reading to match the O2 value marked on the gas cylinder.

10. Press the **ADJUST/ENTER** button to save this setting. The GT displays:

Span Gas

NNN PPM H2S

Setting the Span Readings

1. Use the **FUNC./+** or **BACK LITE/-** buttons to adjust the display reading to match the H2S value marked on the gas cylinder.

2. Press the ADJUST/ENTER button to save this span setting. The GT displays:

Span Gas

NNN %LEL COMB

3. Use the **FUNC./+** or **BACK LITE/-** buttons to adjust the display reading to match the combustible gas value marked on the gas cylinder.

4. Press the ADJUST/ENTER button to save this span setting. The GT displays:

Span Gas

NNN PPM CO

5. Use the **FUNC./+** or **BACK LITE/-** buttons to adjust the display reading to match the CO value marked on the gas cylinder.

6. Press the ADJUST/ENTER button to save this span setting. The GT displays:

Span Gas

NN.N %VOL OXY

7. Disconnect the probe from the tubing leading to the regulator. The flow of gas will stop automatically.

8. Use the FUNC./+ or BACK LITE/- buttons to adjust the display reading to 20.9 %VOL OXY.

9. Press the ADJUST/ENTER button to save this span setting.

Calibration is now complete. The GT displays:

Exit

Press any Key...

Exiting Calibration Mode

1. Press any button, except the **ON/OFF** to exit calibration mode.

2. Unscrew the regulator from the gas cylinder.

3. Store the components of the calibration kit in the storage case.

4. The GT is now ready for normal operation.

5. Record all calibration information in the Project Field Book as well as on an **Equipment Calibration Log** sheet (see attached sample).

MAINTENANCE

The following are daily, monthly, quarterly, and "as required" preventive maintenance suggestions to ensure the reliability of the GT monitor.

Daily

BATTERIES

The GT should always contain fully charged Ni-Cd batteries or sufficiently powered alkaline batteries before each day's use. You can verify the capacity of the batteries using the Function program. To verify battery capacity:

1. Verify that the battery slide switch is at the proper **ALK** or **NI-CAD** setting for the type of batteries in the GT.

2. Press and hold the **FUNC./+** button, for four beeps, then release the button. If the display shows less than three bars, recharge the Ni-Cd batteries or replace the alkaline batteries as described later in this chapter.

3. Press the **FUNC./+** button to return to the main display.

CALIBRATION

For **optimum** efficiency of the monitor, calibrate the GT **before** and **after** each use. If multiple calibrations over a period of days indicate that only a minimum of adjustments are required, the frequency of calibration can be changed to weekly or monthly, depending on how often the monitor is used, and how demanding the monitoring environment is.

NOTE

At the very least, "challenge" the normal operation of the oxygen (O2) sensor (if applicable) before every use. Exhale over the inlet of the probe as you watch the display. The O2 reading should **decrease**. When the O2 reading decreases to **19.5%**, the alarm should activate confirming the normal operation of the O2

SAMPLE-DRAW SUBCOMPONENTS

Verify the proper operation of the flow alarm circuit by holding your finger over the inlet of the probe for a few seconds. The pump shuts off, the **PUMP OFF PRESS RESET** message appears on the display, and the audible alarm sounds if the flow alarm circuit is operating properly.

Monthly/Quarterly

CALIBRATION

Calibrate the sensors at least every one to three months. Calibration frequency depends on the frequency of use and also the environmental conditions in which you use the GT.

As Required

ALARM CIRCUITS

Periodically verify that all visual and audible alarms function properly.

WARNING

Verify alarm circuits in a "fresh air" environment only (environment known to be free of combustible and toxic gases and of normal oxygen content).

To verify the alarm circuits, use a concentration of the proper gas sample that is greater than the preset warn or alarm levels. Verify that **WARN** or **ALRM** displays and the buzzer sounds. Also, verify that the display reading in alarm flashes during the alarm sequence.

SAMPLE-DRAW SUBCOMPONENTS

Periodically check the probe, hoses, internal filter, and tubing for obstructions that can accumulate over time. *This is especially important if you use the GT in a dusty or dirty environment.* Replace the cotton and hydrophobic filter elements if they become contaminated or discolored.

ATTACHMENTS

Equipment Calibration Log (sample)

FOP 006.0

CALIBRATION AND MAINTENANCE OF COMBUSTIBLE GAS/OXYGEN METER

EQUIPMENT CALIBRATION

PROJECT INFORMATION:

Project Name: Date:

Project No.:

Client: Instrument Source: ☐ TK ☐ Rental

METER TYPE	UNITS	TIME	MAKE/MODEL	SERIAL NUMBER	CAL. BY	STANDARD	READING	SETTI
☐ pH meter	units		Myron L Company Ultra Meter 6P	606987		4.00		
						7.00		
						10.01		
☐ Turbidity meter	NTU		Hach 2100P Turbidimeter	970600014560		< 0.4		
						20		
						100		
						800		
☐ Sp. conductance meter	uS/mS		Myron L Company Ultra Meter 6P	606987		µS @ 25 °C		
☐ PID	ppm		Photovac 2020 PID			open air zero		MIBK re
						____ ppm Iso. Gas		factor =
☐ Particulate meter	mg/m^3					zero air		
☐ Oxygen	%					open air		
☐ Hydrogen sulfide	ppm					open air		
☐ Carbon monoxide	ppm					open air		
☐ LEL	%					open air		
☐ Radiation Meter	uR/h					background area		
☐								

SAMPLE

ADDITIONAL REMARKS:

PREPARED BY: **DATE:**

TurnKey Environmental Restoration, LLC

Field Operating Procedures

Calibration & Maintenance of Portable Dissolved Oxygen Meter

FOP 007.0

CALIBRATION AND MAINTENANCE OF PORTABLE DISSOLVED OXYGEN METER

PURPOSE

This guideline describes a method for calibration of a portable dissolved oxygen meter. This meter measures the concentration of dissolved oxygen within a water sample. This parameter is of interest both as a general indicator of water quality, and because of its pertinence to fate and transport of organics and inorganics. This guideline presents a method for calibration of this meter, which is performed to verify instrument accuracy and function. All field instruments will be calibrated, verified and recalibrated at frequencies required by their respective operating manuals or manufacturer's specifications, but not less than once each day that the instrument is in use. Field personnel should have access to all operating manuals for the instruments used for the field measurements. This procedure also documents critical maintenance activities for this meter.

ACCURACY

The calibrated accuracy of the dissolved oxygen meter will be within ± 1% of full-scale over the temperature range of 23° to 113° F (-5° to +45° C).

PROCEDURE

1. Calibrate the dissolved oxygen meter to ambient air based on probe temperature and true local atmospheric pressure conditions (or feet above sea level). Because procedures vary with different brands and models of meters, refer to the manufacturer's recommended calibration procedures.

2. In the event of a failure to adequately calibrate, follow the corrective action directed by the manufacturer.
3. If calibration cannot be achieved or maintained, obtain a replacement instrument (rental instruments) and/or order necessary repairs/adjustment.

4. Document the calibration results and related information in the Project Field Book and on an **Equipment Calibration Log** (see attached sample). Information will include, at a minimum:
    - Time, date, and initials of the field team member performing the calibration
    - The unique identifier for the meter, including manufacturer, model, and serial number
    - The brand and expiration dates of calibration solutions
    - The calibration readings
    - The instrument settings (if applicable)
    - The approximate response time
    - The overall adequacy of calibration including the Pass or fail designation in accordance with the accuracy specifications presented above
    - Corrective action taken (see Step 5 above) in the event of failure to adequately calibrate

MAINTENANCE

- When not in use or between measurements, the dissolved oxygen probe will be kept immersed in or moist with deionized water.

- The meter batteries will be checked prior to each meter's use and will be replaced when the meter cannot be redline adjusted.

- The meter response time and stability will be tracked to determine the need for instrument maintenance. When response time becomes greater than two minutes, probe service is indicated.

ATTACHMENTS

Equipment Calibration Log (sample)

FOP 007.0

CALIBRATION AND MAINTENANCE OF PORTABLE DISSOLVED OXYGEN METER

EQUIPMENT CALIBRATION

PROJECT INFORMATION:

Project Name: Date:

Project No.:

Client: Instrument Source: ☐ TK ☐ Rental

METER TYPE	UNITS	TIME	MAKE/MODEL	SERIAL NUMBER	CAL. BY	STANDARD	READING	SETTI
☐ pH meter	units		Myron L Company Ultra Meter 6P	606987		4.00		
						7.00		
						10.01		
☐ Turbidity meter	NTU		Hach 2100P Turbidimeter	970600014560		< 0.4		
						20		
						100		
						800		
☐ Sp. conductance meter	uS/mS		Myron L Company Ultra Meter 6P	606987		µS @ 25 °C		
☐ PID	ppm		Photovac 2020 PID			open air zero		MIBK re
						____ ppm Iso. Gas		factor =
☐ Particulate meter	mg/m^3					zero air		
☐ Oxygen	%					open air		
☐ Hydrogen sulfide	ppm					open air		
☐ Carbon monoxide	ppm					open air		
☐ LEL	%					open air		
☐ Radiation Meter	uR/h					background area		
☐								

SAMPLE

ADDITIONAL REMARKS:

PREPARED BY: **DATE:**

TurnKey Environmental Restoration, LLC

FIELD OPERATING PROCEDURES

Calibration and Maintenance of Portable Field pH/Eh Meter

FOP 008.0

CALIBRATION AND MAINTENANCE OF PORTABLE FIELD pH/Eh METER

PURPOSE

This guideline describes a method for calibration of a portable pH/Eh meter. The pH/Eh meter measures the hydrogen ion concentration or acidity of a water sample (pH function), and the oxidation/reduction potential of a water sample (Eh function). Calibration is performed to verify instrument accuracy and function. All field instruments will be calibrated, verified and recalibrated at frequencies required by their respective operating manuals or manufacturer's specifications, but not less than once each day that the instrument is in use. Field personnel should have access to all operating manuals for the instruments used for the field measurements. This procedure also documents critical maintenance activities for this meter.

ACCURACY

The calibrated accuracy of the pH/Eh meter will be:

pH ± 0.2 pH unit, over the temperature range of ± 0.2 C.

Eh ± 0.2 millivolts (mV) over the range of ± 399.9 mV, otherwise ± 2 mV.

PROCEDURE

Note: Meters produced by different manufacturers may have different calibration procedures. These instructions will take precedence over the procedure provided herein. This procedure is intended to be used as a general guideline, or in the absence of available manufacturer's instructions.

1. Obtain and active the meter to be used. As stated above, initial calibrations will be performed at the beginning of each sampling day.

2. Immerse the sensing probe in a container of certified pH 7.0 buffer solution traceable to the National Bureau of Standards.

3. Measure the temperature of the buffer solution, and adjust the temperature setting accordingly.

4. Compare the meter reading to the known value of the buffer solution while stirring. If the reading obtained by the meter does not agree with the known value of the buffer solution, recalibrate the meter according to the manufacturer's instructions until the desired reading is obtained. This typically involves accessing and turning a dial or adjustment screw while measuring the pH of the buffer solution. The meter is adjusted until the output agrees with the known solution pH.

5. Repeat Steps 2 through 5 with a pH 4.0 and 10.0 buffer solution to provide a three-point calibration. Standards used to calibrate the pH meter will be of concentrations that bracket the expected values of the samples to be analyzed, especially for two-point calibrations (see note below).

Note: Some pH meters only allow two-point calibrations. Two-point calibrations should be within the suspected range of the groundwater to be analyzed. For example, if the groundwater pH is expected to be approximately 8, the two-point calibration should bracket that value. Buffer solutions of 7 and 10 should then be used for the two-point calibration.

6. Document the calibration results and related information in the Project Field Book and on an **Equipment Calibration Log** (see attached sample). Information will include, at a minimum:

    - Time, date, and initials of the field team member performing the calibration
    - The unique identifier for the meter, including manufacturer, model, and serial number
    - The brand and expiration dates of buffer solutions
    - The instrument readings
    - The instrument settings (if applicable)

- Pass or fail designation in accordance with the accuracy specifications presented above
- Corrective action taken (see Maintenance below) in the event of failure to adequately calibrate

MAINTENANCE

- When not in use, or between measurements, keep the pH/Eh probe immersed in or moist with buffer solutions.

- Check the meter batteries at the end of each day and recharge or replace as needed.

- Replace the pH/Eh probe any time that the meter response time becomes greater than two minutes or the meeting system consistently fails to retain its calibrated accuracy for a minimum of ten sample measurements.

- If a replacement of the pH/Eh probe fails to resolve instrument response time and stability problems, obtain a replacement instrument (rental instruments) and/or order necessary repairs/adjustment.

ATTACHMENTS

Equipment Calibration Log (sample)

FOP 008.0

CALIBRATION AND MAINTENANCE OF PORTABLE FIELD pH/Eh METER

EQUIPMENT CALIBRATION

PROJECT INFORMATION:

Project Name: Date:

Project No.:

Client: Instrument Source: ☐ TK ☐ Rental

METER TYPE	UNITS	TIME	MAKE/MODEL	SERIAL NUMBER	CAL. BY	STANDARD	READING	SETTI
☐ pH meter	units		Myron L Company Ultra Meter 6P	606987		4.00		
						7.00		
						10.01		
☐ Turbidity meter	NTU		Hach 2100P Turbidimeter	970600014560		< 0.4		
						20		
						100		
						800		
☐ Sp. conductance meter	uS/mS		Myron L Company Ultra Meter 6P	606987		µS @ 25 °C		
☐ PID	ppm		Photovac 2020 PID			open air zero		MIBK re
						____ ppm Iso. Gas		factor =
☐ Particulate meter	mg/m^3					zero air		
☐ Oxygen	%					open air		
☐ Hydrogen sulfide	ppm					open air		
☐ Carbon monoxide	ppm					open air		
☐ LEL	%					open air		
☐ Radiation Meter	uR/h					background area		
☐								

SAMPLE

ADDITIONAL REMARKS:

PREPARED BY: **DATE:**

TurnKey Environmental Restoration, LLC

FIELD OPERATING PROCEDURES

Calibration and Maintenance of Portable Field Turbidity Meter

FOP 009.0

CALIBRATION AND MAINTENANCE OF PORTABLE FIELD TURBIDITY METER

PURPOSE

This guideline describes the method for calibration of the HACH 2100P portable field turbidity meter. Turbidity is one water quality parameter measured during purging and development of wells. Turbidity is measured as a function of the samples ability to transmit light, expressed as Nephelometric Turbidity Units (NTUs). The turbidity meter is factory calibrated and must be checked daily prior to using the meter in the field. Calibration is performed to verify instrument accuracy and function. This procedure also documents critical maintenance activities for this meter.

ACCURACY

Accuracy shall be ± 2% of reading below 499 NTU or ± 3% of reading above 500 NTU with resolution to 0.01 NTU in the lowest range. The range key provides for automatic or manual range selection for ranges of 0.00 to 9.99, 0.0 to 99.9 and 0 to 1000 NTU. Another key provides for selecting automatic signal averaging. Pressing the key shall toggle signal averaging on or off.

PROCEDURE

Calibration of the 2100P Turbidimeter is based on formazin, the primary standard for turbidity. The instrument's electronic and optical design provides long-term stability and minimizes the need for frequent calibration. The two-detector ratioing system compensates for most fluctuations in lamp output. **A formazin recalibration should be performed at least once every three months,** more often if experience indicates the need. During calibration, use a primary standard such as StablCal™ Stabilized Standards or formazin standards.

Note: Meters produced by different manufacturers may have different calibration check procedures. These manufacturers' instructions will take precedence over the procedure provided here. This procedure is intended to be used as a general guideline, or in the absence of available manufacturer's instructions.

Note: Because the turbidity meter measures light transmission, it is critical that the meter and standards be cared for as precision optical instruments. Scratches, dirt, dust, etc. can all temporarily or permanently affect the accuracy of meter readings.

Preparing StablCal Stabilized Standards in Sealed Vials

Sealed vials that have been sitting undisturbed for longer than a month must be shaken to break the condensed suspension into its original particle size. Start at *step 1* for these standards. If the standards are used on at least a weekly interval, start at *step 3*.

Note: These instructions do not apply to < 0.1 NTU StablCal Standards; < 0.1 NTU StablCal Standards should not be shaken or inverted.

1. Shake the standard vigorously for 2-3 minutes to re-suspend any particles.
2. Allow the standard to stand undisturbed for 5 minutes.
3. Gently invert the vial of StablCal 5 to 7 times.
4. Prepare the vial for measurement using traditional preparation techniques. This usually consists of oiling the vial (see *Section 2.3.2 on page 11 of the manual*)

and marking the vial to maintain the same orientation in the sample cell compartment (see *Section 2.3.3 on page 12 of the manual*). This step will eliminate any optical variations in the sample vial.

5. Let the vial stand for one minute. The standard is now ready for use in the calibration procedure.

Calibration Procedure

1. Turn the meter on.

2. Shake pre-mixed formazin primary standards in accordance with the above procedure.

3. Wipe the outside of the < 0.1 NTU standard and insert the sample cell in the cell compartment by aligning the orientation mark on the cell with the mark on the front of the cell compartment.

4. Close the lid and press **I/O**.

5. Press the **CAL** button. The **CAL** and **S0** icons will be displayed and the 0 will flash. The four-digit display will show the value of the **S0** standard for the previous calibration. If the blank value was forced to 0.0, the display will be blank. Press the right arrow key (→) to get a numerical display.

6. Press **READ**. The instrument will count from 60 to 0, read the blank and use it to calculate a correction factor for the 20 NTU standard measurement. If the dilution water is ≥ 0.5 NTU, E 1 will appear when the calibration is calculated (*see Section 3.6.2.3 on page 31 of the manual*). The display will automatically increment to the next standard. Remove the sample cell from the cell compartment

Note: The turbidity of the dilution water can be "forced" to zero by pressing → rather than reading the dilution water. The display will show "S0 NTU" and the ↑ key must be pressed to continue with the next standard.

7. Repeat steps 1 through 7 for the 20, 100 and 800 standards.

8. Following the 800 NTU standard calibration, the display will increment back to the **S0** display. Remove the sample cell from the cell compartment.

9. Press **CAL** to accept the calibration. The instrument will return to measurement mode automatically.

10. Document the calibration results and related information in the Project Field Book and on an **Equipment Calibration Log** (see attached sample). Information will include, at a minimum:
    - Time, date, and initials of the field team member performing the calibration
    - The unique identifier for the meter, including manufacturer, model, and serial number
    - The brand of calibration standards
    - The instrument readings
    - The instrument settings (if applicable)
    - Pass or fail designation in accordance with the accuracy specifications presented above
    - Corrective action taken (see Maintenance below) in the event of failure to adequately calibrate.

Note: Pressing CAL completes the calculation of the calibration coefficients. If calibration errors occurred during calibration, error messages will appear after CAL is pressed. If E 1 or E 2 appear, check the standard preparation and review the calibration; repeat the calibration if necessary. If "CAL?" appears, an error may have

occurred during calibration. If "CAL?" is flashing, the instrument is using the default calibration.

NOTES

- If the **I/O** key is pressed during calibration, the new calibration data is lost and the old calibration will be used for measurements. Once in calibration mode, only the **READ, I/O,** ↑ , and →keys function. Signal averaging and range mode must be selected before entering the calibration mode.

- If **E 1** or **E 2** are displayed, an error occurred during calibration. Check the standard preparation and review the calibration; repeat the calibration if necessary. Press **DIAG** to cancel the error message (**E 1** or **E 2)**. To continue without repeating the calibration, press **I/O** twice to restore the previous calibration. If "**CAL?"** is displayed, an error may have occurred during calibration. The previous calibration may not be restored. Either recalibrate or use the calibration as is.

- To review a calibration, press **CAL** and then ↑ to view the calibration standard values. As long as **READ** is never pressed and **CAL** is not flashing, the calibration will not be updated. Press **CAL** again to return to the measurement mode.

MAINTENANCE

- **Cleaning**: Keep the turbidimeter and accessories as clean as possible and store the instrument in the carrying case when not in use. Avoid prolonged exposure to sunlight and ultraviolet light. Wipe spills up promptly. Wash sample cells with non-abrasive laboratory detergent, rinse with distilled or demineralized water, and air dry. Avoid scratching the cells and wipe all moisture and fingerprints off the cells before inserting them into the instrument. Failure to do so can give inaccurate readings. See *Section 2.3.1 on page 11of the manual* for more information about sample cell care.

- **Battery Replacement**: AA alkaline cells typically last for about 300 tests with the signal-averaging mode off, about 180 tests if signal averaging is used. The "battery" icon flashes when battery replacement is needed. Refer to *Section 1.4.2 on page 5 of the manual* for battery installation instructions. If the batteries are changed within 30

seconds, the instrument retains the latest range and signal average selections. If it takes more than 30 seconds, the instrument uses the default settings. If, after changing batteries, the instrument will not turn off or on and the batteries are good, remove the batteries and reinstall them. If the instrument still won't function, contact Hach Service or the nearest authorized dealer.

- **Lamp Replacement**: The procedure in *Section 4.0 on page 49 of the manual* explains lamp installation and electrical connections. Use a small screwdriver to remove and install the lamp leads in the terminal block. The instrument requires calibration after lamp replacement.

ATTACHMENTS

Equipment Calibration Log (sample)

FOP 009.0

CALIBRATION AND MAINTENANCE OF PORTABLE FIELD TURBIDITY METER

EQUIPMENT CALIBRATION

PROJECT INFORMATION:

Project Name: Date:

Project No.:

Client: Instrument Source: ☐ TK ☐ Rental

METER TYPE	UNITS	TIME	MAKE/MODEL	SERIAL NUMBER	CAL. BY	STANDARD	READING	SETTI
☐ pH meter	units		Myron L Company Ultra Meter 6P	606987		4.00		
						7.00		
						10.01		
☐ Turbidity meter	NTU		Hach 2100P Turbidimeter	970600014560		< 0.4		
						20		
						100		
						800		
☐ Sp. conductance meter	uS/mS		Myron L Company Ultra Meter 6P	606987		µS @ 25 °C		
☐ PID	ppm		Photovac 2020 PID			open air zero		MIBK re
						____ ppm Iso. Gas		factor =
☐ Particulate meter	mg/m^3					zero air		
☐ Oxygen	%					open air		
☐ Hydrogen sulfide	ppm					open air		
☐ Carbon monoxide	ppm					open air		
☐ LEL	%					open air		
☐ Radiation Meter	uR/h					background area		
☐								

SAMPLE

ADDITIONAL REMARKS:

PREPARED BY: **DATE:**

TurnKey Environmental Restoration, LLC

Field Operating Procedures

Calibration & Maintenance of Portable Flame Ionization Detector

FOP 010.0

CALIBRATION AND MAINTENANCE OF PORTABLE FLAME IONIZATION DECTECTOR

PURPOSE

This guideline presents a general description of the method for calibration and maintenance of a portable flame ionization detector (FID). The FID detects and initially quantifies a reading of the volatile organic compound (VOC) concentration in air. The FID is used as a field-screening tool for initial evaluation of soil samples and for ambient air monitoring. In order to ensure an accurate reading, the FID must be calibrated prior to use in the field.

Although the information included below is equipment manufacturer- and model-specific, however, accuracy, calibration, and maintenance procedures for this type of portable equipment are typically similar. The information below pertains to the Sensidyne Portable Flame Ionization Detector. The actual equipment to be used in the field will be equivalent or similar.

The FID indicates total VOC concentration readings, which are normalized to a methane standard, so actual quantification of individual compounds is not provided. In addition, the FID response to compounds is highly variable, dependent on the structure of the compound and the presence or absence of other compounds. In the calibration mode, a methane standard of 200 parts per million by volume (ppmv) is used, and the desired accuracy at this concentration is $\pm$ 50 ppmv.

PROCEDURE

1. Zero the machine.

2. Calibrate all field test equipment at the beginning of each sampling day and check and recalibrate according to the manufacture's specifications.

3. Calibrate the FID meter using a compressed gas cylinder containing 200 ppmv methane in air, a 2 liter per minute flow regulator, and a tubing assembly.

4. Assemble the calibration equipment and actuate the FID. Insert the probe into the calibration assembly and wait for a stable indication. Remove the cover over the calibration adjustment screw. Using a slotted screwdriver, turn the adjustment screw until the meter reads exactly 200 ppmv.

5. Replace the adjustment screw cover and deactivate the FID.

6. Document the calibration results and related information in the Project Field Book and on an **Equipment Calibration Log** (see attached sample), indicating the meter readings before and after instrument adjustments. This is important, not only for data validation, but also to establish maintenance schedules and component replacement. Information will include, at a minimum:
    - Time, date, and initials of the field team member performing the calibration
    - The unique identifier for the meter, including manufacturer, model, and serial number
    - The brand and expiration dates of calibration solutions
    - The calibration readings
    - The instrument settings (if applicable)
    - The approximate response time
    - The overall adequacy of calibration including the Pass or fail designation in accordance with the accuracy specifications presented above
    - Corrective action taken (see Step 5 above) in the event of failure to adequately calibrate

MAINTENANCE

- The probe and handle of the FID should be checked before and after every use for cleanliness and worn or damaged parts. Drain the water trap in the handle as needed. Remove any other condensation with a clean cloth or

tissue. The dust filter and hydrophobic filters should be inspected and cleaned between use.

- The FID battery must be recharged when the battery level indicator is in the red sector. It is also recommended that the battery be recharged every month the instrument is not used frequently. Replace the instrument's hydrogen carrier gas as necessary.

- Store the FID in its carrying case when not in use. Additional maintenance details related to individual components of the FID are provided in the equipment manufacturer's instruction manual. If calibration or instrument performance is not in accordance with specifications, send the instrument to the equipment manufacturer for repair.

- Maintain a log for each monitoring instrument. Record all maintenance performed on the instrument on this log with date and name of the organization performing the maintenance.

ATTACHMENTS

Equipment Calibration Log (sample)

FOP 010.0

CALIBRATION AND MAINTENANCE OF PORTABLE FLAME IONIZATION DECTECTOR

EQUIPMENT CALIBRATION

PROJECT INFORMATION:

Project Name: Date:

Project No.:

Client: Instrument Source: ☐ TK ☐ Rental

METER TYPE	UNITS	TIME	MAKE/MODEL	SERIAL NUMBER	CAL. BY	STANDARD	READING	SETTI
☐ pH meter	units		Myron L Company Ultra Meter 6P	606987		4.00		
						7.00		
						10.01		
☐ Turbidity meter	NTU		Hach 2100P Turbidimeter	970600014560		< 0.4		
						20		
						100		
						800		
☐ Sp. conductance meter	uS/mS		Myron L Company Ultra Meter 6P	606987		µS @ 25 °C		
☐ PID	ppm		Photovac 2020 PID			open air zero		MIBK re
						____ ppm Iso. Gas		factor =
☐ Particulate meter	mg/m^3					zero air		
☐ Oxygen	%					open air		
☐ Hydrogen sulfide	ppm					open air		
☐ Carbon monoxide	ppm					open air		
☐ LEL	%					open air		
☐ Radiation Meter	uR/h					background area		
☐								

SAMPLE

ADDITIONAL REMARKS:

PREPARED BY: **DATE:**

TurnKey Environmental Restoration, LLC

Field Operating Procedures

Calibration and Maintenance of Portable Photoionization Meter

FOP 011.1

CALIBRATION AND MAINTENANCE OF PORTABLE PHOTOIONIZATION DETECTOR

PURPOSE

This procedure describes a general method for the calibration and maintenance of a portable photoionization detector (PID). The PID detects and initially quantifies a reading of the volatile organic compound (VOC) concentration in air. The PID is used as a field-screening tool for initial evaluation of soil samples and for ambient air monitoring of compounds with ionization potentials (IP) less than the PID lamp electron voltage (eV) rating. The IP is the amount of energy required to move an electron to an infinite distance from the nucleus thus creating a positive ion plus an electron. It should be noted that all of the major components of air (i.e., carbon dioxide, methane, nitrogen, oxygen etc.) have IP's above 12 eV. As a result, they will not be ionized by the 9.8, 10.6, or 11.7 eV lamps typically utilized in field PIDs. The response of the PID will then be the sum of the organic and inorganic compounds in air that are ionized by the appropriate lamp (i.e., 9.8, 10.6 or 11.7 eV). Attached to this FOP is a table summarizing common organic compounds and their respective IPs.

Calibration is performed to verify instrument accuracy and function. All field instruments will be calibrated, verified and recalibrated at frequencies required by their respective operating manuals or manufacturer's specifications, but not less than once each day that the instrument is in use. Compound-specific calibration methods should be selected on a project-by-project basis to increase the accuracy of the instrument. The best way to calibrate a PID to different compounds is to use a standard of the gas of interest. However, correction factors have been determined that enable the user to quantify a large number of chemicals using only a single calibration gas, typically isobutylene. Field personnel should have access to all operating manuals for the instruments used for the field measurements. This procedure also documents critical maintenance activities for this meter.

CALIBRATION AND MAINTENANCE OF PORTABLE PHOTOIONIZATION DETECTOR

Note: The information included below is equipment manufacturer- and model-specific, however, accuracy, calibration, and maintenance procedures for this type of portable equipment are typically similar. The information below pertains to the MiniRAE 2000 Portable VOC Monitor equipped with a 10.6 eV lamp. The actual equipment to be used in the field will be equivalent or similar. The following information is provided for general reference; the equipment-specific manufacturer's manual should be followed with precedence over this FOP.

Note: The PID indicates total VOC concentration readings that are normalized to a calibration standard, so actual quantification of individual compounds is not provided. In addition, the PID response to compounds is highly variable, dependent on ionization potential of the compound, and the presence or absence of other compounds.

ACCURACY

The MiniRAE 2000 is accurate to ± 2 ppm or 10% of the reading for concentrations ranging from 0-2,000 ppm and ± 20% of the reading at concentrations greater than 2,000 ppm. Response time is less than two seconds to 90 percent of full-scale. The operating temperature range is 0 to 45° C and the operating humidity range is 0 to 95 % relative humidity (non-condensing).

CALIBRATION PROCEDURE

The calibration method and correction factor, if applicable, will be selected on a project-by-project basis and confirmed with the Project Manager prior to the start of field work.

1. Calibrate all field test equipment at the beginning of each sampling day. Check and recalibrate the PID according to the manufacture's specifications.

2. Calibrate the PID using a compressed gas cylinder or equivalent containing the calibration standard, a flow regulator, and a tubing assembly. In addition, a compressed gas cylinder containing zero air ("clean" air) may be required if ambient air conditions do not permit calibration to "clean air".

3. Fill two Tedlar® bags equipped with a one-way valve with zero-air (if applicable) and the calibration standard gas.

4. Assemble the calibration equipment and actuate the PID in its calibration mode.

5. Select the appropriate calibration method. Calibration may be completed with two methods: 1) where the calibration standard gas is the same as the measurement gas (no correction factor is applied) or 2) where the calibration standard gas is not the same as the measurement gas and a correction factor will be applied. An isobutylene standard gas must be used as the calibration standard gas for the use of correction factors with the MiniRAE 2000. See below for additional instructions for calibration specific to use with or without correction factors.

Calibrating Without a Correction Factor

Navigate within the menu to select the "cal memory" for the specific calibration standard gas prior to calibration. The default gas selections for the MiniRAE 2000 are as follows:

Cal Memory #0	Isobutylene
Cal Memory #1	Hexane
Cal Memory #2	Xylene
Cal Memory #3	Benzene
Cal Memory #4	Styrene
Cal Memory #5	Toluene
Cal Memory #6	Vinyl Chloride
Cal Memory #7	Custom

The calibration standard gas for Cal Memory #1-7 may be toggled for selection of any of the approximately 100 preprogrammed calibration standard gases for use without an applied correction factor (i.e., the calibration gas must be the same as the measurement gas).

Calibrating With a Correction Factor

Navigate within the menu to select the "Cal Memory".

Select "Cal Memory #0" and toggle for selection of any of the approximately 100 preprogrammed chemicals. During calibration, the unit requests isobutylene gas and displays the isobutylene concentration immediately following calibration, but when the unit is returned to the normal reading mode, it displays the selected chemical and applies the correction factor.

If the pre-programmed list does not include the desired chemical or a user-defined measurement gas and correction factor is desired, toggle Cal Memory #0 to "user defined custom gas". A list of approximately 300 correction factors is attached in Technical Note 106 generated by MiniRAE.

6. Once the PID settings have been verified, connect the PID probe to the zero air calibration bag (or calibrate to ambient air if conditions permit) and wait for a stable indication.

7. Connect the PID probe to the calibration standard bag. Measure an initial reading of the standard and wait for a stable indication.

8. Keep the PID probe connected to the calibration standard bag, calibrate to applicable concentration (typically 100 ppm with isobutylene) with the standard and wait for a stable indication.

9. Document the calibration results and related information in the Project Field Book and on an **Equipment Calibration Log** (see attached sample), indicating the meter readings before and after the instrument has been adjusted. This is important, not only for data validation, but also to establish

maintenance schedules and component replacement. Information will include, at a minimum:

- Time, date and initials of the field team member performing the calibration
- The unique identifier for the meter, including manufacturer, model, and serial number
- The calibration standard and concentration
- Correction factors used, if any
- The brand and expiration date of the calibration standard gas
- The instrument readings: before and after calibration
- The instrument settings (if applicable)
- Pass or fail designation in accordance with the accuracy specifications presented above
- Corrective action taken (see Maintenance below) in the event of failure to adequately calibrate.

MAINTENANCE

- The probe and dust filter of the PID should be checked before and after every use for cleanliness. Should instrument response become unstable, recalibration should be performed. If this does not resolve the problem, access the photoionization bulb and clean with the manufacturer-supplied abrasive compound, then recalibrate.

- The PID battery must be recharged after each use. Store the PID in its carrying case when not in use. Additional maintenance details related to individual components of the PID are provided in the equipment manufacturer's instruction manual. If calibration or instrument performance is not in accordance with specifications, send the instrument to the equipment manufacturer for repair.

- Maintain a log for each monitoring instrument. Record all maintenance performed on the instrument on this log with date and name of the organization performing the maintenance.

ATTACHMENTS

Table 1; Summary of Ionization Potentials
Equipment Calibration Log (sample)
Technical Note TN-106

TABLE 1

SUMMARY OF IONIZATION POTENTIALS

Chemical Name	Ionization Potential (eV)	Cannot be Read by 10.6 eV PID
A		
2-Amino pyridine	8	
Acetaldehyde	10.21	
Acetamide	9.77	
Acetic acid	10.69	X
Acetic anhydride	10	
Acetone	9.69	
Acetonitrile	12.2	X
Acetophenone	9.27	
Acetyl bromide	10.55	
Acetyl chloride	11.02	X
Acetylene	11.41	X
Acrolein	10.1	
Acrylamide	9.5	
Acrylonitrile	10.91	X
Allyl alcohol	9.67	
Allyl chloride	9.9	
Ammonia	10.2	
Aniline	7.7	
Anisidine	7.44	
Anisole	8.22	
Arsine	9.89	
B		
1,3-Butadiene (butadiene)	9.07	
1-Bromo-2-chloroethane	10.63	X
1-Bromo-2-methylpropane	10.09	
1-Bromo-4-fluorobenzene	8.99	
1-Bromobutane	10.13	
1-Bromopentane	10.1	
1-Bromopropane	10.18	
1-Bromopropene	9.3	
1-Butanethiol	9.14	
1-Butene	9.58	
1-Butyne	10.18	
2,3-Butadione	9.23	
2-Bromo-2-methylpropane	9.89	
2-Bromobutane	9.98	
2-Bromopropane	10.08	

TABLE 1

SUMMARY OF IONIZATION POTENTIALS

Chemical Name	Ionization Potential (eV)	Cannot be Read by 10.6 eV PID
2-Bromothiophene	8.63	
2-Butanone (MEK)	9.54	
3-Bromopropene	9.7	
3-Butene nitrile	10.39	
Benzaldehyde	9.53	
Benzene	9.25	
Benzenethiol	8.33	
Benzonitrile	9.71	
Benzotrifluoride	9.68	
Biphenyl	8.27	
Boron oxide	13.5	X
Boron trifluoride	15.56	X
Bromine	10.54	
Bromobenzene	8.98	
Bromochloromethane	10.77	X
Bromoform	10.48	
Butane	10.63	X
Butyl mercaptan	9.15	
cis-2-Butene	9.13	
m-Bromotoluene	8.81	
n-Butyl acetate	10.01	
n-Butyl alcohol	10.04	
n-Butyl amine	8.71	
n-Butyl benzene	8.69	
n-Butyl formate	10.5	
n-Butyraldehyde	9.86	
n-Butyric acid	10.16	
n-Butyronitrile	11.67	X
o-Bromotoluene	8.79	
p-Bromotoluene	8.67	
p-tert-Butyltoluene	8.28	
s-Butyl amine	8.7	
s-Butyl benzene	8.68	
sec-Butyl acetate	9.91	
t-Butyl amine	8.64	
t-Butyl benzene	8.68	
trans-2-Butene	9.13	
C		

TABLE 1

SUMMARY OF IONIZATION POTENTIALS

Chemical Name	Ionization Potential (eV)	Cannot be Read by 10.6 eV PID
1-Chloro-2-methylpropane	10.66	X
1-Chloro-3-fluorobenzene	9.21	
1-Chlorobutane	10.67	X
1-Chloropropane	10.82	X
2-Chloro-2-methylpropane	10.61	X
2-Chlorobutane	10.65	X
2-Chloropropane	10.78	X
2-Chlorothiophene	8.68	
3-Chloropropene	10.04	
Camphor	8.76	
Carbon dioxide	13.79	X
Carbon disulfide	10.07	
Carbon monoxide	14.01	X
Carbon tetrachloride	11.47	X
Chlorine	11.48	X
Chlorine dioxide	10.36	
Chlorine trifluoride	12.65	X
Chloroacetaldehyde	10.61	X
α -Chloroacetophenone	9.44	
Chlorobenzene	9.07	
Chlorobromomethane	10.77	X
Chlorofluoromethane (Freon 22)	12.45	X
Chloroform	11.37	X
Chlorotrifluoromethane (Freon 13)	12.91	X
Chrysene	7.59	
Cresol	8.14	
Crotonaldehyde	9.73	
Cumene (isopropyl benzene)	8.75	
Cyanogen	13.8	X
Cyclohexane	9.8	
Cyclohexanol	9.75	
Cyclohexanone	9.14	
Cyclohexene	8.95	
Cyclo-octatetraene	7.99	
Cyclopentadiene	8.56	
Cyclopentane	10.53	
Cyclopentanone	9.26	
Cyclopentene	9.01	

TABLE 1

SUMMARY OF IONIZATION POTENTIALS

Chemical Name	Ionization Potential (eV)	Cannot be Read by 10.6 eV PID
Cyclopropane	10.06	
m-Chlorotoluene	8.83	
o-Chlorotoluene	8.83	
p-Chlorotoluene	8.7	
D		
1,1-Dibromoethane	10.19	
1,1-Dichloroethane	11.12	X
1,1-Dimethoxyethane	9.65	
1,1-Dimethylhydrazine	7.28	
1,2-Dibromoethene	9.45	
1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon 114)	12.2	X
1,2-Dichloroethane	11.12	X
1,2-Dichloropropane	10.87	X
1,3-Dibromopropane	10.07	
1,3-Dichloropropane	10.85	X
2,2-Dimethyl butane	10.06	
2,2-Dimethyl propane	10.35	
2,3-Dichloropropene	9.82	
2,3-Dimethyl butane	10.02	
3,3-Dimethyl butanone	9.17	
cis-Dichloroethene	9.65	
Decaborane	9.88	
Diazomethane	9	
Diborane	12	X
Dibromochloromethane	10.59	
Dibromodifluoromethane	11.07	X
Dibromomethane	10.49	
Dibutylamine	7.69	
Dichlorodifluoromethane (Freon 12)	12.31	X
Dichlorofluoromethane	12.39	X
Dichloromethane	11.35	X
Diethoxymethane	9.7	
Diethyl amine	8.01	
Diethyl ether	9.53	
Diethyl ketone	9.32	
Diethyl sulfide	8.43	
Diethyl sulfite	9.68	
Difluorodibromomethane	11.07	X

TABLE 1

SUMMARY OF IONIZATION POTENTIALS

Chemical Name	Ionization Potential (eV)	Cannot be Read by 10.6 eV PID
Dihydropyran	8.34	
Diiodomethane	9.34	
Diisopropylamine	7.73	
Dimethoxymethane (methylal)	10	
Dimethyl amine	8.24	
Dimethyl ether	10	
Dimethyl sulfide	8.69	
Dimethylaniline	7.13	
Dimethylformamide	9.18	
Dimethylphthalate	9.64	
Dinitrobenzene	10.71	X
Dioxane	9.19	
Diphenyl	7.95	
Dipropyl amine	7.84	
Dipropyl sulfide	8.3	
Durene	8.03	
m-Dichlorobenzene	9.12	
N,N-Diethyl acetamide	8.6	
N,N-Diethyl formamide	8.89	
N,N-Dimethyl acetamide	8.81	
N,N-Dimethyl formamide	9.12	
o-Dichlorobenzene	9.06	
p-Dichlorobenzene	8.95	
p-Dioxane	9.13	
trans-Dichloroethene	9.66	
E		
Epichlorohydrin	10.2	
Ethane	11.65	X
Ethanethiol (ethyl mercaptan)	9.29	
Ethanolamine	8.96	
Ethene	10.52	
Ethyl acetate	10.11	
Ethyl alcohol	10.48	
Ethyl amine	8.86	
Ethyl benzene	8.76	
Ethyl bromide	10.29	
Ethyl chloride (chloroethane)	10.98	X
Ethyl disulfide	8.27	

TABLE 1

SUMMARY OF IONIZATION POTENTIALS

Chemical Name	Ionization Potential (eV)	Cannot be Read by 10.6 eV PID
Ethyl ether	9.51	
Ethyl formate	10.61	X
Ethyl iodide	9.33	
Ethyl isothiocyanate	9.14	
Ethyl mercaptan	9.29	
Ethyl methyl sulfide	8.55	
Ethyl nitrate	11.22	X
Ethyl propionate	10	
Ethyl thiocyanate	9.89	
Ethylene chlorohydrin	10.52	
Ethylene diamine	8.6	
Ethylene dibromide	10.37	
Ethylene dichloride	11.05	X
Ethylene oxide	10.57	
Ethylenelmine	9.2	
Ethynylbenzene	8.82	
F		
2-Furaldehyde	9.21	
Fluorine	15.7	X
Fluorobenzene	9.2	
Formaldehyde	10.87	X
Formamide	10.25	
Formic acid	11.05	X
Freon 11 (trichlorofluoromethane)	11.77	X
Freon 112 (1,1,2,2-tetrachloro-1,2-difluoroethane)	11.3	X
Freon 113 (1,1,2-trichloro-1,2,2-trifluororethane)	11.78	X
Freon 114 (1,2-dichloro-1,1,2,2-tetrafluoroethane)	12.2	X
Freon 12 (dichlorodifluoromethane)	12.31	X
Freon 13 (chlorotrifluoromethane)	12.91	X
Freon 22 (chlorofluoromethane)	12.45	X
Furan	8.89	
Furfural	9.21	
m-Fluorotoluene	8.92	
o-Fluorophenol	8.66	
o-Fluorotoluene	8.92	
p-Fluorotoluene	8.79	
H		
1-Hexene	9.46	

TABLE 1

SUMMARY OF IONIZATION POTENTIALS

Chemical Name	Ionization Potential (eV)	Cannot be Read by 10.6 eV PID
2-Heptanone	9.33	
2-Hexanone	9.35	
Heptane	10.08	
Hexachloroethane	11.1	X
Hexane	10.18	
Hydrazine	8.1	
Hydrogen	15.43	X
Hydrogen bromide	11.62	X
Hydrogen chloride	12.74	X
Hydrogen cyanide	13.91	X
Hydrogen fluoride	15.77	X
Hydrogen iodide	10.38	
Hydrogen selenide	9.88	
Hydrogen sulfide	10.46	
Hydrogen telluride	9.14	
Hydroquinone	7.95	
I		
1-Iodo-2-methylpropane	9.18	
1-Iodobutane	9.21	
1-Iodopentane	9.19	
1-Iodopropane	9.26	
2-Iodobutane	9.09	
2-Iodopropane	9.17	
Iodine	9.28	
Iodobenzene	8.73	
Isobutane	10.57	
Isobutyl acetate	9.97	
Isobutyl alcohol	10.12	
Isobutyl amine	8.7	
Isobutyl formate	10.46	
Isobutyraldehyde	9.74	
Isobutyric acid	10.02	
Isopentane	10.32	
Isophorone	9.07	
Isoprene	8.85	
Isopropyl acetate	9.99	
Isopropyl alcohol	10.16	
Isopropyl amine	8.72	

TABLE 1

SUMMARY OF IONIZATION POTENTIALS

Chemical Name	Ionization Potential (eV)	Cannot be Read by 10.6 eV PID
Isopropyl benzene	8.69	
Isopropyl ether	9.2	
Isovaleraldehyde	9.71	
m-Iodotoluene	8.61	
o-Iodotoluene	8.62	
p-Iodotoluene	8.5	
K		
Ketene	9.61	
L		
2,3-Lutidine	8.85	
2,4-Lutidine	8.85	
2,6-Lutidine	8.85	
M		
2-Methyl furan	8.39	
2-Methyl napthalene	7.96	
1-Methyl napthalene	7.96	
2-Methyl propene	9.23	
2-Methyl-1-butene	9.12	
2-Methylpentane	10.12	
3-Methyl-1-butene	9.51	
3-Methyl-2-butene	8.67	
3-Methylpentane	10.08	
4-Methylcyclohexene	8.91	
Maleic anhydride	10.8	X
Mesityl oxide	9.08	
Mesitylene	8.4	
Methane	12.98	X
Methanethiol (methyl mercaptan)	9.44	
Methyl acetate	10.27	
Methyl acetylene	10.37	
Methyl acrylate	9.9	
Methyl alcohol	10.85	X
Methyl amine	8.97	
Methyl bromide	10.54	
Methyl butyl ketone	9.34	
Methyl butyrate	10.07	
Methyl cellosolve	9.6	
Methyl chloride	11.28	X

TABLE 1

SUMMARY OF IONIZATION POTENTIALS

Chemical Name	Ionization Potential (eV)	Cannot be Read by 10.6 eV PID
Methyl chloroform (1,1,1-trichloroethane)	11	X
Methyl disulfide	8.46	
Methyl ethyl ketone	9.53	
Methyl formate	10.82	X
Methyl iodide	9.54	
Methyl isobutyl ketone	9.3	
Methyl isobutyrate	9.98	
Methyl isocyanate	10.67	X
Methyl isopropyl ketone	9.32	
Methyl isothiocyanate	9.25	
Methyl mercaptan	9.44	
Methyl methacrylate	9.7	
Methyl propionate	10.15	
Methyl propyl ketone	9.39	
α -Methyl styrene	8.35	
Methyl thiocyanate	10.07	
Methylal (dimethoxymethane)	10	
Methylcyclohexane	9.85	
Methylene chloride	11.32	X
Methyl-n-amyl ketone	9.3	
Monomethyl aniline	7.32	
Monomethyl hydrazine	7.67	
Morpholine	8.2	
n-Methyl acetamide	8.9	
N		
1-Nitropropane	10.88	X
2-Nitropropane	10.71	X
Naphthalene	8.12	
Nickel carbonyl	8.27	
Nitric oxide, (NO)	9.25	
Nitrobenzene	9.92	
Nitroethane	10.88	X
Nitrogen	15.58	X
Nitrogen dioxide	9.78	
Nitrogen trifluoride	12.97	X
Nitromethane	11.08	X
Nitrotoluene	9.45	
p-Nitrochloro benzene	9.96	

TABLE 1

SUMMARY OF IONIZATION POTENTIALS

Chemical Name	Ionization Potential (eV)	Cannot be Read by 10.6 eV PID
O		
Octane	9.82	
Oxygen	12.08	X
Ozone	12.08	X
P		
1-Pentene	9.5	
1-Propanethiol	9.2	
2,4-Pentanedione	8.87	
2-Pentanone	9.38	
2-Picoline	9.02	
3-Picoline	9.02	
4-Picoline	9.04	
n-Propyl nitrate	11.07	X
Pentaborane	10.4	
Pentane	10.35	
Perchloroethylene	9.32	
Pheneloic	8.18	
Phenol	8.5	
Phenyl ether (diphenyl oxide)	8.82	
Phenyl hydrazine	7.64	
Phenyl isocyanate	8.77	
Phenyl isothiocyanate	8.52	
Phenylene diamine	6.89	
Phosgene	11.77	X
Phosphine	9.87	
Phosphorus trichloride	9.91	
Phthalic anhydride	10	
Propane	11.07	X
Propargyl alcohol	10.51	
Propiolactone	9.7	
Propionaldehyde	9.98	
Propionic acid	10.24	
Propionitrile	11.84	X
Propyl acetate	10.04	
Propyl alcohol	10.2	
Propyl amine	8.78	
Propyl benzene	8.72	
Propyl ether	9.27	

TABLE 1

SUMMARY OF IONIZATION POTENTIALS

Chemical Name	Ionization Potential (eV)	Cannot be Read by 10.6 eV PID
Propyl formate	10.54	
Propylene	9.73	
Propylene dichloride	10.87	X
Propylene imine	9	
Propylene oxide	10.22	
Propyne	10.36	
Pyridine	9.32	
Pyrrole	8.2	
Q		
Quinone	10.04	
S		
Stibine	9.51	
Styrene	8.47	
Sulfur dioxide	12.3	X
Sulfur hexafluoride	15.33	X
Sulfur monochloride	9.66	
Sulfuryl fluoride	13	X
T		
o-Terphenyls	7.78	
1,1,2,2-Tetrachloro-1,2-difluoroethane (Freon 112)	11.3	X
1,1,1-Trichloroethane	11	X
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	11.78	X
2,2,4-Trimethyl pentane	9.86	
o-Toluidine	7.44	
Tetrachloroethane	11.62	X
Tetrachloroethene	9.32	
Tetrachloromethane	11.47	X
Tetrahydrofuran	9.54	
Tetrahydropyran	9.25	
Thiolacetic acid	10	
Thiophene	8.86	
Toluene	8.82	
Tribromoethene	9.27	
Tribromofluoromethane	10.67	X
Tribromomethane	10.51	
Trichloroethene	9.45	
Trichloroethylene	9.47	
Trichlorofluoromethane (Freon 11)	11.77	X

TABLE 1

SUMMARY OF IONIZATION POTENTIALS

Chemical Name	Ionization Potential (eV)	Cannot be Read by 10.6 eV PID
Trichloromethane	11.42	X
Triethylamine	7.5	
Trifluoromonobromo-methane	11.4	X
Trimethyl amine	7.82	
Tripropyl amine	7.23	
V		
o-Vinyl toluene	8.2	
Valeraldehyde	9.82	
Valeric acid	10.12	
Vinyl acetate	9.19	
Vinyl bromide	9.8	
Vinyl chloride	10	
Vinyl methyl ether	8.93	
W		
Water	12.59	X
X		
2,4-Xylidine	7.65	
m-Xylene	8.56	
o-Xylene	8.56	
p-Xylene	8.45	

FOP 011.0

CALIBRATION AND MAINTENANCE OF PORTABLE PHOTOIONIZATION DETECTOR

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

EQUIPMENT CALIBRATION LOG

PROJECT INFORMATION:

Project Name: Date:

Project No.:

Client: Instrument Source: ☐ BM ☐ Rental

METER TYPE	UNITS	TIME	MAKE/MODEL	SERIAL NUMBER	CAL. BY	STANDARD	POST CAL. READING	SETTINGS
☐ pH meter	units		Myron L Company Ultra Meter 6P	606987		4.00		
						7.00		
						10.01		
☐ Turbidity meter	NTU		Hach 2100P Turbidimeter	9706000145		< 0.4		
						00		
						800		
☐ Sp. Cond. meter	uS mS		Myron L Company Ultra Meter 6P			_____ mS @ 25 °C		
☐ PID	ppm		MinRAE 20			open air zero		MIBK response factor = 1.0
						_____ ppm Iso. Gas		
☐ Dissolved Oxygen	ppm		YSI Model 5					
☐ Particulate meter	mg/m^3					zero air		
☐ Oxygen	%					open air		
☐ Hydrogen sulfide	ppm					open air		
☐ Carbon monoxide	ppm					open air		
☐ LEL	%					open air		
☐ Radiation Meter	uR/H					background area		
☐								

SAMPLE

ADDITIONAL REMARKS:

PREPARED BY: **DATE:**

Correction Factors, Ionization Energies*, And Calibration Characteristics

Correction Factors and Ionization Energies

RAE Systems PIDs can be used for the detection of a wide variety of gases that exhibit different responses. In general, any compound with ionization energy (IE) lower than that of the lamp photons can be measured.* The best way to calibrate a PID to different compounds is to use a standard of the gas of interest. However, correction factors have been determined that enable the user to quantify a large number of chemicals using only a single calibration gas, typically isobutylene. In our PIDs, correction factors can be used in one of three ways:

1) Calibrate the monitor with isobutylene in the usual fashion to read in isobutylene equivalents. Manually multiply the reading by the correction factor (CF) to obtain the concentration of the gas being measured.

2) Calibrate the unit with isobutylene in the usual fashion to read in isobutylene equivalents. Call up the correction factor from the instrument memory or download it from a personal computer and then call it up. The monitor will then read directly in units of the gas of interest.

3) Calibrate the unit with isobutylene, but input an equivalent, "corrected" span gas concentration when prompted for this value. The unit will then read directly in units of the gas of interest.

* *The term "ionization energy" is more scientifically correct and replaces the old term "ionization potential." High-boiling ("heavy") compounds may not vaporize enough to give a response even when their ionization energies are below the lamp photon energy. Some inorganic compounds like H_2O_2 and NO_2 give weak response even when their ionization energies are well below the lamp photon energy.*

Example 1:
With the unit calibrated to read isobutylene equivalents, the reading is 10 ppm with a 10.6 eV lamp. The gas being measured is butyl acetate, which has a correction factor of 2.6. Multiplying 10 by 2.6 gives an adjusted butyl acetate value of 26 ppm. Similarly, if the gas being measured were trichloroethylene (CF = 0.54), the adjusted value with a 10 ppm reading would be 5.4 ppm.

Example 2:
With the unit calibrated to read isobutylene equivalents, the reading is 100 ppm with a 10.6 eV lamp. The gas measured is m-xylene (CF = 0.43). After downloading this factor, the unit should read about 43 ppm when exposed to the same gas, and thus read directly in m-xylene values.

Example 3:
The desired gas to measure is ethylene dichloride (EDC). The CF is 0.6 with an 11.7 eV lamp. During calibration with 100 ppm isobutylene, insert 0.6 times 100, or 60 at the prompt for the calibration gas concentration. The unit then reads directly in EDC values.

Conversion to mg/m^3

To convert from ppm to mg/m^3, use the following formula:

$$\text{Conc.}\ (mg/m^3) = \frac{[\text{Conc.(ppmv)} \times \text{mol. wt. (g/mole)}]}{\text{molar gas volume (L)}}$$

For air at 25 °C (77 °F), the molar gas volume is 24.4 L/mole and the formula reduces to:

$$\text{Conc.}(mg/m^3) = \text{Conc.(ppmv)} \times \text{mol. wt. (g/mole)} \times 0.041$$

For example, if the instrument is calibrated with a gas standard in ppmv, such as 100 ppm isobutylene, and the user wants the display to read in mg/m^3 of hexane, whose m.w. is 86 and CF is 4.3, the overall correction factor would be 4.3 x 86 x 0.041 equals 15.2.

Correction Factors for Mixtures

The correction factor for a mixture is calculated from the sum of the mole fractions Xi of each component divided by their respective correction factors CFi:

$$CFmix = 1 / (X_1/CF_1 + X_2/CF_2 + X_3/CF_3 + \ldots Xi/CFi)$$

Thus, for example, a vapor phase mixture of 5% benzene and 95% n-hexane would have a CFmix of CFmix = 1 / (0.05/0.53 + 0.95/4.3) = 3.2. A reading of 100 would then correspond to 320 ppm of the total mixture, comprised of 16 ppm benzene and 304 ppm hexane.

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For a spreadsheet to compute the correction factor and TLV of a mixture see the appendix at the end of the CF table.

TLVs and Alarm Limits for Mixtures

The correction factor for mixtures can be used to set alarm limits for mixtures. To do this one first needs to calculate the exposure limit for the mixture. The Threshold Limit Value (TLV) often defines exposure limits. The TLV for the mixture is calculated in a manner similar to the CF calculation:

$$TLV\ mix = 1 / (X_1/TLV_1 + X_2/TLV_2 + X_3/TLV_3 + ... Xi/TLVi)$$

In the above example, the 8-h TLV for benzene is 0.5 ppm and for n-hexane 50 ppm. Therefore the TLV of the mixture is TLVmix = 1 / (0.05/0.5 + 0.95/50) = 8.4 ppm, corresponding to 8.0 ppm hexane and 0.4 ppm benzene. For an instrument calibrated on isobutylene, the reading corrsponding to the TLV is:

$$Alarm\ Reading = TLVmix / CFmix = 8.4 / 3.2 = 2.6\ ppm$$

A common practice is to set the lower alarm limit to half the TLV, and the higher limit to the TLV. Thus, one would set the alarms to 1.3 and 2.6 ppm, respectively.

Calibration Characteristics

a) Flow Configuration. PID response is essentially independent of gas flow rate as long as it is sufficient to satisfy the pump demand. Four main flow configurations are used for calibrating a PID:

1) **Pressurized gas cylinder (Fixed-flow regulator):** The flow rate of the regulator should match the flow demand of the instrument pump or be slightly higher.
2) **Pressurized gas cylinder (Demand-flow regulator):** A demand-flow regulator better matches pump speed differences, but results in a slight vacuum during calibration and thus slightly high readings.
3) **Collapsible gas bag:** The instrument will draw the calibration gas from the bag at its normal flow rate, as long as the bag valve is large enough. The bag should be filled with enough gas to allow at least one minute of flow (~ 0.6 L for a MiniRAE, ~0.3 L for MultiRAE).
4) **T (or open tube) method:** The T method uses a T-junction with gas flow higher than the pump draw. The gas supply is connected to one end of the T, the instrument inlet is connected to a second end of the T, and excess gas flow escapes through the third, open end of the T. To prevent ambient air mixing, a long tube should be connected to the open end, or a high excess rate should be used. Alternatively, the instrument probe can be inserted into an open tube slightly wider than the probe. Excess gas flows out around the probe.

The first two cylinder methods are the most efficient in terms of gas usage, while the bag and T methods give slightly more accurate results because they match the pump flow better.

b) Pressure. Pressures deviating from atmospheric pressure affect the readings by altering gas concentration and pump characteristics. It is best to calibrate with the instrument and calibration gas at the same pressure as each other and the sample gas. (Note that the cylinder pressure is not relevant because the regulator reduces the pressure to ambient.) If the instrument is calibrated at atmospheric pressure in one of the flow configurations described above, then 1) pressures slightly above ambient are acceptable but high pressures can damage the pump and 2) samples under vacuum may give low readings if air leaks into the sample train.

c) Temperature. Because temperature effects gas density and concentration, the temperature of the calibration gas and instrument should be as close as possible to the ambient temperature where the unit will be used. We recommend that the temperature of the calibration gas be within the instrument's temperature specification (typically 14° to 113° F or -10° to 45° C). Also, during actual measurements, the instrument should be kept at the same or higher temperature than the sample temperature to avoid condensation in the unit.

d) Matrix. The matrix gas of the calibration compound and VOC sample is significant. Some common matrix components, such as methane and water vapor can affect the VOC signal. PIDs are

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most commonly used for monitoring VOCs in air, in which case the preferred calibration gas matrix is air. For a MiniRAE, methane, methanol, and water vapor reduce the response by about 20% when their concentration is 15,000 ppm and by about 40% at 30,000 ppm. Despite earlier reports of oxygen effects, RAE PID responses with 10.6 eV lamps are independent of oxygen concentration, and calibration gases in a pure nitrogen matrix can be used. H_2 and CO_2 up to 5 volume % also have no effect.

e) Concentration. Although RAE Systems PIDs have electronically linearized output, it is best to calibrate in a concentration range close to the actual measurement range. For example, 100 ppm standard gas for anticipated vapors of 0 to 250 ppm, and 500 ppm standard for expected concentrations of 250 to 1000 ppm. The correction factors in this table were typically measured at 50 to 100 ppm and apply from the ppb range up to about 1000 ppm. Above 1000 ppm the CF may vary and it is best to calibrate with the gas of interest near the concentration of interest.

f) Filters. Filters affect flow and pressure conditions and therefore all filters to be used during sampling should also be in place during calibration. Using a water trap (hydrophobic filter) greatly reduces the chances of drawing water aerosols or dirt particles into the instrument. Regular filter replacements are recommended because dirty filters can adsorb VOCs and cause slower response time and shifts in calibration.

g) Instrument Design. High-boiling ("heavy") or very reactive compounds can be lost by reaction or adsorption onto materials in the gas sample train, such as filters, pumps and other sensors. Multi-gas meters, including EntryRAE, MultiRAE and AreaRAE have the pump and other sensors upstream of the PID and are prone to these losses. Compounds possibly affected by such losses are shown in green in the table, and may give slow response, or in extreme cases, no response at all. In many cases the multi-gas meters can still give a rough indication of the relative concentration, without giving an accurate, quantitative reading. The ppbRAE and MiniRAE series instruments have inert sample trains and therefore do not exhibit significant loss; nevertheless, response may be slow for the very heavy compounds and additional sampling time up to a minute or more should be allowed to get a stable reading.

Table Abbreviations:

CF = Correction Factor (multiply by reading to get corrected value for the compound when calibrated to isobutylene)
NR = No Response
IE = Ionization Energy (values in parentheses are not well established)
C = Confirmed Value indicated by "+" in this column; all others are preliminary or estimated values and are subject to change
ne = Not Established ACGIH 8-hr. TWA
C## = Ceiling value, given where 8-hr.TWA is not available

Disclaimer:

Actual readings may vary with age and cleanliness of lamp, relative humidity, and other factors. For accurate work, the instrument should be calibrated regularly under the operating conditions used. The factors in this table were measured in dry air at room temperature, typically at 50-100 ppm. CF values may vary above about 1000 ppm.

Updates:

The values in this table are subject to change as more or better data become available. Watch for updates of this table on the Internet at **http://www.raesystems.com**

IE data are taken from the CRC Handbook of Chemistry and Physics, 73rd Edition, D.R. Lide (Ed.), CRC Press (1993) and NIST Standard Ref. Database 19A, NIST Positive Ion Energetics, Vers. 2.0, Lias, et.al., U.S. Dept. Commerce (1993). Exposure limits (8-h TWA and Ceiling Values) are from the 2005 ACGIH Guide to Occupational Exposure Values, ACGIH, Cincinnati, OH 2005. Equations for exposure limits for mixtures of chemicals were taken from the 1997 TLVs and BEIs handbook published by the ACGIH (1997).

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Compound Name	Synonym/Abbreviation	CAS No.	Formula	9.8	C	10.6	C	11.7	C	IE (eV)	TWA
Acetaldehyde		75-07-0	C_2H_4O	NR	+	6	+	3.3	+	10.23	C25
Acetic acid	Ethanoic Acid	64-19-7	$C_2H_4O_2$	NR	+	22	+	2.6	+	10.66	10
Acetic anhydride	Ethanoic Acid Anhydride	108-24-7	$C_4H_6O_3$	NR	+	6.1	+	2.0	+	10.14	5
Acetone	2-Propanone	67-64-1	C_3H_6O	1.2	+	1.1	+	1.4	+	9.71	500
Acetone cyanohydrin	2-Hydroxyisobutyronitrile	75-86-5	C_4H_7NO					4	+	11.1	C5
Acetonitrile	Methyl cyanide, Cyanomethane	75-05-8	C_2H_3N					100		12.19	40
Acetylene	Ethyne	74-86-2	C_2H_2					2.1	+	11.40	ne
Acrolein	Propenal	107-02-8	C_3H_4O	42	+	3.9	+	1.4	+	10.10	0.1
Acrylic acid	Propenoic Acid	79-10-7	$C_3H_4O_2$			12	+	2.0	+	10.60	2
Acrylonitrile	Propenenitrile	107-13-1	C_3H_3N			NR	+	1.2	+	10.91	2
Allyl alcohol		107-18-6	C_3H_6O	4.5	+	2.4	+	1.6	+	9.67	2
Allyl chloride	3-Chloropropene	107-05-1	C_3H_5Cl			4.3		0.7		9.9	1
Ammonia		7664-41-7	H_3N	NR	+	9.7	+	5.7	+	10.16	25
Amyl acetate	mix of n-Pentyl acetate & 2-Methylbutyl acetate	628-63-7	$C_7H_{14}O_2$	11	+	2.3	+	0.95	+	<9.9	100
Amyl alcohol	1-Pentanol	75-85-4	$C_5H_{12}O$			5		1.6		10.00	ne
Aniline	Aminobenzene	62-53-3	C_7H_7N	0.50	+	0.48	+	0.47	+	7.72	2
Anisole	Methoxybenzene	100-66-3	C_7H_8O	0.89	+	0.58	+	0.56	+	8.21	ne
Arsine	Arsenic trihydride	7784-42-1	AsH_3			1.9	+			9.89	0.05
Benzaldehyde		100-52-7	C_7H_6O					1		9.49	ne
Benzenamine, N-methyl-	N-Methylphenylamine	100-61-8	C_7H_9N			0.7				7.53	
Benzene		71-43-2	C_6H_6	0.55	+	0.53	+	0.6	+	9.25	0.5
Benzonitrile	Cyanobenzene	100-47-0	C_7H_5N			1.6				9.62	ne
Benzyl alcohol	α-Hydroxytoluene, Hydroxymethylbenzene, Benzenemethanol	100-51-6	C_7H_8O	1.4	+	1.1	+	0.9	+	8.26	ne
Benzyl chloride	α-Chlorotoluene, Chloromethylbenzene	100-44-7	C_7H_7Cl	0.7	+	0.6	+	0.5	+	9.14	1
Benzyl formate	Formic acid benzyl ester	104-57-4	$C_8H_8O_2$	0.9	+	0.73	+	0.66	+		ne
Boron trifluoride		7637-07-2	BF_3	NR		NR		NR		15.5	C1
Bromine		7726-95-6	Br_2	NR	+	1.30	+	0.74	+	10.51	0.1
Bromobenzene		108-86-1	C_6H_5Br			0.6		0.5		8.98	ne
2-Bromoethyl methyl ether		6482-24-2	C_3H_7OBr			0.84	+			~10	ne
Bromoform	Tribromomethane	75-25-2	$CHBr_3$	NR	+	2.5	+	0.5	+	10.48	0.5
Bromopropane,1-	n-Propyl bromide	106-94-5	C_3H_7Br	150	+	1.5	+	0.6	+	10.18	ne
Butadiene	1,3-Butadiene, Vinyl ethylene	106-99-0	C_4H_6	0.8		0.85	+	1.1		9.07	2
Butadiene diepoxide, 1,3-	1,2,3,4-Diepoxybutane	298-18-0	$C_4H_6O_2$	25	+	3.5	+	1.2		~10	ne
Butanal	1-Butanal	123-72-8	C_4H_8O			1.8				9.84	
Butane		106-97-8	C_4H_{10}			67	+	1.2		10.53	800
Butanol, 1-	Butyl alcohol, n-Butanol	71-36-3	$C_4H_{10}O$	70	+	4.7	+	1.4	+	9.99	20
Butanol, t-	tert-Butanol, t-Butyl alcohol	75-65-0	$C_4H_{10}O$	6.9	+	2.9	+			9.90	100
Butene, 1-	1-Butylene	106-98-9	C_4H_8			0.9				9.58	ne
Butoxyethanol, 2-	Butyl Cellosolve, Ethylene glycol monobutyl ether	111-76-2	$C_6H_{14}O_2$	1.8	+	1.2	+	0.6	+	<10	25
Butoxyethanol acetate	Ethanol, 2-(2-butoxyethoxy)-, acetate	124-17-4	$C_{10}H_{20}O_4$			5.6				≤10.6	
Butoxyethoxyethanol	2-(2-Butoxyethoxy)ethanol	112-34-5	$C_8H_{18}O_3$			4.6				≤10.6	
Butyl acetate, n-		123-86-4	$C_6H_{12}O_2$			2.6	+			10	150
Butyl acrylate, n-	Butyl 2-propenoate, Acrylic acid butyl ester	141-32-2	$C_7H_{12}O_2$			1.6	+	0.6	+		10
Butylamine, n-		109-73-9	$C_4H_{11}N$	1.1	+	1.1	+	0.7	+	8.71	C5
Butyl cellosolve	see 2-Butoxyethanol	111-76-2									
Butyl hydroperoxide, t-		75-91-2	$C_4H_{10}O_2$	2.0	+	1.6	+			<10	1
Butyl mercaptan	1-Butanethiol	109-79-5	$C_4H_{10}S$	0.55	+	0.52	+			9.14	0.5
Carbon disulfide		75-15-0	CS_2	4	+	1.2	+	0.44		10.07	10
Carbon tetrachloride	Tetrachloromethane	56-23-5	CCl_4	NR	+	NR	+	1.7	+	11.47	5
Carbonyl sulfide	Carbon oxysulfide	463-58-1	COS							11.18	

Cellosolve see 2-Ethoxyethanol
CFC-14 see Tetrafluoromethane
CFC-113 see 1,1,2-Trichloro-1,2,2-trifluoroethane

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Compound Name	Synonym/Abbreviation	CAS No.	Formula	9.8	C	10.6	C	11.7	C	IE (eV)	TWA
Chlorine		7782-50-5	Cl_2					1.0	+	11.48	0.5
Chlorine dioxide		10049-04-4	ClO_2	NR	+	NR	+	NR	+	10.57	0.1
Chlorobenzene	Monochlorobenzene	108-90-7	C_6H_5Cl	0.44	+	0.40	+	0.39	+	9.06	10
Chlorobenzotrifluoride, 4-	PCBTF, OXSOL 100 p-Chlorobenzotrifluoride	98-56-6	$C_7H_4ClF_3$	0.74	+	0.63	+	0.55	+	<9.6	25
Chloro-1,3-butadiene, 2-	Chloroprene	126-99-8	C_4H_5Cl			3					10
Chloro-1,1-difluoroethane, 1-	HCFC-142B, R-142B	75-68-3	$C_2H_3ClF_2$	NR		NR		NR		12.0	ne
Chlorodifluoromethane	HCFC-22, R-22	75-45-6	$CHClF_2$	NR		NR		NR		12.2	1000
Chloroethane	Ethyl chloride	75-00-3	C_2H_5Cl	NR	+	NR	+	1.1	+	10.97	100
Chloroethanol	Ethylene chlrohydrin	107-07-3	C_2H_5ClO					2.9		10.52	C1
Chloroethyl ether, 2-	bis(2-chloroethyl) ether	111-44-4	$C_4H_8Cl_2O$	8.6	+	3.0	+				5
Chloroethyl methyl ether, 2-	Methyl 2-chloroethyl ether	627-42-9	C_3H_7ClO			3					ne
Chloroform	Trichloromethane	67-66-3	$CHCl_3$	NR	+	NR	+	3.5	+	11.37	10
Chloro-2-methylpropene, 3-	Methallyl chloride, Isobutenyl chloride	563-47-3	C_4H_7Cl	1.4	+	1.2	+	0.63	+	9.76	ne
Chloropicrin		76-06-2	CCl_3NO_2	NR	+	~400	+	7	+	?	0.1
Chlorotoluene, o-	o-Chloromethylbenzene	95-49-8	C_7H_7Cl			0.5		0.6		8.83	50
Chlorotoluene, p-	p-Chloromethylbenzene	106-43-4	C_7H_7Cl					0.6		8.69	ne
Chlorotrifluoroethene	CTFE, Chlorotrifluoroethylene Genetron 1113	79-38-9	C_2ClF_3	6.7	+	3.9	+	1.2	+	9.76	5
Chlorotrimethylsilane		75-77-4	C_3H_9ClSi	NR		NR		0.82	+	10.83	ne
Cresol, m-	m-Hydroxytoluene	108-39-4	C_7H_8O	0.57	+	0.50	+	0.57	+	8.29	5
Cresol, o-	o-Hydroxytoluene	95-48-7	C_7H_8O			1.0				8.50	
Cresol, p-	p-Hydroxytoluene	106-44-5	C_7H_8O			1.4				8.35	
Crotonaldehyde	*trans*-2-Butenal	123-73-9 4170-30-3	C_4H_6O	1.5	+	1.1	+	1.0	+	9.73	2
Cumene	Isopropylbenzene	98-82-8	C_9H_{12}	0.58	+	0.54	+	0.4	+	8.73	50
Cyanogen bromide		506-68-3	CNBr	NR		NR		NR		11.84	ne
Cyanogen chloride		506-77-4	CNCl	NR		NR		NR		12.34	C0.3
Cyclohexane		110-82-7	C_6H_{12}	3.3	+	1.4	+	0.64	+	9.86	300
Cyclohexanol	Cyclohexyl alcohol	108-93-0	$C_6H_{12}O$	1.5	+	0.9	+	1.1	+	9.75	50
Cyclohexanone		108-94-1	$C_6H_{10}O$	1.0	+	0.9	+	0.7	+	9.14	25
Cyclohexene		110-83-8	C_6H_{10}			0.8	+			8.95	300
Cyclohexylamine		108-91-8	$C_6H_{13}N$			1.2				8.62	10
Cyclopentane 85% 2,2-dimethylbutane 15%		287-92-3	C_5H_{10}	NR	+	15	+	1.1		10.33	600
Cyclopropylamine	Aminocyclpropane	765-30-0	C_3H_7N	1.1	+	0.9	+	0.9	+		ne
Decamethylcyclopentasiloxane		541-02-6	$C_{10}H_{30}O_5Si_5$	0.16	+	0.13	+	0.12	+		ne
Decamethyltetrasiloxane		141-62-8	$C_{10}H_{30}O_3Si_4$	0.17	+	0.13	+	0.12	+	<10.2	ne
Decane		124-18-5	$C_{10}H_{22}$	4.0	+	1.4	+	0.35	+	9.65	ne
Diacetone alcohol	4-Methyl-4-hydroxy-2-pentanone	123-42-2	$C_6H_{12}O_2$			0.7					50
Dibromochloromethane	Chlorodibromomethane	124-48-1	$CHBr_2Cl$	NR	+	5.3	+	0.7	+	10.59	ne
Dibromo-3-chloropropane, 1,2-	DBCP	96-12-8	$C_3H_5Br_2Cl$	NR	+	1.7	+	0.43	+		0.001
Dibromoethane, 1,2-	EDB, Ethylene dibromide, Ethylene bromide	106-93-4	$C_2H_4Br_2$	NR	+	1.7	+	0.6	+	10.37	ne
Dichlorobenzene, o-	1,2-Dichlorobenzene	95-50-1	$C_6H_4Cl_2$	0.54	+	0.47	+	0.38	+	9.08	25
Dichlorodifluoromethane	CFC-12	75-71-8	CCl_2F_2			NR	+	NR	+	11.75	1000
Dichlorodimethylsilane		75-78-5	$C_2H_6Cl_2Si$	NR		NR		1.1	+	>10.7	ne
Dichloroethane, 1,2-	EDC, 1,2-DCA, Ethylene dichloride	107-06-2	$C_2H_4Cl_2$			NR	+	0.6	+	11.04	10
Dichloroethene, 1,1-	1,1-DCE, Vinylidene chloride	75-35-4	$C_2H_2Cl_2$			0.82	+	0.8	+	9.79	5
Dichloroethene, c-1,2-	*c*-1,2-DCE, *cis*-Dichloroethylene	156-59-2	$C_2H_2Cl_2$			0.8				9.66	200
Dichloroethene, t-1,2-	*t*-1,2-DCE, *trans*-Dichloroethylene	156-60-5	$C_2H_2Cl_2$			0.45	+	0.34	+	9.65	200
Dichloro-1-fluoroethane, 1,1-	R-141B	1717-00-6	$C_2H_3Cl_2F$	NR	+	NR	+	2.0	+		ne
Dichloromethane	see Methylene chloride										

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Compound Name	Synonym/Abbreviation	CAS No.	Formula	9.8	C	10.6	C	11.7	C	IE (eV)	TWA
Dichloropentafluoropropane	AK-225, mix of ~45% 3,3-dichloro-1,1,1,2,2-pentafluoro-propane (HCFC-225ca) & ~55% 1,3-Dichloro-1,1,2,2,3-pentafluoropropane (HCFC-225cb)	442-56-0 507-55-1	$C_3HCl_2F_5$	NR	+	NR	+	25	+		ne
Dichloropropane, 1,2-		78-87-5	$C_3H_6Cl_2$					0.7		10.87	75
Dichloro-1-propene, 1,3-		542-75-6	$C_3H_4C_{12}$	1.3	+	0.96	+			<10	1
Dichloro-1-propene, 2,3-		78-88-6	$C_3H_4Cl_2$	1.9	+	1.3	+	0.7	+	<10	ne
Dichloro-1,1,1-trifluoroethane, 2,2-	R-123	306-83-2	$C_2HCl_2F_3$	NR	+	NR	+	10.1	+	11.5	ne
Dichloro-2,4,6-trifluoropyridine, 3,5-	DCTFP	1737-93-5	$C_5Cl_2F_3N$	1.1	+	0.9	+	0.8	+		ne
Dichlorvos *	Vapona; O,O-dimethyl O-dichlorovinyl phosphate	62-73-7	$C_4H_7Cl_2O_4P$			0.9	+			<9.4	0.1
Dicyclopentadiene	DCPD, Cyclopentadiene dimer	77-73-6	$C_{10}H_{12}$	0.57	+	0.48	+	0.43	+	8.8	5
Diesel Fuel		68334-30-5	m.w. 226			0.9	+				11
Diesel Fuel #2 (Automotive)		68334-30-5	m.w. 216	1.3		0.7	+	0.4	+		11
Diethylamine		109-89-7	$C_4H_{11}N$			1	+			8.01	5
Diethylaminopropylamine, 3-		104-78-9	$C_7H_{18}N_2$			1.3					ne
Diethylbenzene	See Dowtherm J										
Diethylmaleate		141-05-9	$C_8H_{12}O_4$			4					ne
Diethyl sulfide	see Ethyl sulfide										
Diglyme	See Methoxyethyl ether	111-96-6	$C_6H_{14}O_3$								
Diisobutyl ketone	DIBK, 2,2-dimethyl-4-heptanone	108-83-8	$C_9H_{18}O$	0.71	+	0.61	+	0.35	+	9.04	25
Diisopropylamine		108-18-9	$C_6H_{15}N$	0.84	+	0.74	+	0.5	+	7.73	5
Diketene	Ketene dimer	674-82-8	$C_4H_4O_2$	2.6	+	2.0	+	1.4	+	9.6	0.5
Dimethylacetamide, N,N-	DMA	127-19-5	C_4H_9NO	0.87	+	0.8	+	0.8	+	8.81	10
Dimethylamine		124-40-3	C_2H_7N			1.5				8.23	5
Dimethyl carbonate	Carbonic acid dimethyl ester	616-38-6	$C_3H_6O_3$	NR	+	~70	+	1.7	+	~10.5	ne
Dimethyl disulfide	DMDS	624-92-0	$C_2H_6S_2$	0.2	+	0.20	+	0.21	+	7.4	ne
Dimethyl ether	see Methyl ether										
Dimethylethylamine	DMEA	598-56-1	$C_4H_{11}N$	1.1	+	1.0	+	0.9	+	7.74	~3
Dimethylformamide, N,N-	DMF	68-12-2	C_3H_7NO	0.7	+	0.7	+	0.8	+	9.13	10
Dimethylhydrazine, 1,1-	UDMH	57-14-7	$C_2H_8N_2$			0.8	+	0.8	+	7.28	0.01
Dimethyl methylphosphonate	DMMP, methyl phosphonic acid dimethyl ester	756-79-6	$C_3H_9O_3P$	NR	+	4.3	+	0.74	+	10.0	ne
Dimethyl sulfate		77-78-1	$C_2H_6O_4S$	~23		~20	+	2.3	+		0.1
Dimethyl sulfide	see Methyl sulfide										
Dimethyl sulfoxide	DMSO, Methyl sulfoxide	67-68-5	C_2H_6OS			1.4	+			9.10	ne
Dioxane, 1,4-		123-91-1	$C_4H_8O_2$			1.3				9.19	25
Dioxolane, 1,3-	Ethylene glycol formal	646-06-0	$C_3H_6O_2$	4.0	+	2.3	+	1.6	+	9.9	20
Dowtherm A see Therminol® *											
Dowtherm J (97% Diethylbenzene) *		25340-17-4	$C_{10}H_{14}$			0.5					
DS-108F Wipe Solvent	Ethyl lactate/Isopar H/ Propoxypropanol ~7:2:1	97-64-3 64742-48-9 1569-01-3	m.w. 118	3.3	+	1.6	+	0.7	+		ne
Epichlorohydrin	ECH Chloromethyloxirane, 1-chloro2,3-epoxypropane	106-89-8	C_2H_5ClO	~200	+	8.5	+	1.4	+	10.2	0.5
Ethane		74-84-0	C_2H_6			NR	+	15	+	11.52	ne
Ethanol	Ethyl alcohol	64-17-5	C_2H_6O			10	+	3.1	+	10.47	1000
Ethanolamine *	MEA, Monoethanolamine	141-43-5	C_2H_7NO	5.6	+	1.6	+			8.96	3
Ethene	Ethylene	74-85-1	C_2H_4			9	+	4.5	+	10.51	ne
Ethoxyethanol, 2-	Ethyl cellosolve	110-80-5	$C_4H_{10}O_2$			1.3				9.6	5
Ethyl acetate		141-78-6	$C_4H_8O_2$			4.6	+	3.5		10.01	400
Ethyl acetoacetate		141-97-9	$C_6H_{10}O_3$	1.4	+	1.2	+	1.0	+	<10	ne
Ethyl acrylate		140-88-5	$C_5H_8O_2$			2.4	+	1.0	+	<10.3	5
Ethylamine		75-04-7	C_2H_7N			0.8				8.86	5

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Ethylbenzene		100-41-4	C_8H_{10}	0.52	+	0.52	+	0.51	+	8.77	100
Ethyl caprylate	Ethyl octanoate	106-32-1	$C_{10}H_{20}O_2$		+	0.52	+	0.51	+		
Ethylenediamine	1,2-Ethanediamine; 1,2-Diaminoethane	107-15-3	$C_2H_8N_2$	0.9	+	0.8	+	1.0	+	8.6	10
Ethylene glycol *	1,2-Ethanediol	107-21-1	$C_2H_6O_2$			16	+	6	+	10.16	C100
Ethylene glycol, Acrylate	2-hydroxyethyl Acrylate	818-61-1	$C_5H_8O_3$			8.2				≤10.6	
Ethylene glycol dimethyl ether	1,2-Dimethoxyethane, Monoglyme	110-71-4	$C_4H_{10}O_2$	1.1		0.86		0.7		9.2	ne
Ethylene glycol monobutyl ether acetate	2-Butoxyethyl acetate	112-07-2	$C_8H_{16}O_3$			1.3				≤10.6	
Ethylene glycol, monothio	mercapto-2-ethanol	60-24-2	C_2H_6OS			1.5				9.65	
Ethylene oxide	Oxirane, Epoxyethane	75-21-8	C_2H_4O			13	+	3.5	+	10.57	1
Ethyl ether	Diethyl ether	60-29-7	$C_4H_{10}O$			1.1	+	1.7		9.51	400
Ethyl 3-ethoxypropionate	EEP	763-69-9	$C_7H_{14}O_3$	1.2	+	0.75	+				ne
Ethyl formate		109-94-4	$C_3H_6O_2$					1.9		10.61	100
Ethylhexyl acrylate, 2-	Acrylic acid 2-ethylhexyl ester	103-11-7	$C_{11}H_{20}O_2$			1.1	+	0.5	+		ne
Ethylhexanol	2-Ethyl-1-hexanol	104-76-7	C8H18O			1.9				≤10.6	
Ethylidenenorbornene	5-Ethylidene bicyclo(2,2,1)hept-2-ene	16219-75-3	C_9H_{12}	0.4	+	0.39	+	0.34	+	≤8.8	ne
Ethyl (S)-(-)-lactate see also DS-108F	Ethyl lactate, Ethyl (S)-(-)-hydroxypropionate	687-47-8 97-64-3	$C_5H_{10}O_3$	13	+	3.2	+	1.6	+	~10	ne
Ethyl mercaptan	Ethanethiol	75-08-1	C_2H_6S	0.60	+	0.56	+			9.29	0.5
Ethyl sulfide	Diethyl sulfide	352-93-2	$C_4H_{10}S$			0.5	+			8.43	ne
Formaldehyde	Formalin	50-00-0	CH_2O	NR	+	NR	+	1.6	+	10.87	C0.3
Formamide		75-12-7	CH_3NO			6.9	+	4		10.16	10
Formic acid		64-18-6	CH_2O_2	NR	+	NR	+	9	+	11.33	5
Furfural	2-Furaldehyde	98-01-1	$C_5H_4O_2$			0.92	+	0.8	+	9.21	2
Furfuryl alcohol		98-00-0	$C_5H_6O_2$			0.80	+			<9.5	10
Gasoline #1		8006-61-9	m.w. 72			0.9	+				300
Gasoline #2, 92 octane		8006-61-9	m.w. 93	1.3	+	1.0	+	0.5	+		300
Glutaraldehyde	1,5-Pentanedial, Glutaric dialdehyde	111-30-8	$C_5H_8O_2$	1.1	+	0.8	+	0.6	+		C0.05
Glycidyl methacrylate	2,3-Epoxypropyl methacrylate	106-91-2	$C_7H_{10}O_3$	2.6	+	1.2	+	0.9	+		0.5
Halothane	2-Bromo-2-chloro-1,1,1-trifluoroethane	151-67-7	$C_2HBrClF_3$					0.6		11.0	50
HCFC-22 see Chlorodifluoromethane											
HCFC-123 see 2,2-Dichloro-1,1,1-trifluoroethane											
HCFC-141B see 1,1-Dichloro-1-fluoroethane											
HCFC-142B see 1-Chloro-1,1-difluoroethane											
HCFC-134A see 1,1,1,2-Tetrafluoroethane											
HCFC-225 see Dichloropentafluoropropane											
Heptane, n-		142-82-5	C_7H_{16}	45	+	2.8	+	0.60	+	9.92	400
Heptanol, 4-	Dipropylcarbinol	589-55-9	$C_7H_{16}O$	1.8	+	1.3	+	0.5	+	9.61	ne
Hexamethyldisilazane, 1,1,1,3,3,3- *	HMDS	999-97-3	$C_6H_{19}NSi_2$			0.2	+	0.2	+	~8.6	ne
Hexamethyldisiloxane	HMDSx	107-46-0	$C_6H_{18}OSi_2$	0.33	+	0.27	+	0.25	+	9.64	ne
Hexane, n-		110-54-3	C_6H_{14}	350	+	4.3	+	0.54	+	10.13	50
Hexanol, 1-	Hexyl alcohol	111-27-3	$C_6H_{14}O$	9	+	2.5	+	0.55	+	9.89	ne
Hexene, 1-		592-41-6	C_6H_{12}			0.8				9.44	30
HFE-7100 see Methyl nonafluorobutyl ether											
Histoclear (Histo-Clear)	Limonene/corn oil reagent		m.w. ~136	0.5	+	0.4	+	0.3	+		ne
Hydrazine *		302-01-2	H_4N_2	>8	+	2.6	+	2.1	+	8.1	0.01
Hydrazoic acid	Hydrogen azide		HN_3							10.7	
Hydrogen	Synthesis gas	1333-74-0	H_2	NR	+	NR	+	NR	+	15.43	ne
Hydrogen cyanide	Hydrocyanic acid	74-90-8	HCN	NR	+	NR	+	NR	+	13.6	C4.7
Hydrogen iodide *	Hydriodic acid	10034-85-2	HI			~0.6*				10.39	
Hydrogen peroxide		7722-84-1	H_2O_2	NR	+	NR	+	NR	+	10.54	1
Hydrogen sulfide		7783-06-4	H_2S	NR	+	3.3	+	1.5	+	10.45	10
Hydroxypropyl methacrylate		27813-02-1 923-26-2	$C_7H_{12}O_3$	9.9	+	2.3	+	1.1	+		ne
Iodine *		7553-56-2	I_2	0.1	+	0.1	+	0.1	+	9.40	C0.1

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Iodomethane	Methyl iodide	74-88-4	CH_3I	0.21	+	0.22	+	0.26	+	9.54	2
Isoamyl acetate	Isopentyl acetate	123-92-2	$C_7H_{14}O_2$	10.1		2.1		1.0		<10	100
Isobutane	2-Methylpropane	75-28-5	C_4H_{10}			100	+	1.2	+	10.57	ne
Isobutanol	2-Methyl-1-propanol	78-83-1	$C_4H_{10}O$	19	+	3.8	+	1.5		10.02	50
Isobutene	Isobutylene, Methyl butene	115-11-7	C_4H_8	1.00	+	1.00	+	1.00	+	9.24	Ne
Isobutyl acrylate	Isobutyl 2-propenoate	106-63-8	$C_7H_{12}O_2$			1.5	+	0.60	+		Ne
Isoflurane	1-Chloro-2,2,2-trifluoroethyl difluoromethyl ether, forane	26675-46-7	$C_3H_2ClF_5O$	NR	+	NR	+	48	+	~11.7	Ne
Isooctane	2,2,4-Trimethylpentane	540-84-1	C8H18			1.2				9.86	ne
Isopar E Solvent	Isoparaffinic hydrocarbons	64741-66-8	m.w. 121	1.7	+	0.8	+				Ne
Isopar G Solvent	Photocopier diluent	64742-48-9	m.w. 148			0.8	+				Ne
Isopar K Solvent	Isoparaffinic hydrocarbons	64742-48-9	m.w. 156	0.9	+	0.5	+	0.27	+		Ne
Isopar L Solvent	Isoparaffinic hydrocarbons	64742-48-9	m.w. 163	0.9	+	0.5	+	0.28	+		Ne
Isopar M Solvent	Isoparaffinic hydrocarbons	64742-47-8	m.w. 191			0.7	+	0.4	+		Ne
Isopentane	2-Methylbutane	78-78-4	C_5H_{12}			8.2					Ne
Isophorone		78-59-1	$C_9H_{14}O$					3		9.07	C5
Isoprene	2-Methyl-1,3-butadiene	78-79-5	C_5H_8	0.69	+	0.63	+	0.60	+	8.85	Ne
Isopropanol	Isopropyl alcohol, 2-propanol, IPA	67-63-0	C_3H_8O	500	+	6.0	+	2.7		10.12	200
Isopropyl acetate		108-21-4	$C_5H_{10}O_2$			2.6				9.99	100
Isopropyl ether	Diisopropyl ether	108-20-3	$C_6H_{14}O$			0.8				9.20	250
Jet fuel JP-4	Jet B, Turbo B, F-40 Wide cut type aviation fuel	8008-20-6 + 64741-42-0	m.w. 115			1.0	+	0.4	+		Ne
Jet fuel JP-5	Jet 5, F-44, Kerosene type aviation fuel	8008-20-6 + 64747-77-1	m.w. 167			0.6	+	0.5	+		29
Jet fuel JP-8	Jet A-1, F-34, Kerosene type aviation fuel	8008-20-6 + 64741-77-1	m.w. 165			0.6	+	0.3	+		30
Jet fuel A-1 (JP-8)	F-34, Kerosene type aviation fuel	8008-20-6 + 64741-77-1	m.w. 145			0.67					34
Jet Fuel TS	Thermally Stable Jet Fuel, Hydrotreated kerosene fuel	8008-20-6 + 64742-47-8	m.w. 165	0.9	+	0.6	+	0.3	+		30
Limonene, D-	(R)-(+)-Limonene	5989-27-5	$C_{10}H_{16}$			0.33	+			~8.2	Ne
Kerosene C10-C16 petro.distillate – see Jet Fuels		8008-20-6									
MDI – see 4,4'-Methylenebis(phenylisocyanate)											
Maleic anhydride	2,5-Furandione	108-31-6	$C_4H_2O_3$							~10.8	0.1
Mesitylene	1,3,5-Trimethylbenzene	108-67-8	C_9H_{12}	0.36	+	0.35	+	0.3	+	8.41	25
Methallyl chloride – see 3-Chloro-2-methylpropene											
Methane	Natural gas	74-82-8	CH_4	NR	+	NR	+	NR	+	12.61	Ne
Methanol	Methyl alcohol, carbinol	67-56-1	CH_4O	NR	+	NR	+	2.5	+	10.85	200
Methoxyethanol, 2-	Methyl cellosolve, Ethylene glycol monomethyl ether	109-86-4	$C_3H_8O_2$	4.8	+	2.4	+	1.4	+	10.1	5
Methoxyethoxyethanol, 2-	2-(2-Methoxyethoxy)ethanol Diethylene glycol monomethyl ether	111-77-3	$C_7H_{16}O$	2.3	+	1.2	+	0.9	+	<10	Ne
Methoxyethyl ether, 2-	bis(2-Methoxyethyl) ether, Diethylene glycol dimethyl ether, Diglyme	111-96-6	$C_6H_{14}O_3$	0.64	+	0.54	+	0.44	+	<9.8	Ne
Methyl acetate		79-20-9	$C_3H_6O_2$	NR	+	6.6	+	1.4	+	10.27	200
Methyl acrylate	Methyl 2-propenoate, Acrylic acid methyl ester	96-33-3	$C_4H_6O_2$			3.7	+	1.2	+	(9.9)	2
Methylamine	Aminomethane	74-89-5	CH_5N			1.2				8.97	5
Methyl amyl ketone	MAK, 2-Heptanone, Methyl pentyl ketone	110-43-0	$C_7H_{14}O$	0.9	+	0.85	+	0.5	+	9.30	50
Methyl bromide	Bromomethane	74-83-9	CH_3Br	110	+	1.7	+	1.3	+	10.54	1
Methyl t-butyl ether	MTBE, *tert*-Butyl methyl ether	1634-04-4	$C_5H_{12}O$			0.9	+			9.24	40
Methyl cellosolve	see 2-Methoxyethanol										
Methyl chloride	Chloromethane	74-87-3	CH_3Cl	NR	+	NR	+	0.74	+	11.22	50
Methylcyclohexane		107-87-2	C_7H_{14}	1.6	+	0.97	+	0.53	+	9.64	400
Methylene bis(phenyl-isocyanate), 4,4'- *	MDI, Mondur M		$C_{15}H_{10}N_2O_2$	Very slow ppb level response							0.005

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Methylene chloride	Dichloromethane	75-09-2	CH_2Cl_2	NR	+	NR	+	0.89	+	11.32	25
Methyl ether	Dimethyl ether	115-10-6	C_2H_6O	4.8	+	3.1	+	2.5	+	10.03	Ne
Methyl ethyl ketone	MEK, 2-Butanone	78-93-3	C_4H_8O	0.86	+	0.9	+	1.1	+	9.51	200
Methylhydrazine	Monomethylhydrazine, Hydrazomethane	60-34-4	$C_2H_6N_2$	1.4	+	1.2	+	1.3	+	7.7	0.01
Methyl isoamyl ketone	MIAK, 5-Methyl-2-hexanone	110-12-3	$C_7H_{14}O$	0.8	+	0.76	+	0.5	+	9.28	50
Methyl isobutyl ketone	MIBK, 4-Methyl-2-pentanone	108-10-1	$C_6H_{12}O$	0.9	+	0.8	+	0.6	+	9.30	50
Methyl isocyanate	CH3NCO	624-83-9	C_2H_3NO	NR	+	4.6	+	1.5		10.67	0.02
Methyl isothiocyanate	CH3NCS	551-61-6	C_2H_3NS	0.5	+	0.45	+	0.4	+	9.25	ne
Methyl mercaptan	Methanethiol	74-93-1	CH_4S	0.65		0.54		0.66		9.44	0.5
Methyl methacrylate		80-62-6	$C_5H_8O_2$	2.7	+	1.5	+	1.2	+	9.7	100
Methyl nonafluorobutyl ether	HFE-7100DL	163702-08-7, 163702-07-6	$C_5H_3F_9O$			NR	+	~35	+		ne
Methyl-1,5-pentanediamine, 2- (coats lamp) *	Dytek-A amine, 2-Methyl pentamethylenediamine	15520-10-2	C6H16N2			~0.6	+			<9.0	ne
Methyl propyl ketone	MPK, 2-Pentanone	107-87-9	$C_5H_{12}O$			0.93	+	0.79	+	9.38	200
Methyl-2-pyrrolidinone, N-	NMP, N-Methylpyrrolidone, 1-Methyl-2-pyrrolidinone, 1-Methyl-2-pyrrolidone	872-50-4	C_5H_9NO	1.0	+	0.8	+	0.9	+	*9.17*	ne
Methyl salicylate	Methyl 2-hydroxybenzoate	119-36-8	C_8H_8O3	1.3	+	0.9	+	0.9	+	~9	ne
Methylstyrene, α-	2-Propenylbenzene	98-83-9	C_9H_{10}			0.5				8.18	50
Methyl sulfide	DMS, Dimethyl sulfide	75-18-3	C_2H_6S	0.49	+	0.44	+	0.46	+	8.69	ne
Mineral spirits	Stoddard Solvent, Varsol 1, White Spirits	8020-83-5 8052-41-3 68551-17-7	m.w. 144	1.0		0.69	+	0.38	+		100
Mineral Spirits - Viscor 120B Calibration Fluid, b.p. 156-207°C		8052-41-3	m.w. 142	1.0	+	0.7	+	0.3	+		100
Monoethanolamine - see Ethanolamine											
Mustard *	HD, Bis(2-chloroethyl) sulfide	505-60-2 39472-40-7 68157-62-0	$C_4H_8Cl_2S$			0.6					0.0005
Naphtha - see VM & P Naptha											
Naphthalene	Mothballs	91-20-3	$C_{10}H_8$	0.45	+	0.42	+	0.40	+	8.13	10
Nickel carbonyl (in CO)	Nickel tetracarbonyl	13463-39-3	C_4NiO_4			0.18				<8.8	0.001
Nicotine		54-11-5	$C_{10}H_{14}N_2$			2.0				≤10.6	
Nitric oxide		10102-43-9	NO	~6		5.2	+	2.8	+	9.26	25
Nitrobenzene		98-95-3	$C_6H_5NO_2$	2.6	+	1.9	+	1.6	+	9.81	1
Nitroethane		79-24-3	$C_2H_5NO_2$					3		10.88	100
Nitrogen dioxide		10102-44-0	NO_2	23	+	16	+	6	+	9.75	3
Nitrogen trifluoride		7783-54-2	NF_3	NR		NR		NR		13.0	10
Nitromethane		75-52-5	CH_3NO_2					4		11.02	20
Nitropropane, 2-		79-46-9	$C_3H_7NO_2$					2.6		10.71	10
Nonane		111-84-2	C_9H_{20}			1.4				9.72	200
Norpar 12	n-Paraffins, mostly C_{10}-C_{13}	64771-72-8	m.w. 161	3.2	+	1.1	+	0.28	+		ne
Norpar 13	n-Paraffins, mostly C_{13}-C_{14}	64771-72-8	m.w. 189	2.7	+	1.0	+	0.3	+		ne
Octamethylcyclotetrasiloxane		556-67-2	$C_8H_{24}O_4Si_4$	0.21	+	0.17	+	0.14	+		ne
Octamethyltrisiloxane		107-51-7	$C_8H_{24}O_2Si_3$	0.23	+	0.18	+	0.17	+	<10.0	ne
Octane, n-		111-65-9	C_8H_{18}	13	+	1.8	+			9.82	300
Octene, 1-		111-66-0	C_8H_{16}	0.9	+	0.75	+	0.4	+	9.43	75
Pentane		109-66-0	C_5H_{12}	80	+	8.4	+	0.7	+	10.35	600
Peracetic acid *	Peroxyacetic acid, Acetyl hydroperoxide	79-21-0	$C_2H_4O_3$	NR	+	NR	+	2.3	+		ne
Peracetic/Acetic acid mix *	Peroxyacetic acid, Acetyl hydroperoxide	79-21-0	$C_2H_4O_3$			50	+	2.5	+		ne
Perchloroethene	PCE, Perchloroethylene, Tetrachloroethylene	127-18-4	C_2Cl_4	0.69	+	0.57	+	0.31	+	9.32	25
PGME	Propylene glycol methyl ether, 1-Methoxy-2-propanol	107-98-2	$C_6H_{12}O_3$	2.4	+	1.5	+	1.1	+		100

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Compound Name	Synonym/Abbreviation	CAS No.	Formula	9.8	C	10.6	C	11.7	C	IE (eV)	TWA
PGMEA	Propylene glycol methyl ether acetate, 1-Methoxy-2-acetoxypropane, 1-Methoxy-2-propanol acetate	108-65-6	$C_6H_{12}O_3$	1.65	+	1.0	+	0.8	+		ne
Phenol	Hydroxybenzene	108-95-2	C_6H_6O	1.0	+	1.0	+	0.9	+	8.51	5
Phosgene	Dichlorocarbonyl	75-44-5	CCl_2O	NR	+	NR	+	8.5	+	11.2	0.1
Phosgene in Nitrogen	Dichlorocarbonyl	75-44-5	CCl_2O	NR	+	NR	+	6.8	+	11.2	0.1
Phosphine (coats lamp)		7803-51-2	PH_3	28		3.9	+	1.1	+	9.87	0.3
Photocopier Toner	Isoparaffin mix					0.5	+	0.3	+		ne
Picoline, 3-	3-Methylpyridine	108-99-6	C_6H_7N			0.9				9.04	ne
Pinene, α-		2437-95-8	$C_{10}H_{16}$			0.31	+	0.47		8.07	ne
Pinene, β-		18172-67-3	$C_{10}H_{16}$	0.38	+	0.37	+	0.37	+	~8	100
Piperylene, isomer mix	1,3-Pentadiene	504-60-9	C_5H_8	0.76	+	0.69	+	0.64	+	8.6	100
Propane		74-98-6	C_3H_8			NR	+	1.8	+	10.95	2500
Propanol, n-	Propyl alcohol	71-23-8	C_3H_8O			5		1.7		10.22	200
Propene	Propylene	115-07-1	C_3H_6	1.5	+	1.4	+	1.6	+	9.73	ne
Propionaldehyde	Propanal	123-38-6	C_3H_6O			1.9				9.95	ne
Propyl acetate, n-		109-60-4	$C_5H_{10}O_2$			3.5		2.3		10.04	200
Propylamine, n-	1-Propylamine, 1-Aminopropane	107-10-8	C_3H_9N	1.1	+	1.1	+	0.9	+	8.78	ne
Propylene carbonate *		108-32-7	$C_4H_6O_3$			62	+	1	+	10.5	ne
Propylene glycol	1,2-Propanediol	57-55-6	$C_3H_8O_2$	18		5.5	+	1.6	+	<10.2	ne
Propylene glycol propyl ether	1-Propoxy-2-propanol	1569-01-3	$C_6H_{14}O_2$	1.3	+	1.0	+	1.6	+		ne
Propylene oxide	Methyloxirane	75-56-9 16088-62-3 15448-47-2	C_3H_6O	~240		6.6	+	2.9	+	10.22	20
Propyleneimine	2-Methylaziridine	75-55-8	C_3H_7N	1.5	+	1.3	+	1.0	+	9.0	2
Propyl mercaptan, 2-	2-Propanethiol, Isopropyl mercaptan	75-33-2	C_3H_8S	0.64	+	0.66	+			9.15	ne
Pyridine		110-86-1	C_5H_5N	0.78	+	0.7	+	0.7	+	9.25	5
Pyrrolidine (coats lamp)	Azacyclohexane	123-75-1	C_4H_9N	2.1	+	1.3	+	1.6	+	~8.0	ne
RR7300 (PGME/PGMEA)	70:30 PGME:PGMEA (1-Methoxy-2-propanol:1-Methoxy-2-acetoxypropane)	107-98-2	$C_4H_{10}O_2$ / $C_6H_{12}O_3$			1.4	+	1.0	+		ne
Sarin	GB, Isopropyl methylphosphonofluoridate	107-44-8 50642-23-4	$C_4H_{10}FO_2P$			~3					
Stoddard Solvent - see Mineral Spirits		8020-83-5									
Styrene		100-42-5	C_8H_8	0.45	+	0.40	+	0.4	+	8.43	20
Sulfur dioxide		7446-09-5	SO_2	NR		NR	+	NR	+	12.32	2
Sulfur hexafluoride		2551-62-4	SF_6	NR		NR		NR		15.3	1000
Sulfuryl fluoride	Vikane	2699-79-8	SO_2F_2	NR		NR		NR		13.0	5
Tabun *	Ethyl N, N-dimethylphosphoramidocyanidate	77-81-6	$C_5H_{11}N_2O_2P$			0.8					15ppt
Tetrachloroethane, 1,1,1,2-		630-20-6	$C_2H_2Cl_4$					1.3		~11.1	ne
Tetrachloroethane, 1,1,2,2-		79-34-5	$C_2H_2Cl_4$	NR	+	NR	+	0.60	+	~11.1	1
Tetrachlorosilane		10023-04-7	$SiCl_4$	NR		NR		15	+	11.79	ne
Tetraethyl lead	TEL	78-00-2	$C_8H_{20}Pb$	0.4		0.3		0.2		~11.1	0.008
Tetraethyl orthosilicate	Ethyl silicate, TEOS	78-10-4	$C_8H_{20}O_4Si$			0.7	+	0.2	+	~9.8	10
Tetrafluoroethane, 1,1,1,2-	HFC-134A	811-97-2	$C_2H_2F_4$			NR		NR			ne
Tetrafluoroethene	TFE, Tetrafluoroethylene, Perfluoroethylene	116-14-3	C_2F_4			~15				10.12	ne
Tetrafluoromethane	CFC-14, Carbon tetrafluoride	75-73-0	CF_4			NR	+	NR	+	>15.3	ne
Tetrahydrofuran	THF	109-99-9	C_4H_8O	1.9	+	1.7	+	1.0	+	9.41	200
Tetramethyl orthosilicate	Methyl silicate, TMOS	681-84-5	$C_4H_{12}O_4Si$	10	+	1.9	+			~10	1
Therminol® D-12 *	Hydrotreated heavy naphtha	64742-48-9	m.w. 160	0.8	+	0.51	+	0.33	+		ne
Therminol® VP-1 *	Dowtherm A, 3:1 Diphenyl oxide: Biphenyl	101-84-8 92-52-4	$C_{12}H_{10}O$ $C_{12}H_{10}$			0.4	+				1
Toluene	Methylbenzene	108-88-3	C_7H_8	0.54	+	0.50	+	0.51	+	8.82	50

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Compound Name	Synonym/Abbreviation	CAS No.	Formula	9.8	C	10.6	C	11.7	C	IE (eV)	TWA
Tolylene-2,4-diisocyanate	TDI, 4-Methyl-1,3-phenylene-2,4-diisocyanate	584-84-9	$C_9H_6N_2O_2$	1.4	+	1.4	+	2.0	+		0.002
Trichlorobenzene, 1,2,4-	1,2,4-TCB	120-82-1	$C_6H_3Cl_3$	0.7	+	0.46	+			9.04	C5
Trichloroethane, 1,1,1-	1,1,1-TCA, Methyl chloroform	71-55-6	$C_2H_3Cl_3$			NR	+	1	+	11	350
Trichloroethane, 1,1,2-	1,1,2-TCA	79-00-5	$C_2H_3Cl_3$	NR	+	NR	+	0.9	+	11.0	10
Trichloroethene	TCE, Trichoroethylene	79-01-6	C_2HCl_3	0.62	+	0.54	+	0.43	+	9.47	50
Trichloromethylsilane	Methyltrichlorosilane	75-79-6	CH_3Cl_3Si	NR		NR		1.8	+	11.36	ne
Trichlorotrifluoroethane, 1,1,2-	CFC-113	76-13-1	$C_2Cl_3F_3$			NR		NR		11.99	1000
Triethylamine	TEA	121-44-8	$C_6H_{15}N$	0.95	+	0.9	+	0.65	+	7.3	1
Triethyl borate	TEB; Boric acid triethyl ester	150-46-9	$C_6H_{15}O_3B$			2.2	+	1.1	+	~10	ne
Triethyl phosphate	Ethyl phosphate	78-40-0	$C_6H_{15}O_4P$	~50	+	3.1	+	0.60	+	9.79	ne
Trifluoroethane, 1,1,2-		430-66-0	$C_2H_3F_3$					34		*12.9*	ne
Trimethylamine		75-50-3	C_3H_9N			0.9				7.82	5
Trimethylbenzene, 1,3,5- - see Mesitylene		108-67-8									25
Trimethyl borate	TMB; Boric acid trimethyl ester, Boron methoxide	121-43-7	$C_3H_9O_3B$			5.1	+	1.2	+	10.1	ne
Trimethyl phosphate	Methyl phosphate	512-56-1	$C_3H_9O_4P$			8.0	+	1.3	+	9.99	ne
Trimethyl phosphite	Methyl phosphite	121-45-9	$C_3H_9O_3P$			1.1	+		+	*8.5*	2
Turpentine	Pinenes (85%) + other diisoprenes	8006-64-2	$C_{10}H_{16}$	0.37	+	0.30	+	0.29	+	~8	20
Undecane		1120-21-4	$C_{11}H_{24}$			2				9.56	ne
Varsol – see Mineral Spirits											
Vinyl actetate		108-05-4	$C_4H_6O_2$	1.5	+	1.2	+	1.0	+	9.19	10
Vinyl bromide	Bromoethylene	593-60-2	C_2H_3Br			0.4				9.80	5
Vinyl chloride	Chloroethylene, VCM	75-01-4	C_2H_3Cl			2.0	+	0.6	+	9.99	5
Vinyl-1-cyclohexene, 4-	Butadiene dimer, 4-Ethenylcyclohexene	100-40-3	C_8H_{12}	0.6	+	0.56	+			9.83	0.1
Vinylidene chloride - see 1,1-Dichloroethene											
Vinyl-2-pyrrolidinone, 1-	NVP, N-vinylpyrrolidone, 1-ethenyl-2-pyrrolidinone	88-12-0	C_6H_9NO	1.0	+	0.8	+	0.9	+		ne
Viscor 120B - see Mineral Spirits - Viscor 120B Calibration Fluid											
V. M. & P. Naphtha	Ligroin; Solvent naphtha; Varnish maker's & painter's naptha	64742-89-8	m.w. 111 (C_8-C_9)	1.7	+	0.97	+				300
Xylene, m-	1,3-Dimethylbenzene	108-38-3	C_8H_{10}	0.50	+	0.44	+	0.40	+	8.56	100
Xylene, o-	1,2-Dimethylbenzene	95-47-6	C_8H_{10}	0.56	+	0.46	+	0.43		8.56	100
Xylene, p-	1,4-Dimethylbenzene	106-42-3	C_8H_{10}	0.48	+	0.39	+	0.38	+	8.44	100
None				1		1		1			
Undetectable				1E+6		1E+6		1E+6			

* Compounds indicated in green can be detected using a MiniRAE 2000 or ppbRAE/+ with slow response, but may be lost by adsorption on a MultiRAE or EntryRAE. Response on multi-gas meters can give an indication of relative concentrations, but may not be quantitative and for some chemicals no response is observed.

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Appendix I:
Example of Automatic Calculation of Correction Factors, TLVs and Alarm Limits for Mixtures
(Calculations performed using Excel version of this database, available on request)

Compound	CF 9.8 eV	CF 10.6 eV	CF 11.7eV	Mol. Frac	Conc ppm	TLV ppm	STEL Ppm
Benzene	0.55	0.53	0.6	0.01	1	0.5	2.5
Toluene	0.54	0.5	0.51	0.06	10	50	150
Hexane, n-	300	4.3	0.54	0.06	10	50	150
Heptane, n-	45	2.8	0.6	0.28	50	400	500
Styrene	0.45	0.4	0.42	0.06	10	20	40
Acetone	1.2	1.1	1.4	0.28	50	750	1000
Isopropanol	500	6	2.7	0.28	50	400	500
None	1	1	1	0.00	0	1	
Mixture Value:	2.1	1.5	0.89	1.00	181	56	172
TLV Alarm Setpoint when Calibrated to Isobutylene:	26 ppm	37 ppm	62 ppm		ppm	ppm	ppm
STEL Alarm Setpoint, same Calibration	86 ppm	115 ppm	193 ppm				

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TurnKey Environmental Restoration, LLC

Field Operating Procedures

Calibration and Maintenance of Portable Specific Conductance Meter

FOP 012.0

CALIBRATION AND MAINTENANCE OF PORTABLE SPECIFIC CONDUCTANCE METER

PURPOSE

This guideline describes a method for calibration of a portable specific conductance meter. This meter measures the ability of a water sample to conduct electricity, which is largely a function of the dissolved solids within the water. The instrument has been calibrated by the manufacturer according to factory specifications. This guideline presents a method for checking the factory calibration of a portable specific conductance meter. A calibration check is performed to verify instrument accuracy and function. All field test equipment will be checked at the beginning of each sampling day. This procedure also documents critical maintenance activities for this meter.

ACCURACY

The calibrated accuracy of the specific conductance meter will be within ± 1 percent of full-scale, with repeatability of ± 1 percent. The built-in cell will be automatically temperature compensated from at least 32° to 160° F (0° to 71°C).

PROCEDURE

Note: The information included below is equipment manufacturer- and model-specific, however, accuracy, calibration, and maintenance procedures for this type of portable equipment are typically similar. The information below pertains to the Myron L Company Ultrameter Model 6P. The actual equipment to be used in the field will be equivalent or similar.

CALIBRATION AND MAINTENANCE OF PORTABLE SPECIFIC CONDUCTANCE METER

1. Calibrate all field test equipment at the beginning of each sampling day. Check and recalibrate the specific conductance meter according to the manufacture's specifications.

2. Use a calibration solution of known specific conductivity and salinity. For maximum accuracy, use a Standard Solution Value closest to the samples to be tested.

3. Rinse conductivity cell three times with proper standard.

4. Re-fill conductivity cell with same standard.

5. Press **COND** or **TDS**, then press **CAL/MCLR**. The "CAL" icon will appear on the display.

6. Press the **↑/MS** or **MR/↓** key to step the displayed value toward the standard's value or hold a key down to cause rapid scrolling of the reading.

7. Press CAL/MCLR once to confirm new value and end the calibration sequence for this particular solution type.

8. Repeat steps 1 through 7 with additional new solutions, as necessary.

9. Document the calibration results and related information in the Project Field Book and on an **Equipment Calibration Log** (see attached sample), indicating the meter readings before and after the instrument has been adjusted. This is important, not only for data validation, but also to establish maintenance schedules and component replacement. Information will include, at a minimum:
    - Time, date and initials of the field team member performing the calibration
    - The unique identifier for the meter, including manufacturer, model, and serial number
    - The brand and expiration date of the calibration standards
    - The instrument readings: before and after calibration

- The instrument settings (if applicable)
- The overall adequacy of calibration including the Pass or fail designation in accordance with the accuracy specifications presented above.
- Corrective action taken (see Maintenance below) in the event of failure to adequately calibrate.

MAINTENANCE

NOTE: Ultrameters should be rinsed with clean water after use. Solvents should be avoided. Shock damage from a fall may cause instrument failure.

Temperature Extremes

Solutions in excess of 160°F/71°C should not be placed in the cell cup area; this may cause damage. Care should be exercised not to exceed rated operating temperature. Leaving the Ultrameter in a vehicle or storage shed on a hot day can easily subject the instrument to over 150°F voiding the warranty.

Battery Replacement

Dry Instrument THOROUGHLY. Remove the four bottom screws. Open instrument carefully; it may be necessary to rock the bottom slightly side to side to release it from the RS-232 connector. Carefully detach battery from circuit board. Replace with 9-volt alkaline battery. Replace bottom, ensuring the sealing gasket is installed in the groove of the top half of case. Re-install screws, tighten evenly and securely.

NOTE: Because of nonvolatile EEPROM circuitry, all data stored in memory and all calibration settings are protected even during power loss or battery replacement.

Cleaning Sensors

The conductivity cell cup should be kept as clean as possible. Flushing with clean water following use will prevent buildup on electrodes. However, if very dirty samples — particularly scaling types — are allowed to dry in the cell cup, a film will form. This film reduces accuracy. When there are visible films of oil, dirt, or scale in the cell cup or on the electrodes, use a foaming non-abrasive household cleaner. Rinse out the cleaner and your Ultrameter is ready for accurate measurements.

NOTE: Maintain a log for each monitoring instrument. Record all maintenance performed on the instrument on this log with date and name of the organization performing the maintenance.

ATTACHMENTS

Equipment Calibration Log (sample)

FOP 012.0

CALIBRATION AND MAINTENANCE OF PORTABLE SPECIFIC CONDUCTANCE METER

EQUIPMENT CALIBRATION

PROJECT INFORMATION:

Project Name: Date:

Project No.:

Client: Instrument Source: ☐ TK ☐ Rental

METER TYPE	UNITS	TIME	MAKE/MODEL	SERIAL NUMBER	CAL. BY	STANDARD	READING	SETTI
☐ pH meter	units		Myron L Company Ultra Meter 6P	606987		4.00		
						7.00		
						10.01		
☐ Turbidity meter	NTU		Hach 2100P Turbidimeter	970600014560		< 0.4		
						20		
						100		
						800		
☐ Sp. conductance meter	uS/mS		Myron L Company Ultra Meter 6P	606987		µS @ 25 °C		
☐ PID	ppm		Photovac 2020 PID			open air zero		MIBK re
						____ ppm Iso. Gas		factor =
☐ Particulate meter	mg/m^3					zero air		
☐ Oxygen	%					open air		
☐ Hydrogen sulfide	ppm					open air		
☐ Carbon monoxide	ppm					open air		
☐ LEL	%					open air		
☐ Radiation Meter	uR/h					background area		
☐								

SAMPLE

ADDITIONAL REMARKS:

PREPARED BY: **DATE:**

TurnKey Environmental Restoration, LLC

Field Operating Procedures

Composite Sample Collection Procedure for Non-Volatile Organic Analysis

FOP 013.0

COMPOSITE SAMPLE COLLECTION PROCEDURE FOR NON-VOLATILE ORGANIC ANALYSIS

PURPOSE

This guideline addresses the procedure to be used when soil samples are to be composited in the field.

PROCEDURE

1. Transfer equal weighted aliquots of soil from individual split-spoon samples, excavator bucket, hand auger or surface soil sample location to a large precleaned stainless steel (or Pyrex glass) mixing bowl.

2. Thoroughly mix (homogenize) and break up the soil using a stainless steel scoop or trowel.

3. Spread the composite sample evenly on a stainless steel tray and quarter the sample.

4. Discard alternate (i.e., diagonal) quarters and, using a small stainless steel scoop or spatula, collect equal portions of subsample from the remaining two quarters until the amount required for the composite sample is acquired. Transfer these subsamples to a precleaned stainless steel (or Pyrex glass) mixing bowl and re-mix.

5. Transfer the composite sample to the laboratory provided, precleaned sample jars. Store any excess sample from the stainless steel tray in a separate, precleaned, wide-mouth sample jar and refrigerate for future use, if applicable.

6. Decontaminate all stainless steel (or Pyrex glass) equipment in accordance with TurnKey's Non-disposable and Non-dedicated Sampling Equipment Decontamination procedures.

7. Prepare samples in accordance with TurnKey's Sample Labeling, Storage and Shipment FOP.

8. Record all sampling details in the Project Field Book and on the Soil/Sediment Sample Collection Summary Log (sample attached).

ATTACHMENTS

Soil/Sediment Sample Collection Summary Log (sample)

REFERENCES

TurnKey FOPs:

040 *Non-disposable and Non-dedicated Sampling Equipment Decontamination*

046 *Sample Labeling, Storage and Shipment*

FOP 013.0

COMPOSITE SAMPLE COLLECTION PROCEDURE FOR NON-VOLATILE ORGANIC ANALYSIS

SOIL/SEDIMENT

SAMPLE COLLECTION SUMMARY LOG

Field ID	Location	QC Type	Depth (feet)		Analytical Parameters	Containers	Date	Time	Sampler Initials	Comments (e.g. problems encountered, ref. to variance, location changes, depth changes, important matrix observations or description, gravel thickness, etc.)
			from	to						

SAMPLE

Equipment Rinsate Blanks *- Pour clean deionized water over or th... eq...to sample containers. Collect at a frequency of 1 per sampling method per day. Analyze for all those parameters analyzed for in the samples collected the same day. HSL Metals can be substituted by only the Metals analyzed for that day (e... ...eeds a separate container). Match equipment used for constituents of concern to rinsate analyte. Note deionzied water lot # or distilled water can be substit info & date.*

MS/MSD/MSB *- Collect at a frequency of 1 per 20 samples of each matrix per day... ...ose parameters analyzed for the samples collected the same day.*

Field Blank *- Pour clean deionized water (used as final decon rinse water) into sample containers while at the sampling site. Collect field blanks at a frequency of 1 per lot of deionized water. Note water lot number and dates in use for decon in 'Comments' section.*

Investigation Derived Waste (IDW) Characterization samples *- One composited sample from all drums of decon fluids and soil. Please note number of drums and labels on collection log.*

Notes:

1. See QAPP for sampling frequency and actual number of QC samples.
2. CWM - clear, wide-mouth glass jar with Teflon-lined cap.
3. HDPE - high density polyethylene bottle.
4. MS/MSD/MSB - Matrix Spike, Matrix Spike Duplicate, Matrix Spike Blank.
5. BD - Blind Duplicate - indicate location of duplicate.

TurnKey Environmental Restoration, LLC

FIELD OPERATING PROCEDURES

Documentation Requirements for Drilling and Well Installation

FOP 015.0

DOCUMENTATION REQUIREMENTS FOR DRILLING AND WELL INSTALLATION

PURPOSE

The purpose of these documentation requirements is to document the procedures used for drilling and installing wells in order to ensure the quality of the data obtained from these operations. TurnKey field technical personnel will be responsible for developing and maintaining documentation for quality control of field operations. At least one field professional will monitor each major operation (e.g. one person per drilling rig) to document and record field procedures for quality control. These procedures provide a description of the format and information for this documentation.

PROCEDURE

Project Field Book

Personnel assigned by the TurnKey Field Team Leader or Project Manager will maintain a Project Field Book for all site activities. These Field Books will be started upon initiation of any site activities to document the field investigation process. The Field Books will meet the following criteria:

- Permanently bound, with nominal 8.5-inch by 11-inch gridded pages.
- Water resistant paper.
- Pages must be pre-numbered or numbered in the field, front and back.

Notations in the field book will be in black or blue ink that will not smudge when wet. Information that may be recorded in the Field Book includes:

- Time and date of all entries.

- Name and location of project site and project job number.
- Listing of key project, client and agency personnel and telephone numbers.
- Date and time of daily arrivals and departures, name of person keeping the log, names and affiliation of persons on site, purpose of visit (if applicable), weather conditions, outline of project activities to be completed.
- Details of any variations to the procedures/protocols (i.e., as presented in the Work Plan or Field Operating Procedures) and the basis for the change.
- Field-generated data relating to implementation of the field program, including sample locations, sample descriptions, field measurements, instrument calibration, etc.
- Record of all photographs taken in the field, including date, time, photographer, site location and orientation, sequential number of photograph, and roll number.

Upon completion of the site activities, all Field Books will be photocopied and both the original and photocopied versions placed in the project files. In addition, all field notes except those presented on specific field forms will be neatly transcribed into Field Activity Daily Log (FADL) forms (sample attached).

Field Borehole/Monitoring Well Installation Log Form

Examples of the Field Borehole Log and Field Borehole/Monitoring Well Installation Log forms are attached to this Field Operating Procedure. One form will be completed for every boring by the TurnKey field person overseeing the drilling. At a minimum, these forms will include:

- Project name, location, and number.
- Boring number.

- Rig type and drilling method.
- Drilling dates.
- Sampling method.
- Sample descriptions, to meet the requirements of the Unified Soil Classification System (USCS) for soils and the Unified Rock Classification System (URCS) for rock.
- Results of photoionization evaluations (scan and/or headspace determinations).
- Blow counts for sampler penetration (Standard Penetration Test, N-Value).
- Drilling rate, rig chatter, and other drilling-related information, as necessary.

All depths recorded on Boring/Monitoring Well Installation Log forms will be expressed in increments tenths of feet, and not in inches.

Well Completion Detail Form

An example of this form is attached to this Field Operating Procedure. One form will be completed for every boring by the TurnKey field person overseeing the well installation. At a minimum, these forms will include:

- Project name, location, and number.
- Well number.
- Installation dates.
- Dimensions and depths of the various well components illustrated in the Well Completion Detail (attached). These include the screened interval, bottom caps or plugs, centralizers, and the tops and bottoms of the various annular materials.

- Drilling rate, rig chatter, and other drilling related information.

All depths recorded on Field Borehole/Monitoring Well Installation Logs will be expressed in tenths of feet, and not in inches.

Daily Drilling Report Form

An example of this form is attached to this Field Operating Procedure. This form should be used to summarize all drilling activities. One form should be completed for each rig for each day. These forms will include summaries of:

- Footage drilled, broken down by diameter (e.g. 200 feet of 6-inch diameter hole, 50 feet of 10-inch diameter hole).
- Footage of well and screen installed, broken down by diameter.
- Quantities of materials used, including sand, cement, bentonite, centralizers, protective casings, traffic covers, etc. recorded by well or boring location.
- Active time (hours), and activity (drilling, decontamination, development, well installation, surface completions, etc.)
- Down-time (hours) and reason.
- Mobilizations and other events.
- Other quantities that will be the basis for drilling invoices.

The form should be signed daily by both the TurnKey field supervisor and the driller's representative, and provided to the TurnKey Field Team Leader.

Other Project Field Forms

Well purging/well development forms, test pit logs, environmental sampling field data sheets, water level monitoring forms, and well testing (slug test or pumping test) forms. Refer to specific guidelines for form descriptions.

ATTACHMENTS

Field Activity Daily Log (FADL) (sample)
Field Borehole Log (sample)
Field Borehole/Monitoring Well Installation Log (sample)
Stick-up Well/Piezometer Completion Detail (sample)
Flush-mount Well/Piezometer Completion Detail (sample)
Daily Drilling Report (sample)

DOCUMENTATION REQUIREMENTS FOR DRILLING AND WELL INSTALLATION

DAILY LOG				
	DATE			
	NO.			
	SHEET		OF	

FIELD ACTIVITY DAILY LOG

PROJECT NAME:	PROJECT NO.
PROJECT LOCATION:	CLIENT:
FIELD ACTIVITY SUBJECT:	
DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:	

TIME	DESCRIPTION
	SAMPLE

VISITORS ON SITE:	CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS:
WEATHER CONDITIONS: A.M.:	IMPORTANT TELEPHONE CALLS:
P.M.:	
BM/TK PERSONNEL ON SITE:	
SIGNATURE	DATE:

FOP 015.0

DOCUMENTATION REQUIREMENTS FOR DRILLING AND WELL INSTALLATION

FIELD BOREHOLE LOG

PROJECT:		**Log of Boring No.:**		
BORING LOCATION:		ELEVATION AND DATUM:		
DRILLING CONTRACTOR:		DATE STARTED:		DATE FINISHED:
DRILLING METHOD:		TOTAL DEPTH:		SCREEN INTERVAL:
DRILLING EQUIPMENT:		DEPTH TO WATER: FIRST:	COMPL.:	CASING:
SAMPLING METHOD:		LOGGED BY:		
HAMMER WEIGHT:	DROP:	RESPONSIBLE PROFESSIONAL:		REG. NO.

Depth (bgs)	SAMPLES: Sample No.	Sample	Blows (per 6")	SPT N-Value	Recovery	PID Scan (ppm)	SAMPLE DESCRIPTION USCS Classification: Color, Moisture Condition, % of Soil Type, ...ticity, Fabric, Bedding, Weathering/Fracturing, Odor SURFACE ELEVATION (FMSL):	REMARKS

SAMPLE

ABANDONMENT:

Volume of cement/bentonite grout required:	V = pr2 x 7.48 =	gallons	borehole depth = ft.
Volume of cement/bentonite grout installed:		gallons	borehole diameter = ft.
Has bridging of grout occurred? ☐ yes ☐ no			borehole radius = ft.
If yes, explain resolution:			
Method of installation:			

Project No:	**TurnKey Environmental Restoration, LLC**	Figure

DOCUMENTATION REQUIREMENTS FOR DRILLING AND WELL INSTALLATION

FIELD BOREHOLE/MONITORING WELL INSTALLATION LOG

PROJECT:			**Log of Well No.:**	
BORING LOCATION:			ELEVATION AND DATUM:	
DRILLING CONTRACTOR:			DATE STARTED:	DATE FINISHED:
DRILLING METHOD:			TOTAL DEPTH:	SCREEN INTERVAL:
DRILLING EQUIPMENT:			DEPTH TO WATER: FIRST: / COMPL.:	CASING:
SAMPLING METHOD:			LOGGED BY:	
HAMMER WEIGHT:	DROP:		RESPONSIBLE PROFESSIONAL:	REG. NO.

Depth (fbgs)	SAMPLES: Sample No.	Sample	Blows (per 6")	SPT N-Value	Recovery	PID Scan (ppm)	SAMPLE DESCRIPTION USCS Classification: Color, Moisture Condition, % of Soil Type, Fabric, Bedding, Weathering/Fracturing, Odor, Other SURFACE ELEVATION (FMSL):	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS

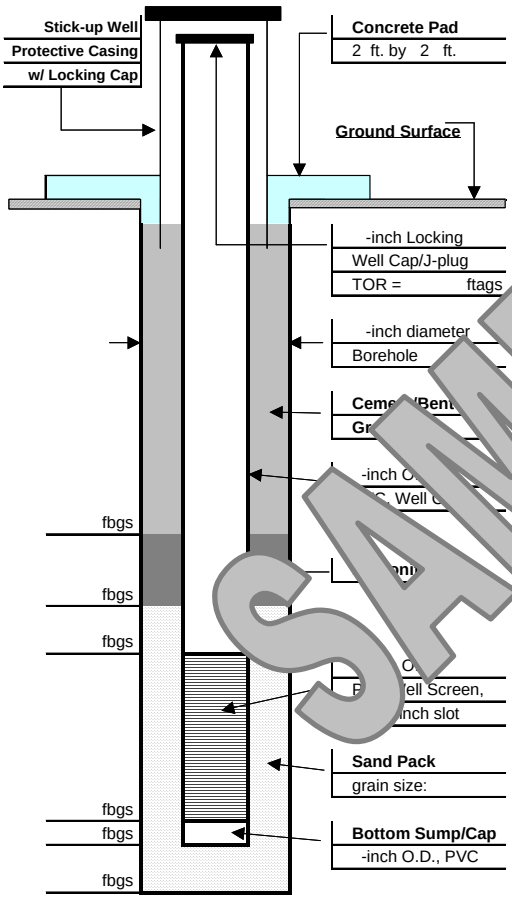
SAMPLE

Project No:	**TurnKey Environmental Restoration, LLC**	Figure

DOCUMENTATION REQUIREMENTS FOR DRILLING AND WELL INSTALLATION

STICK-UP MONITORING WELL COMPLETION DETAIL

Project Name:	WELL NUMBER:
Client:	Date Installed:
Boring Location:	Project Number:



Driller Information

Company:	
Driller:	
Helper:	
Permit Number:	
Drill Rig Type	

Well Informa

Land Surface Ele	fmsl (approximate)
Method:	
Sa le Collection	
Los g Dri	gallons (approximate)

of We truction

g:	
n:	
Sa	
and	
ular Seal:	

ll Development

Well Purpose:	
Techneque(s):	
Date Completed:	
BM/TK Personnel:	
Total Volume Purge:	gallons
Static Water Level (SWL):	fbTOR
Pump Depth: bottom of well	
Purge Duration:	minutes
Yeild:	gpm
Specific Capacity:	gpm/ft

SAMPLE

Comments: saturated thickness: SWL - stickup = fbgs

Total Depth = fbTOR Total Depth - SWL = feet

stick-up = feet

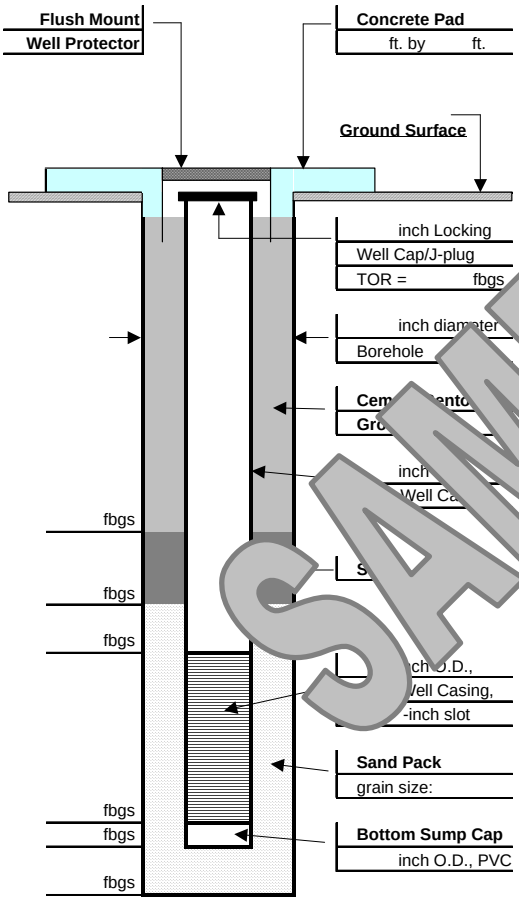
Total Depth = fbgs

PREPARED BY: DATE:

DOCUMENTATION REQUIREMENTS FOR DRILLING AND WELL INSTALLATION

FLUSHMOUNT WELL/PIEZOMETER COMPLETION DETAIL

Project Name:	WELL NUMBER:
Client:	Date Installed:
Boring Location:	Project Number:



Driller Information

Company:	
Driller:	
Helper:	
Permit Number:	
Drill Rig Typ	

Well Informa

Land Surface Ele	fmsl (approximate)
Method:	
Soi le Collection	
rilling	
os D	gallons (approximate)

of We struction

g:	
Sur	
nd P	
r Seal:	

ll Development

Well Purpose:	
Techneque(s):	
Date Completed:	
BM/TK Personnel:	
Total Volume Purge:	gallons
Static Water Level:	fbTOR
Pump Depth:	
Purge Duration:	minutes
Yeild:	gpm
Specific Capacity:	gpm/ft

SAMPLE

Comments:

PREAPRED BY: DATE:

FOP 015.0

DOCUMENTATION REQUIREMENTS FOR DRILLING AND WELL INSTALLATION

DAILY DRILLING REPORT

CONTRACTOR:	DATE:
DRILLING EQUIPMENT:	PROJECT:
CREW MEMBERS:	JOB NUMBER:
SITE NAME:	BM PERSONNEL:

CATEGORY	Total Hours	a.m. 6 7 8 9 10 11 12	p.m. 1 2 3 4 5 6 7 8 9 10 11 12	a.m. 1 2 3 4 5 6
MOB / DEMOB				
DRILLING				
WELL INSTALLATION				
DEVELOPMENT / TESTING				
GROUTING				
STEAM / DECON				
DOWN TIME (explain below)				
STANDBY (explain below)				
CLEANUP				
PREP FOR DRILLING				
LUNCH				
OTHER:				

REMARKS:

DRILLING & WELL MATERIALS: Describe nature, quantity, siz

ITEM OR SERVICE	QUANTITIES	LOCATION				TOTALS
Starting depth (fbgs)						--
Ending depth (fbgs)						--
Total footage drilled (feet)						
Drilling Method (HSA, air rotary, cab						--
Auger/Bit size						--
CSSS starting depth (f						--
CSSS ending depth (f						--
Total CSSS footage						
-inch Schedule 40 P						
-inch Schedule 40 PVC						
-inch Schedule 40 PVC screen, slot s						
-inch Schedule 40 PVC riser						
-inch Schedule 40 PVC screen,						
-inch Schedule 40 PVC riser						
Sand pack, size =						
Bentonite pellets/chips, size =						
Cement/beontonite grout						
☐ Protective casing ☐ Flushmount road box						
Lockable J-plug						
Lock						

PERSONNEL TIME LOG:

POSITION	NAME	HOURS
Observer		
Drillers		

DRILLER (optional):	BM REP.

SAMPLE

TurnKey Environmental Restoration, LLC

Field Operating Procedures

Drill Site Selection Procedure

FOP 017.0

DRILL SITE SELECTION PROCEDURE

PURPOSE

This procedure presents a method for selecting a site location for drilling. Drill site selection should be based on the project objectives, ease of site access, freedom from obstructions and buried metallic objects (drums) and site safety (appropriate set backs from overhead and buried services).

PROCEDURE

The following procedure outlines procedures prior to drilling activities:

1. Review project objectives and tentatively select drilling locations that provide necessary information for achieving objectives (i.e., Work Plan).

2. Clear locations with property owner/operator to ensure that drilling activities will not interfere with site operations and select appropriate access routes.

3. Stake locations in the field, measure distance from locations to recognizable landmarks, such as building or fence lines and plot locations on site plan. Ensure location is relatively flat, free of overhead wires and readily accessible. Survey location if property ownership is in doubt.

4. Obtain clearances from appropriate utilities and if buried waste/metallic objects are suspected, screen location with appropriate geophysical method.

5. Establish a secure central staging area for storage of drilling supplies and for equipment decontamination. Locate a secure storage area for drilling samples, as necessary.

ATTACHMENTS

none

TurnKey Environmental Restoration, LLC

FIELD OPERATING PROCEDURES

Drilling & Excavation Equipment Decontamination Procedures

FOP 018.0

DRILLING AND EXCAVATION EQUIPMENT DECONTAMINATION PROCEDURES

PURPOSE

This procedure is to be used for the decontamination of drilling and excavation equipment (i.e., drill rigs, backhoes, augers, drill bits, drill rods, buckets, and associated equipment) used during a subsurface investigation. The purpose of this procedure is to remove chemical constituents associated with a particular drilling or excavation location from this equipment. This prevents these constituents from being transferred between drilling or excavation locations, or being transported out of controlled areas.

PROCEDURE

The following procedure will be utilized prior to the use of drilling or excavation equipment at each location, and prior to the demobilization of such equipment from the site:

1. Remove all loose soil and other particulate materials from the equipment at the survey site.

2. Wrap augers, tools, plywood, and other reusable items with a plastic cover prior to transport from the site of use to the decontamination facility.

3. Transport equipment to the decontamination facility. All equipment must be decontaminated at an established decontamination facility. This facility will be placed within a controlled area, and will be equipped with necessary features to contain and collect wash water and entrained materials.

4. Wash equipment thoroughly with pressurized low-volume water or steam, supplied by a pressure washer or steam cleaner.

5. If necessary, use a brush or scraper to remove visible soils adhering to the equipment, and a non-phosphate detergent to remove any oils, grease, and/or hydraulic fluids adhering to the equipment. Continue pressure washing until all visible contaminants are removed.

6. Allow equipment to air dry.

7. Store equipment in a clean area or wrap the equipment in new plastic sheeting as necessary to ensure cleanliness until ready for use.

8. Manage all wash waters and entrained solids as described in the TurnKey Field Operating Procedure for Management of Investigation-Derived Waste.

ATTACHMENTS

none

TurnKey Environmental Restoration, LLC

Field Operating Procedures

Establishing Horizontal and Vertical Control

FOP 021.0

ESTABLISHING HORIZONTAL AND VERTICAL CONTROL

PURPOSE

This guideline presents a method for establishing horizontal and vertical controls at a project site. It is imperative that this procedure be performed accurately, as all topographic and site maps, monitoring well locations and test pit locations will be based on these controls.

PROCEDURE

A. Establishing Horizontal Primary and Project Control

1. Research the State Plan Coordinate, USGS or project site applicable horizontal control monuments.
2. At the project site, recover the above-mentioned monuments, two markers minimum being recovered.
3. Establish control points on the project site by bringing in the primary control points recovered in the field.
4. All control points will be tied into a closed traverse to assure the error of closure.
5. Compute closures for obtaining degree of accuracy to adjust traverse points.

B. Establishing Vertical Primary and Project Control

1. Research project or USGS datum for recovering monument(s) for vertical control if different than those previously found.
2. Recover the monuments in the field, two markers minimum being found.
3. Set the projects benchmarks.
4. Run a level line from the monuments to the set project benchmarks and back, setting turning points on all benchmarks set on site.

5. Reduce field notes and compute error of closure to adjust benchmarks set on site.

6. Prepare the recovery sketches and tabulate a list for horizontal and vertical control throughout project site.

TurnKey Environmental Restoration, LLC

FIELD OPERATING PROCEDURES

Groundwater Level Measurement

FOP 022.0

GROUNDWATER LEVEL MEASUREMENT

PURPOSE

This procedure describes the methods used to obtain accurate and consistent water level measurements in monitoring wells, piezometers and well points. Water levels will be measured at monitoring wells and, if practicable, in supply wells to estimate purge volumes associated with sampling, and to develop a potentiometric surface of the groundwater in order to estimate the direction and velocity of flow in the aquifer. Water levels in monitoring wells will be measured using an electronic water level indicator (e-line) that has been checked for operation prior to mobilization.

PROCEDURE

1. Decontaminate the e-line probe and a lower portion of cable following the procedures referenced in the TurnKey's Field Operating Procedure for Non-Disposable and Non-Dedicated Sampling Equipment Decontamination. Store the e-line in a protected area until use. This may include wrapping the e-line in clean plastic until the time of use.

2. Unlock and remove the well protective cap or cover and place on clean plastic.

3. Lower the probe slowly into the monitoring well until the audible alarm sounds. This indicates the depth to water has been reached.

4. Move the cable up and down slowly to identify the depth at which the alarm just begins to sound. Measure this depth against the mark on the lip of the well riser used as a surveyed reference point (typically the north side of the riser).

5. Read depth from the graduated cable to the nearest 0.01 foot. Do not use inches. If the e-line is not graduated, use a rule or tape measure graduated in 0.01-foot increments to measure from the nearest reference mark on the e-line cable.

6. Record the water level on a Water Level Monitoring Record (sample attached).

7. Remove the probe from the well slowly, drying the cable and probe with a clean paper wipe. Be sure to repeat decontamination before use in another well.

8. Replace well plug and protective cap or cover. Lock in place as appropriate.

ATTACHMENTS

Water Level Monitoring Record (sample)

REFERENCES

TurnKey FOPs:
040 Non-Disposable and Non-Dedicated Sampling Equipment Decontamination

GROUNDWATER LEVEL MEASUREMENT

WATER LEVEL MONITORING RECORD

Project Name:	Client:
Project No.:	Location:
Field Personnel:	Date:
Weather:	

Well No.	Time	Top of Riser Elevation (fmsl)	Static Depth to Water (fbTOR)	Groundwater Elevation (fmsl)	Total Depth (fbTOR)	Last Total Depth Measurement (fbTOR)

TurnKey Environmental Restoration, LLC

FIELD OPERATING PROCEDURES

Groundwater Purging Procedures Prior to Sample Collection

FOP 023.1

GROUNDWATER PURGING PROCEDURES PRIOR TO SAMPLE COLLECTION

PURPOSE

This procedure describes the methods for monitoring well/piezometer purging prior to groundwater sample collection in order to collect representative groundwater samples. The goal of purging is to remove stagnant, non-representative groundwater from the well and/or prevent stagnant water from entering collected samples. Purging involves the removal of at least three to five volumes of water in wells with moderate yields and at least one well volume from wells with low yields (slow water level recovery).

Purge and sample wells in order of least-to-most contaminated (this is not necessary if dedicated or disposable equipment is used). If you do not know this order, sample the upgradient wells first, then the furthest down-gradient or side-gradient wells, and finally the wells closest to, but down-gradient of the most contaminated area. Sampling should commence immediately following purging or as soon as the well has adequately recharged and not more than 24-hours following end time of evacuation.

PROCEDURE

1. Prepare the electronic water level indicator (e-line) in accordance with the procedures referenced in the TurnKey Field Operating Procedure for Groundwater Level Measurement and decontaminate the e-line probe and a lower portion of cable following the procedures referenced in the TurnKey Field Operating Procedure for Non-disposable and Non-dedicated Sampling Equipment Decontamination. Store the e-line in a protected area until use. This may include wrapping the e-line in clean plastic until the time of use.

2. Inspect the interior and exterior of the well/piezometer for signs of vandalism or damage and record condition on the Groundwater Field Form and/or Groundwater Well Inspection Form (samples attached). Specifically, inspect

the integrity of the following: concrete surface seal, lock, protective casing and well cover, well riser and J-plug/cap. Report any irregular findings to the Project Manager.

3. Unlock and remove the well protective cap or cover and place on clean plastic to avoid introducing foreign material into the well.

4. Calibrate the photoionization detector (PID) in accordance with the TurnKey Field Operating Procedure for Calibration and Maintenance of Portable Photoionization Detector.

5. Monitor the well for organic vapors using a PID, as per the Work Plan. If a reading of greater than 5 ppm is recorded, the well should be allowed to vent until levels drop below 5 ppm before proceeding with purging.

6. Lower the e-line probe slowly into the monitoring well and record the initial water level in accordance with the procedures referenced in the TurnKey Field Operating Procedure for Groundwater Level Measurement.

7. Following static water level determinations, slowly lower the e-line to the bottom of the well/piezometer. Record the total depth to the nearest 0.01-foot and compare to the previous total depth measurement. If a significant discrepancy exists, re-measure the total depth. Continue with purging activities observing purge water to determine whether the well/piezometer had become silted due to inactivity or damaged (i.e., well sand within purge water). Upon confirmation of the new total depth and determination of the cause (i.e., siltation or damage), notify the Project Manager following field activities.

8. Calculate the volume of water in the well based on the water level below the top of riser and the total depth of the well using the following equation:

$$V = 0.0408[(B)^2 \times \{(A) - (C)\}]$$

Where,

A = Total Depth of Well (feet below measuring point)
B = Casing diameter (inches)
C = Static Water Level (feet below measuring point)

9. **For wells where the water level is 20 feet or less below the top of riser**, a peristaltic pump may be used to purge the well. Measure the purged volume using a calibrated container (i.e., graduated 5-gallon bucket) and record measurements on the attached Groundwater Well Development and Purge Log. Use new and dedicated tubing for each well. During the evacuation of shallow wells, the intake opening of the pump tubing should be positioned just below the surface of the water. As the water level drops, lower the tubing as needed to maintain flow. For higher yielding wells, the intake level should not be lowered past the top of the screen. Pumping from the top of the water column will ensure proper flushing of the well. Continue pumping until the required volumes are removed (typically three well volumes). For higher yielding wells, adjust the purging rate to maintain the water level above the screen. For lower yielding wells or wells where the screen straddles the water table, maintain purging at a rate that matches the rate of recovery of the well (well yield). If the well purges to dryness and is slow to recharge (greater than 15 minutes), terminate evacuation. **A peristaltic pump and dedicated tubing cannot be used to collect VOC or SVOC project-required samples; only non-organic compounds may be collected using this type of pump.**

10. **For wells where the water level is initially below 20 feet,** or drawn down to this level because of slow recharge rate, conduct purging using one of three devices listed below:

- Bailer – A bottom filling dedicated polyethylene bailer attached to a length of dedicated hollow-braid polypropylene rope. Purging a well utilizing a bailer should be conducted smoothly and slowly as not to agitate the groundwater or damage the well.

- Well Wizard Purge Pump (or similar) – This pneumatic bladder pump uses compressed air to push water to the surface. Groundwater is not in contact

with the drive air during the pumping process, therefore the pump may be used for sample collection.

- Submersible Pump (12 or 24 volt, or similar) – These submersible pumps are constructed of PVC or stainless steel and are capable of pumping up to 70 feet from ground surface using a 12 volt battery (standard pump) and standard low flow controller. For depths up to 200 feet from ground surface, a high performance power booster controller is used with a 12 volt battery. Unless these pumps are dedicated to the monitoring well location, decontamination between locations is necessary and an equipment blank may be required.

- Waterra™ Pump – This manually operated pump uses dedicated polyethylene tubing and a check valve that can be used as an optional method for purging deeper wells. The pump utilizes positive pressure to evacuate the well, therefore the pump may be used for sample collection, and however over-agitation groundwater should be avoided.

Prior to use in a well, non-dedicated bailers, exterior pump bodies and pump tubing should be cleaned in accordance with the TurnKey Field Operating Procedure for Non-Disposable and Non-Dedicated Sampling Equipment Decontamination. Dedicated and/or disposable equipment should be contained within the sealed original manufacturers packaging and certified pre-cleaned by the manufacturer with a non-phosphate laboratory detergent and rinsed using de-ionized water.

8. Purging will continue until a predetermined volume of water has been removed (typically three well volumes) or to dryness. Measurements for pH, temperature, specific conductance, dissolved oxygen (optional), Eh (optional), and turbidity will be recorded following removal of each well volume. Purge the well to dryness or until the readings for indicator parameters listed above (or well-specific indicator parameters) stabilize within the following limits for each parameter measured:

Field Parameter	Stabilization Criteria
Dissolved Oxygen	± 0.3 mg/L
Turbidity	± 10 %
Specific Conductance	± 3 %
Eh	± 10 mV
PH	± 0.1 unit

Stabilization criteria presented within the project Work Plan will take precedence.

DOCUMENTATION AND SAMPLE COLLECTION

This section pertains to the documentation of collected field data during and following purging activities and sample collection.

1. Record all data including the final three stable readings for each indicator parameter on the attached Groundwater Well Purge & Sample Log.

2. Record, at a minimum, the "volume purged," "purging stop-time," "purged dry (Y/N)," "purged below sand pack (Y/N)," and any problems purging on the attached Groundwater Well Purge & Sample Log.

3. Collect groundwater samples in accordance with the TurnKey Field Operating Procedure for Groundwater Sample Collection. Record "sample flow rate" as an average, "time sample collected," and any other pertinent information related to the sampling event on the attached Groundwater Well Purge & Sample Log.

4. Restore the well to its capped/covered and locked condition.

ALTERNATIVE METHODS

Alternative purging and sampling methods and equipment, other than those described herein are acceptable if they provide representative groundwater samples. The purging and sampling method and equipment must not adversely affect sample integrity, chemistry, temperature, and turbidity. In addition, alternative equipment must have minimal or no effect on groundwater geochemistry, aquifer permeability and well materials. Equipment materials must also minimize sorption and leaching. The field team is responsible for documenting and describing any alternative equipment and procedures used to purge a well and collect samples.

ATTACHMENTS

Groundwater Field Form
Groundwater Well Inspection Form

REFERENCES

TurnKey FOPs:

011 *Calibration and Maintenance of Portable Photoionization Detector*
022 *Groundwater Level Measurement*
024 *Groundwater Sample Collection Procedures*
040 *Non-disposable and Non-dedicated Sampling Equipment Decontamination*

GROUNDWATER PURGING PROCEDURES PRIOR TO SAMPLE COLLECTION

GROUNDWATER FIELD FORM

Project Name: Date:

Location: Project No.: Field Team:

Well No.			Diameter (inches):			Sample Time:			
Product Depth (fbTOR):			Water Column (ft):			DTW when sampled:			
DTW (static) (fbTOR):			Casing Volume:			Purpose: ☐ Development ☐ Sampling			
Total Depth (fbTOR):			Purge Volume (gal):			Purge Method:			
Time	Water Level (fbTOR)	Acc. Volume (gallons)	pH (units)	Temp. (deg. C)	SC (uS)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Appearance & Odor
	0 Initial								
	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								
	9								
	10								
Sample Information:									
	S1								
	S2								

Well No.			Diameter (inches):			Sample Time:			
Product Depth (fbTOR):			Water Column (ft):			DTW when sampled:			
DTW (static) (fbTOR):			Casing Volume:			Purpose: ☐ Development ☐ Sampling			
Total Depth (fbTOR):			Purge Volume (gal):			Purge Method:			
Time	Water Level (fbTOR)	Acc. Volume (gallons)	pH (units)	Temp. (deg. C)	SC (uS)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Appearance & Odor
	0 Initial								
	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								
	9								
	10								
Sample Information:									
	S1								
	S2								

SAMPLE

REMARKS:

Note: All measurements are in feet, distance from top of riser.

Volume Calculation

Diam.	Vol. (g/ft)
1"	0.041
2"	0.163
4"	0.653
6"	1.469

Stabilization Criteria

Parameter	Criteria
pH	± 0.1 unit
SC	± 3%
Turbidity	± 10%
DO	± 0.3 mg/L
ORP	± 10 mV

PREPARED BY:

GROUNDWATER WELL INSPECTION FORM

Project:	**WELL I.D.:**
Client:	
Job No.:	
Date:	
Time:	

EXTERIOR INSPECTION

Protective Casing:
Lock:
Hinge/Lid:
Concrete Surface Seal:
Bollards:
Label/I.D.:
Other:

INTERIOR INSPECTION

Well Riser:
Annular Space:
Well Cap:
Water Level (fbTOR):
Total Depth (fbTOR):
Other:

Comments/Corrective Actions:

PREPARED BY: DATE:

SAMPLE

TurnKey Environmental Restoration, LLC

FIELD OPERATING PROCEDURES

Groundwater Sample Collection Procedures

FOP 024.1

GROUNDWATER SAMPLE COLLECTION PROCEDURES

PURPOSE

This procedure describes the methods for collecting groundwater samples from monitoring wells and domestic supply wells following purging and sufficient recovery. This procedure also includes the preferred collection order in which water samples are collected based on the volatilization sensitivity or suite of analytical parameters required.

PROCEDURE

Allow approximately 3 to 10 days following well development before performing purge and sample activities at any well location. Conversely, perform sampling as soon as practical after sample purging at any time after the well has recovered sufficiently to sample, or within 24 hours after evacuation, if the well recharges slowly. If the well does not yield sufficient volume for all required laboratory analytical testing (including quality control), a decision should be made to prioritize analyses based on contaminants of concern at the site. If the well takes longer than 24 hours to recharge, the Project Manager should be consulted. The following two procedures outline sample collection activities for monitoring and domestic type wells.

Monitoring Wells

1. Purge the monitoring well in accordance with the TurnKey FOPs for Groundwater Purging Procedures Prior to Sample Collection or Low Flow (Minimal Drawdown) Groundwater Purging & Sampling Procedures. Perform sampling as soon as practical after purging at any time after the well has recovered sufficiently to sample, or within 24 hours after evacuation, if the well recharges slowly. If the well does not yield sufficient volume for all required laboratory analytical testing (including quality control), a decision should be made to prioritize analyses based on contaminants of concern at the site. Analyses will be prioritized in the order of the parameters volatilization sensitivity. After volatile organics have been collected, field parameters

must be measured from the next sample collected. If a well takes longer than 24 hours to recharge, the Project Manager should be consulted.

2. Sampling equipment that is not disposable or dedicated to the well will be decontaminated in accordance with the TurnKey Field Operating Procedure for Non-Disposable and Non-Dedicated Sampling Equipment Decontamination.

3. Calibrate all field meters (i.e., pH/Eh, turbidity, specific conductance, dissolved oxygen, PID etc.) in accordance with the TurnKey Field Operating Procedure for Calibration and Maintenance of the specific field meter.

4. Prepare the electronic water level indicator (e-line) in accordance with the procedures referenced in the TurnKey Field Operating Procedure for Groundwater Level Measurement and decontaminate the e-line probe and a lower portion of cable following the procedures referenced in the TurnKey Field Operating Procedure for Non-disposable and Non-dedicated Sampling Equipment Decontamination. Store the e-line in a protected area until use. This may include wrapping the e-line in clean plastic until the time of use.

5. Inspect the well/piezometer for signs of vandalism or damage and record condition on the Groundwater Field Form (sample attached). Specifically, inspect the integrity of the following: concrete surface seal, lock, protective casing and well cover, well casing and J-plug/cap. Report any irregular findings to the Project Manager.

6. Unlock and remove the well protective cap or cover and place on clean plastic to avoid introducing foreign material into the well.

7. Calibrate the photoionization detector (PID) in accordance with the TurnKey Field Operating Procedure for Calibration and Maintenance of Portable Photoionization Detector.

8. Monitor the well for organic vapors using a PID, as per the Work Plan. If a reading of greater than 5 ppm is recorded, the well should be allowed to vent until levels drop below 5 ppm before proceeding with purging. Record PID measurements on a well-specific Groundwater Field Form (sample attached).

9. Lower the e-line probe slowly into the monitoring well and record the measurement on a well-specific Groundwater Field Form (sample attached).

10. Groundwater samples will be collected directly from the sampling valve on the flow through cell (low-flow), discharge port of a standard pump assembly (peristaltic, pneumatic, submersible, or Waterra™ pump) or bailer (stainless steel, PVC or polyethylene) into appropriate laboratory provided containers. In low-yielding wells at which the flow through cell is not used, the samples may be collected using a disposable bailer.

11. If disposable polyethylene bailers are used, the bailer should be lowered *slowly* below the surface of the water to minimize agitation and volatilization. For wells that are known to produce turbid samples (values greater than 50 NTU), the bailer should be lowered and retrieved at a rate that limits surging of the well.

12. Sampling data will be recorded on a Groundwater Field Form (sample attached).

13. Pre-label all sample bottles in the field using a waterproof permanent marker in accordance with the TurnKey Sample Labeling, Storage, and Shipment FOP. The following information, at a minimum, should be included on the label:

    - Project Number;
    - Sample identification code (as per project specifications);
    - Date of sample collection (mm, dd, yy);
    - Time of sample collection (military time only) (hh:mm);
    - Specify "grab" or "composite" sample type;
    - Sampler initials;
    - Preservative(s) (if applicable); and
    - Analytes for analysis (if practicable).

14. Collect a separate sample of approximately 200 ml into an appropriate container prior to collecting the first and following the last groundwater sample collected to measure the following field parameters:

Parameter	Units
Dissolved Oxygen	parts per million (ppm)

Specific Conductance	μmhos/cm or μS or mS
pH	pH units
Temperature	^{o}C or ^{o}F
Turbidity	NTU
Eh (*optional*)	mV
PID VOCs (*optional*)	ppm

Record all field measurements on a Groundwater Field Form (sample attached).

15. Collect samples into pre-cleaned bottles provided by the analytical laboratory with the appropriate preservative(s) added based on the volatilization sensitivity or suite of analytical parameters required, as designated in the **Sample Collection Order** section below.

16. Lower the e-line probe slowly into the monitoring well and record the measurement on a well-specific Groundwater Field Form (sample attached).

17. The samples will be labeled, stored, and shipped in accordance with the TurnKey Field Operating Procedure for Sample Labeling, Storage, and Shipment Procedures.

Domestic Supply Wells

1. Calculate or estimate the volume of water in the well. It is desirable to purge at least one casing volume before sampling. This is controlled, to some extent, by the depth of the well, well yield and the rate of the existing pump. If the volume of water in the well cannot be calculated, the well should be purged continuously for no less than 15 minutes.

2. Connect a sampling tap to an accessible fitting between the well and the pressure tank where practicable. A hose will be connected to the device and the hose discharge located 25 to 50 feet away. The well will be allowed to pump until the lines and one well volume is removed. Flow rate will be measured with a container of known volume and a stopwatch.

3. Place a clean piece of polyethylene or Teflon™ tubing on the sampling port and collect the samples in the order designated below and in the sample containers supplied by the laboratory for the specified analytes. ***DO NOT*** use standard garden hose to collect samples.

4. Sampling results and measurements will be recorded on a Groundwater Field Form (sample attached) as described in the previous section.

5. Collect samples into pre-cleaned bottles provided by the analytical laboratory with the appropriate preservative(s) added based on the volatilization sensitivity or suite of analytical parameters required, as designated in the **Sample Collection Order** section below.

6. The samples will be labeled, stored, and shipped in accordance with the TurnKey Field Operating Procedure for Sample Labeling, Storage, and Shipment Procedures.

SAMPLE COLLECTION ORDER

All groundwater samples, from monitoring wells and domestic supply wells, will be collected in accordance with the following.

1. Samples will be collected preferentially in recognition of volatilization sensitivity. The preferred order of sampling if no free product is present is:

    - Field parameters
    - Volatile Organic Compounds (VOCs)
    - Purgeable organic carbons (POC)
    - Purgeable organic halogens (POH)
    - Total Organic Halogens (TOX)
    - Total Organic Carbon (TOC)
    - Extractable Organic Compounds (i.e., BNAs, SVOCs, etc.)
    - Total petroleum hydrocarbons (TPH) and oil and grease
    - PCBs and pesticides
    - Total metals (Dissolved Metals)
    - Total Phenolic Compounds

- Cyanide
- Sulfate and Chloride
- Turbidity
- Nitrate (as Nitrogen) and Ammonia
- Preserved inorganics
- Radionuclides
- Unpreserved inorganics
- Bacteria
- Field parameters

2. Document the sampling procedures and related information in the Project Field Book and on a Groundwater Field Form (sample attached).
3. 1,4-dioxane will be analyzed via the 8270 SIM method.

DOCUMENTATION

The three words used to ensure adequate documentation for groundwater sampling are accountability, controllability, and traceability. Accountability is undertaken in the sampling plan and answers the questions who, what, where, when, and why to assure that the sampling effort meets its goals. Controllability refers to checks (including QA/QC) used to ensure that the procedures used are those specified in the sampling plan. Traceability is documentation of what was done, when it was done, how it was done, and by whom it was done, and is found in the field forms, Project Field Book, and chain-of-custody forms. At a minimum, adequate documentation of the sampling conducted in the field consists of an entry in the Project Field Book (with sewn binding), field data sheets for each well, and a chain-of-custody form.

As a general rule, if one is not sure whether the information is necessary, it should nevertheless be recorded, as it is impossible to over-document one's fieldwork. Years may go

by before the documentation comes under close scrutiny, so the documentation must be capable of defending the sampling effort without the assistance or translation of the sampling crew.

The minimum information to be recorded daily with an indelible pen in the Project Field Book and/or field data sheets includes date and time(s), name of the facility, name(s) of the sampling crew, site conditions, the wells sampled, a description of how the sample shipment was handled, and a QA/QC summary. After the last entry for the day in the Project Field Book, the Field Team Leader should sign the bottom of the page under the last entry and then draw a line across the page directly under the signature.

PRECAUTIONS/RECOMMENDATIONS

The following precautions should be adhered to prior to and during sample collection activities:

- Field vehicles should be parked downwind (to avoid potential sample contamination concerns) at a minimum of 15 feet from the well and the engine turned off prior to PID vapor analysis and VOC sample collection.

- Ambient odors, vehicle exhaust, precipitation, or windy/dusty conditions can potentially interfere with obtaining representative samples. These conditions should be minimized and should be recorded in the field notes. Shield sample bottles from strong winds, rain, and dust when being filled.

- The outlet from the sampling device should discharge below the top of the sample's air/water interface, when possible. The sampling plan should specify how the samples will be transferred from the sample collection device to the sample container to minimize sample alterations.

- The order of sampling should be from the least contaminated to the most contaminated well to reduce the potential for cross contamination of sampling equipment (see the Sampling Plan or Work Plan).

- Samples should not be transferred from one sampling container to another.

- Sampling equipment must not be placed on the ground, because the ground may be contaminated and soil contains trace metals. Equipment and supplies should be removed from the field vehicle only when needed.

- Smoking and eating should not be allowed until the well is sampled and hands are washed with soap and water, due to safety and possibly sample contamination concerns. These activities should be conducted beyond a 15-foot radius of the well.

- No heat-producing or electrical instruments should be within 15 feet of the well, unless they are intrinsically safe, prior to PID vapor analysis.

- Minimize the amount of time that the sample containers remain open.

- Do not touch the inside of sample bottles or the groundwater sample as it enters the bottle. Disposable gloves may be a source of phthalates, which could be introduced into groundwater samples if the gloves contact the sample.

- Sampling personnel should use a new pair of disposable gloves for each well sampled to reduce the potential for exposure of the sampling personnel to contaminants and to reduce sample cross contamination. In addition, sampling personnel should change disposable gloves between purging and sampling operations at the same well.

- Sampling personnel should not use perfume, insect repellent, hand lotion, etc., when taking groundwater samples. If insect repellent must be used, then sampling personnel should not allow samples or sampling equipment to contact the repellent, and it should be noted in the documentation that insect repellent was used.

- Complete the documentation of the well. A completed assemblage of paperwork for a sampling event includes the completed field forms, entries in the Project Field Book (with a sewn binding), transportation documentation (if required), and possibly chain-of-custody forms.

ATTACHMENTS

Groundwater Field Form (sample)

REFERENCES

1. Wilson, Neal. *Soil Water and Ground Water Sampling*, 1995

TurnKey FOPs:

007 Calibration and Maintenance of Portable Dissolved Oxygen Meter
008 Calibration and Maintenance of Portable Field pH/Eh Meter
009 Calibration and Maintenance of Portable Field Turbidity Meter
011 Calibration and Maintenance of Portable Photoionization Detector
012 Calibration and Maintenance of Portable Specific Conductance Meter
022 Groundwater Level Measurement
023 Groundwater Purging Procedures Prior to Sample Collection (optional)
031 Low Flow (Minimal Drawdown) Groundwater Purging & Sampling Procedures (optional)
040 Non-Disposable and Non-Dedicated Sampling Equipment Decontamination
046 Sample Labeling, Storage and Shipment Procedures

GROUNDWATER FIELD FORM

Project Name: Date:

Location: Project No.: Field Team:

Well No.			Diameter (inches):			Sample Time:			
Product Depth (fbTOR):			Water Column (ft):			DTW when sampled:			
DTW (static) (fbTOR):			Casing Volume:			Purpose: ☐ Development ☐ Sampling			
Total Depth (fbTOR):			Purge Volume (gal):			Purge Method:			
Time	Water Level (fbTOR)	Acc. Volume (gallons)	pH (units)	Temp. (deg. C)	SC (uS)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Appearance & Odor
	0 Initial								
	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								
	9								
	10								
Sample Information:									
	S1								
	S2								

Well No.			Diameter (inches):			Sample Time:			
Product Depth (fbTOR):			Water Column (ft):			DTW when sampled:			
DTW (static) (fbTOR):			Casing Volume:			Purpose: ☐ Development ☐ Sampling			
Total Depth (fbTOR):			Purge Volume (gal):			Purge Method:			
Time	Water Level (fbTOR)	Acc. Volume (gallons)	pH (units)	Temp. (deg. C)	SC (uS)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Appearance & Odor
	0 Initial								
	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								
	9								
	10								
Sample Information:									
	S1								
	S2								

SAMPLE

REMARKS:

Note: All measurements are in feet, distance from top of riser.

Volume Calculation

Diam.	Vol. (g/ft)
1"	0.041
2"	0.163
4"	0.653
6"	1.469

Stabilization Criteria

Parameter	Criteria
pH	± 0.1 unit
SC	± 3%
Turbidity	± 10%
DO	± 0.3 mg/L
ORP	± 10 mV

PREPARED BY:

TurnKey Environmental Restoration, LLC

Field Operating Procedures

Hand Augering Procedure

FOP 025.0

HAND AUGERING PROCEDURES

PURPOSE

This guideline presents a method for hand augering, which enables the recovery of representative surface and shallow subsurface samples for classification and sample collection (ASTM D1452).

PROCEDURE

1. Review project objectives and the Project Health and Safety Plan (HASP).

2. Follow TurnKey's FOP: Drill Site Selection Procedure prior to implementing any hand augering activity.

3. Establish a central staging area for storage of augering supplies and for equipment decontamination (include plastic-covered work bench/table as necessary). Locate a secure storage area for augered samples.

4. Assemble auger and decontaminate in accordance with TurnKey's FOP: Non-Disposable and Non-Dedicated Sampling Equipment Decontamination.

5. Cover the area to be sampled with plastic sheeting, as determined by the Project Work Plan.

6. Make the auger boring through the plastic sheeting by rotating and advancing the auger to the desired depth below ground surface.

7. Withdraw the auger from the hole and remove soil for examination, soil classification, on-site testing (if applicable) and laboratory physical/chemical sample collection (if applicable) in accordance with specific TurnKey FOPs (Soil Description Procedures Using the Unified Soil Classification System; Composite Sample Collection Procedure for Non-Volatile Organic Analysis; and/or Soil Sample Handling for VOC Analysis) and as directed by the Project Work Plan.

8. Document all properties and sample locations in the Project Field Book and Hand Auger Borehole Log (sample attached). Specifically, total depth, borehole diameter, depth of sample collection, personnel, etc. should be recorded.

9. Place sample in appropriate container(s), label and store for future reference or ship to laboratory for analysis in accordance with TurnKey's Field Operating Procedure for Sample Labeling, Storage and Shipment.

10. Decontaminate auger in accordance with TurnKey's Field Operating Procedure for Non-Disposable and Non-Dedicated Sampling Equipment Decontamination.

11. Advance auger to next sample interval and repeat steps 7 through 12 as necessary.

12. Backfill auger holes in accordance with approved procedures outlined in the Project Work Plan.

ATTACHMENTS

Hand Auger Borehole Log (sample)

REFERENCES

TurnKey FOPs:

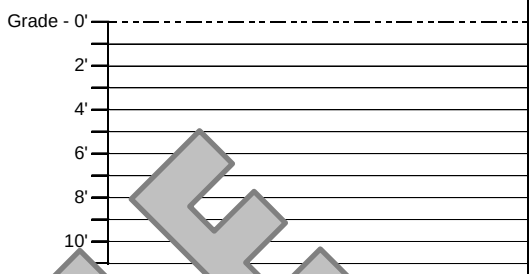
013 Composite Sample Collection Procedure for Non-Volatile Organic Analysis
017 Drill Site Selection Procedure
040 Non-Disposable and Non-Dedicated Sampling Equipment Decontamination
046 Sample Labeling, Storage and Shipment
054 Soil Description Procedures Using the Unified Soil Classification System
057 Soil Sample Handling for Volatile Organic Compound Analysis – Encore Sampling

HAND AUGER BOREHOLE LOG

Project:	BOREHOLE I.D.:
Project No.:	Excavation Date:
Client:	Excavation Method:
Location:	Logged / Checked By:

Hand Auger Location: *NOT TO SCALE*

Hand Auger Cross Section:



TIME	BOREHOLE DIMENSIONS	
Start:	Diameter:	(approx.)
End:	Depth:	(approx.)

Depth (fbgs)	SAMPLE DESCRIPTION USCS Classification: Color, Moisture, ... Texture, Plasticity, Fabric, Bedding, Weathering, ... Other	Photos Y / N	Samples Collected (fbgs)

SAMPLE

COMMENTS:			
GROUNDWATER ENCOUNTERED:	yes	no	If yes, depth to GW:
VISUAL IMPACTS:	yes	no	Describe:
OLFACTORY OBSERVATIONS:	yes	no	Describe:
NON-NATIVE FILL ENCOUNTERED:	yes	no	
OTHER OBSERVATIONS:	yes	no	Describe:
SAMPLES COLLECTED:	yes	no	Sample I.D.:
			Sample I.D.:
			Sample I.D.:

TurnKey Environmental Restoration, LLC

FIELD OPERATING PROCEDURES

Hollow Stem Auger (HSA) Drilling Procedures

FOP 026.1

HOLLOW STEM AUGER (HSA) DRILLING PROCEDURES

PURPOSE

This guideline presents a method for drilling a borehole through unconsolidated materials, including soils or overburden, and consolidated materials, including bedrock.

PROCEDURE

The following procedure will be used to drill a borehole for sampling and/or well installation, using hollow-stem auger methods and equipment.

1. Follow TurnKey's Field Operating Procedure for Drill Site Selection Procedure prior to implementing any drilling activity.

2. Perform drill rig safety checks with the driller by completing the Drilling Safety Checklist form (sample attached).

3. Conduct tailgate health and safety meeting with project team and drillers by completing the Tailgate Safety Meeting Form.

4. Calibrate air-monitoring equipment in accordance with the appropriate Benchmark's Field Operating Procedures (i.e., PID, FID, combustible gas meter) or manufacturer's recommendations for calibration of field meters (i.e., DataRAM 4 Particulate Meter).

5. Ensure all drilling equipment (i.e., augers, rods, split-spoons) appear clean and free of soil prior to initiating any subsurface intrusion. Decontamination of drilling equipment should be in accordance with TurnKey's FOP: Drilling and Excavation Equipment Decontamination Procedures.

6. Mobilize the auger rig to the site and position over the borehole.

7. Level and stabilize the rig using the rig jacks, and recheck the rig location against the planned drilling location. If necessary, raise the jacks and adjust the rig position.

8. Place a metal or plywood auger pan over the borehole location to collect the auger cuttings. This auger pan will be equipped with a 12-inch nominal diameter hole for auger passage. As an alternative, a piece of polyethylene tarp may be used as a substitute.

9. Advance augers into the subsurface. For sampling or pilot-hole drilling, nominal 8-inch outside diameter (OD) augers should be used. The boring diameter will be approved by the TurnKey field supervisor.

10. Collect soil samples via split spoon sampler in accordance with TurnKey's Field Operating Procedure for Split Spoon Sampling.

11. Check augers periodically during drilling to ensure the boring is plumb. Adjust rig position as necessary to maintain plumb.

12. Continue drilling until reaching the assigned total depth, or until auger refusal occurs. Auger refusal is when the drilling penetration drops below 0.1 feet per 10 minutes, with the full weight of the rig on the auger bit, and a center bit (not center plug) in place.

13. Plug and abandon boreholes not used for well installation in accordance with TurnKey's Field Operating Procedure for Abandonment of Borehole.

OTHER PROCEDURAL ISSUES

- Slip rings may be used for lifting a sampling or bit string. The string will not be permitted to extend more than 15 feet above the mast crown.

- Borings will not be over drilled (rat holed) without the express permission of the TurnKey field supervisor. All depth measurements should be accurate to the nearest 0.1 foot, to the extent practicable.

- Potable water may be placed in the auger stem if critically necessary for borehole control or to accomplish sampling objectives and must be approved by the TurnKey Project Manager and/or NYSDEC Project Manager. Upon approval,

the potable water source and quantity used will be documented in the Project Field Book and subsequent report submittal.

ATTACHMENTS

Drilling Safety Checklist (sample)
Tailgate Safety Meeting Form (sample)

REFERENCES

TurnKey FOPs:

001 *Abandonment of Borehole Procedures*
010 *Calibration and Maintenance of Portable Flame Ionization Detector*
011 *Calibration and Maintenance of Portable Photoionization Detector*
017 *Drill Site Selection Procedure*
018 *Drilling and Excavation Equipment Decontamination Procedures*
058 *Split Spoon Sampling Procedures*

DRILLING SAFETY CHECKLIST

Project:	Date:
Project No.:	Drilling Company:
Client:	Drill Rig Type:

ITEMS TO CHECK	OK	ACTION NEEDED
"Kill switches" installed by the manufacturer are in operable condition and all workers at the drill site are familiar with their location and how to activate them?		
"Kill switches" are accessible to workers on both sides of the rotating stem? NOTE: Optional based on location and number of switches provided by the manufacturer.		
Cables on drill rig are free of kinks, frayed wires, "bird cages" and worn or missing sections?		
Cables are terminated at the working end with a proper eye splice, either swaged Coupling or using cable clamps?		
Cable clamps are installed with the saddle on the live or load side? Clamps should not be alternated and should be of the correct size and number for the cable size to which it is installed. Clamps are complete with no missing parts?		
Hooks installed on hoist cables are the safety type with a functional latch to prevent accidental separation?		
Safety latches are functional and completely span the entire throat of the hook and have positive action to close the throat except when manually displaced for connecting or disconnecting a load?		
Drive shafts, belts, chain drives and universal joints shall be guarded to prevent accidental insertion of hands and fingers or tools.		
Outriggers shall be extended prior to and whenever the boom is raised off its cradle. Hydraulic outriggers must maintain pressure to continuously support and stabilize the drill rig even while unattended.		
Outriggers shall be properly supported on the ground surface to prevent settling into the soil.		
Controls are properly labeled and have freedom of movement? Controls should not be blocked or locked in an action position.		
Safeties on any device shall not be bypassed or neutralized.		
Controls shall be operated smoothly and cables and lifting devices shall not be jerked or operated erratically to overcome resistance.		
Slings, chokers and lifting devices are inspected before using and are in proper working order? Damaged units are removed from service and are properly tagged?		
Shackles and clevises are in proper working order and pins and screws are fully inserted before placing under a load?		
High-pressure hoses have a safety (chain, cable or strap) at each end of the hose section to prevent whipping in the event of a failure?		
Rotating parts of the drill string shall be free of sharp projections or hooks, which could entrap clothing or foreign objects?		

SAMPLE

DRILLING SAFETY CHECKLIST

Project: Date:

ITEMS TO CHECK	OK	ACTION NEEDED
Wire ropes should not be allowed to bend around sharp edges without cushion material.		
The exclusion zone is centered over the borehole and the radius is equal or greater than the boom height?		
The work area around the borehole shall be kept clear of trip hazards and walking surfaces should be free of slippery material.		
Workers shall not proceed higher than the drilling deck without a fall restraining device and must attach the device in a manner to restrict fall to less than 6 feet.		
A fire extinguisher of appropriate size shall be immediately available to the drill crew. The drill crew shall have received annual training on proper use of the fire extinguisher.		
29 CFR 1910.333 © (3) Except where electrical distribution and transmission lines have been de-energized and visibly grounded, drill rigs will be operated proximate to, under, by, or near power lines only in accordance with the following: .333 © (3) (ii) 50 kV or less -minimum clearance is 10 ft. For 50 kV or over - 10ft. Plus ½ in. For each additional kV **TurnKey Policy: Maintain 20 feet clearance**		
29 CFR 1910.333 © (3) (iii) While the rig is in transit with the boom in the down position, clearance from energized power lines will be maintained as follows: Less than 50 kV - 4 feet 50 to 365 kV - 10 feet 365 to 720 kV - 16 feet		

SAMPLE

Name: (printed)

Signed: Date:

TAILGATE SAFETY MEETING FORM

Project Name: Date: Time:

Project Number: Client:

Work Activities:

HOSPITAL INFORMATION:

Name:

Address: *City:* *State:* *Zip:*

Phone No.: *Ambulance Phone No.*

SAFETY TOPICS PRESENTED:

Chemical Hazards:

Physical Hazards: Slips, Trips, Falls

PERSONAL PROTECTIVE EQUIPMENT:

Activity:	*PPE Level:*	A	B	C	D
Activity:	*PPE Level:*	A	B	C	D
Activity:	*PPE Level:*	A	B	C	D
Activity:	*PPE Level:*	A	B	C	D
Activity:	*PPE Level:*	A	B	C	D

New Equipment:

Other Safety Topic (s): Environmental Hazards (aggressive fauna)

Eating, drinking, use of tobacco products is prohibited in the Exclusion Zone (EZ)

ATTENDEES

Name Printed	Signatures

Meeting conducted by:

SAMPLE

TurnKey Environmental Restoration, LLC

Field Operating Procedures

Low-Flow (Minimal Drawdown) Groundwater Purging & Sampling Procedure

FOP 031.2

LOW FLOW (MINIMAL DRAWDOWN) GROUNDWATER PURGING & SAMPLING PROCEDURES

PURPOSE

This procedure describes the methods used for performing low flow (minimal drawdown) purging, also referred to as micro-purging, at a well prior to groundwater sampling to obtain a representative sample from the water-bearing zone. This method of purging is used to minimize the turbidity of the produced water. This may increase the representativeness of the groundwater samples by avoiding the necessity of filtering suspended solids in the field prior to preservation of the sample.

Well purging is typically performed immediately preceding groundwater sampling. The sample should be collected as soon as the parameters measured in the field (i.e., pH, specific conductance, dissolved oxygen, Eh, temperature, and turbidity) have stabilized.

PROCEDURE

Allow approximately 3 to 10 days following well development for groundwater to return to static conditions before performing low-flow purge and sample activities at any well location. Conversely, perform low-flow sampling as soon as purged groundwater has stabilized. If the well does not yield sufficient volume (i.e., cannot maintain a constant water level during purging) for low-flow purge and sampling, then an alternative method must be performed in accordance with TurnKey's Groundwater Purging Procedures Prior to Sample Collection FOP.

1. Water samples should not be taken immediately following well development. Sufficient time should be allowed to stabilize the groundwater flow regime in

the vicinity of the monitoring well. This lag time will depend on site conditions and methods of installation but may exceed one week.

2. Prepare the electronic water level indicator (e-line) in accordance with the procedures referenced in the TurnKey's Groundwater Level Measurement FOP and decontaminate the e-line probe and a lower portion of cable following the procedures referenced in the TurnKey's Non-disposable and Non-dedicated Sampling Equipment Decontamination FOP. Store the e-line in a protected area until use. This may include wrapping the e-line in clean plastic until the time of use.

3. Calibrate all sampling devices and monitoring equipment in accordance with manufacturer's recommendations, the site Quality Assurance Project Plan (QAPP) and/or Field Sampling Plan (FSP). Calibration of field instrumentation should be followed as specified in TurnKey's Calibration and Maintenance FOP for each individual meter.

4. Inspect the well/piezometer for signs of vandalism or damage and record condition on the Groundwater Field Form (sample attached). Specifically, inspect the integrity of the following: concrete surface seal, lock, protective casing and well cover, well casing and J-plug/cap. Report any irregular findings to the Project Manager.

5. Unlock and remove the well protective cap or cover and place on clean plastic to avoid introducing foreign material into the well.

6. Monitor the well for organic vapors using a PID, as per the Work Plan. If a reading of greater than 5 ppm is recorded, the well should be allowed to vent until levels drop below 5 ppm before proceeding with purging.

7. Lower the e-line probe slowly into the monitoring well and record the initial water level in accordance with the procedures referenced in TurnKey's Groundwater Level Measurement FOP. Refer to the construction diagram for the well to identify the screened depth.

8. Decontaminate all non-dedicated pump and tubing equipment following the procedures referenced in the TurnKey's Non-disposable and Non-dedicated Sampling Equipment Decontamination FOP.

9. Lower the purge pump or tubing (i.e., low-flow electrical submersible, peristaltic, etc.) slowly into the well until the pump/tubing intake is approximately in the middle of the screened interval. Rapid insertion of the pump will increase the turbidity of well water, and can increase the required purge time. This step can be eliminated if dedicated tubing is already within the well.

   Placement of the pump close to the bottom of the well will cause increased entrainment of solids, which may have settled in the well over time. Low-flow purging has the advantage of minimizing mixing between the overlying stagnant casing water and water within the screened interval. The objective of low-flow purging is to maintain a purging rate, which minimizes stress (drawdown) of the water level in the well. Low-flow refers to the velocity with which water enters the pump intake and that is imparted to the formation pore water in the immediate vicinity of the well screen.

10. Lower the e-line back down the well as water levels will be frequently monitored during purge and sample activities.

11. Begin pumping to purge the well. The pumping rate should be between 100 and 500 milliliters (ml) per minute (0.03 to 0.13 gallons per minute) depending on site hydrogeology. Periodically check the well water level with the e-line adjusting the flow rate as necessary to stabilize drawdown within the well. If possible, a steady flow rate should be maintained that results in a stabilized water level (drawdown of 0.3 feet or less). If the water level exceeds 2 feet below static and declining, slow the purge rate until the water level generally stabilizes. Record each pumping rate and water level during the event. If the water level continues to drop and will not stabilize, the monitoring location is not conducive to low-flow sampling and conventional purge and sample methods should be performed.

The low flow rate determined during purging will be maintained during the collection of analytical samples. At some sites where geologic heterogeneities are sufficiently different within the screened interval, high conductivity zones may be preferentially sampled.

12. Measure and record field parameters (pH, specific conductance, Eh, dissolved oxygen (DO), temperature, and turbidity) during purging activities. In lieu of measuring all of the parameters, a minimum subset could be limited to pH, specific conductance, and turbidity or DO. A reduction in the field parameter list must be approved by the Project Manager and/or the NYSDEC Project Manager.

    Water quality indicator parameters should be used to determine purging needs prior to sample collection in each well. Stabilization of indicator parameters should be used to determine when formation water is first encountered during purging. In general, the order of stabilization is pH, temperature, and specific conductance, followed by Eh, DO and turbidity. Performance criteria for determination of stabilization should be based on water-level drawdown, pumping rate and equipment specifications for measuring indicator parameters. An in-line flow through cell to continuously measure the above parameters may be used. The in-line device should be disconnected or bypassed during sample collection.

13. Purging will continue until parameters of water quality have stabilized or at least a minimum of three (3) well volumes have been removed. Record measurements for field indicator parameters (including water levels) at regular intervals during purging. The stability of these parameters with time can be used to guide the decision to discontinue purging. Proper adjustments must be made to stabilize the flow rate as soon as possible.

14. Record well purging and sampling data in the Project Field Book or on the Groundwater Field Form (sample attached). Measurements should be taken approximately every three to five minutes, or as merited given the rapidity of change.

15. Purging is complete when field indicator parameters stabilize. Stabilization is achieved after all field parameters have stabilized for three successive readings. Three successive readings should be within ± 0.1 units for pH, ± 3% for specific conductance, ± 10 mV for Eh, and ± 10% for turbidity and dissolved oxygen. These stabilization guidelines are provided for rough estimates only, actual site-specific knowledge may be used to adjust these requirements higher or lower.

    An in-line water quality measurement device (e.g., flow-through cell) should be used to establish the stabilization time for several field parameters on a well-specific basis. Data on pumping rate, drawdown, and volume required for parameter stabilization can be used as a guide for conducting subsequent sampling activities.

16. Collect all project-required samples from the discharge tubing at the flow rate established during purging in accordance with TurnKey's Groundwater Sample Collection Procedures FOP. **A peristaltic pump and dedicated tubing cannot be used to collect VOC or SVOC project-required samples; only non-organic compounds may be collected using this type of pump.** Continue to maintain a constant flow rate such that the water level is not drawn down as described above. Fill sample containers with minimal turbulence by allowing the ground water to flow from the tubing along the inside walls of the container.

17. If field filtration is recommended as a result of increased turbidity greater than 50 NTU, an in-line filter equipped with a 0.45-micron filter should be utilized. Collection of a filtered sample must be accompanied by an unfiltered sample.

18. Replace the dedicated tubing down the well taking care to avoid contact with the ground surface.

19. Restore the well to its capped/covered and locked condition.

20. Upon purge and sample collection completion, slowly lower the e-line to the bottom of the well/piezometer. Record the total depth to the nearest 0.01-

foot and compare to the previous total depth measurement. If a significant discrepancy exists, re-measure the total depth. Record observations of purge water to determine whether the well/piezometer had become silted due to inactivity or damaged (i.e., well sand within purge water). Upon confirmation of the new total depth and determination of the cause (i.e., siltation or damage), notify the Project Manager following project field activities.

ATTACHMENTS

Groundwater Field Form (sample)

REFERENCES

United States Environmental Protection Agency, 540/S-95/504, 1995. *Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures.*

TurnKey FOPs:

007 Calibration and Maintenance of Portable Dissolved Oxygen Meter
008 Calibration and Maintenance of Portable Field pH/Eh Meter
009 Calibration and Maintenance of Portable Field Turbidity Meter
011 Calibration and Maintenance of Portable Photoionization Detector
012 Calibration and Maintenance of Portable Specific Conductance Meter
022 Groundwater Level Measurement
024 Groundwater Sample Collection Procedures
040 Non-Disposable and Non-Dedicated Sampling Equipment Decontamination
046 Sample Labeling, Storage and Shipment Procedures

LOW FLOW (MINIMAL DRAWDOWN) GROUNDWATER PURGING & SAMPLING PROCEDURES

GROUNDWATER FIELD FORM

Project Name: Date:

Location: Project No.: Field Team:

Well No.			Diameter (inches):			Sample Time:			
Product Depth (fbTOR):			Water Column (ft):			DTW when sampled:			
DTW (static) (fbTOR):			Casing Volume:			Purpose: ☐ Development ☐ Sampling			
Total Depth (fbTOR):			Purge Volume (gal):			Purge Method:			
Time	Water Level (fbTOR)	Acc. Volume (gallons)	pH (units)	Temp. (deg. C)	SC (uS)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Appearance & Odor
	0 Initial								
	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								
	9								
	10								
Sample Information:									
	S1								
	S2								

Well No.			Diameter (inches):			Sample Time:			
Product Depth (fbTOR):			Water Column (ft):			DTW when sampled:			
DTW (static) (fbTOR):			Casing Volume:			Purpose: ☐ Development ☐ Sampling			
Total Depth (fbTOR):			Purge Volume (gal):			Purge Method:			
Time	Water Level (fbTOR)	Acc. Volume (gallons)	pH (units)	Temp. (deg. C)	SC (uS)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Appearance & Odor
	0 Initial								
	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								
	9								
	10								
Sample Information:									
	S1								
	S2								

SAMPLE

REMARKS:

Note: All measurements are in feet, distance from top of riser.

Volume Calculation

Diam.	Vol. (g/ft)
1"	0.041
2"	0.163
4"	0.653
6"	1.469

Stabilization Criteria

Parameter	Criteria
pH	± 0.1 unit
SC	± 3%
Turbidity	± 10%
DO	± 0.3 mg/L
ORP	± 10 mV

PREPARED BY:

TurnKey Environmental Restoration, LLC

FIELD OPERATING PROCEDURES

Management of Investigation-Derived Waste (IDW)

FOP 032.1

MANAGEMENT OF INVESTIGATION-DERIVED WASTE (IDW)

PURPOSE

The purpose of these guidelines is to ensure the proper holding, storage, transportation, and disposal of materials generated from field investigation activities that may contain hazardous wastes. Investigation-derived waste (IDW) includes the following:

- Drill cuttings, discarded soil samples, drilling mud solids, and used sample containers.
- Well development and purge waters and discarded groundwater samples.
- Decontamination waters and associated solids.
- Soiled disposable personal protective equipment (PPE).
- Used disposable sampling equipment.
- Used plastic sheeting and aluminum foil.
- Other equipment or materials that either contain or have been in contact with potentially impacted environmental media.

Because these materials may contain regulated chemical constituents, they must be managed as a solid waste. This management may be terminated if characterization analytical results indicate the absence of these constituents.

PROCEDURE

1. Contain all investigation-derived wastes in Department of Transportation (DOT)-approved 55-gallon drums, roll-off boxes, or other containers suitable for the wastes.

2. Contain wastes from separate borings or wells in separate containers (i.e. do not combine wastes from several borings/wells in a single container, unless it is a container used specifically for transfer purposes, or unless specific permission to do so has been provided by the TurnKey Field Team Leader. Unused samples from surface sample locations within a given area may be combined.

3. To the extent practicable, separate solids from drilling muds, decontamination waters, and similar liquids. Place solids within separate containers.

4. Transfer all waste containers to a staging area. Access to this area will be controlled. Waste containers must be transferred to the staging area as soon as practicable after the generating activity is complete.

5. Pending transfer, all containers will be covered and secured when not immediately attended.

6. Label all containers with regard to contents, origin, date of generation, using TurnKey's IDW container label (sample attached). Use indelible ink for all labeling.

7. Complete the Investigative Derived Waste Container Log (sample attached) as waste containers are labeled in order to track and inventory project waste. Leave a copy of the log with the site manager or fax copy to the owner/operator as necessary.

8. Collect samples for waste characterization purposes, or use boring/well sample analytical data for characterization.

9. For wastes determined to be hazardous in character, **be aware of accumulation time limitations**. Coordinate the disposal of these wastes with the plant manager/owner/operator, if applicable.

10. Upon Property Owner, Project Manager, and/or NYSDEC Project Manager approval, dispose of investigation-derived wastes as follows:

- Soil, water, and other environmental media for which analysis does not detect organic constituents, and for which inorganic constituents are at levels that meet the Site's cleanup objectives, may be spread on the Property or otherwise treated as a non-waste material. Disposal quantity and on-site location will be documented on Project Field Books and in the project report submittal.

- Soil, water, and other environmental media in which organic compounds are detected or metals are present above the Site's cleanup objectives will be disposed off-site in accordance with applicable state and federal regulations. Disposal quantity and off-site location will be documented on Project Field Books and in the project report submittal.

- Personal protective equipment, disposable bailers, and similar equipment may be disposed as municipal waste, unless waste characterization results mandate otherwise.

WASTE STORAGE MANAGEMENT

Hazardous materials generated on site should be temporarily stored in a secure location that is under the control of the owner/operator or does not allow for vandalism (i.e., within a locked building structure or within a locked fenced in area). A waste-staging area should be designated on-site by the Project Manager in conjunction with the owner/operator.

ATTACHMENTS

Investigation Derived Waste Container Log (sample)
Investigation Derived Waste Container Label (sample)

REFERENCES

None

INVESTIGATION DERIVED WASTE CO

Project Name: Location:

Project Number: Personnel:

Container		Contents	Date		Staging Location	Date Sampled	Co
Number	Description		Started	Ended			

SAMPLE

Prepared By:

Signed:

IDW Container Label (sample):

Project Name:
Project Number:

Container I.D.:
Contents/Matrix:
Estimated Quantity:
Date of Generation:
Date of Sample Collection:

Contact Name:
Contact Phone Number:

TurnKey Environmental Restoration, LLC

FIELD OPERATING PROCEDURES

Monitoring Well Construction for Hollow Stem Auger Boreholes

FOP 033.0

MONITORING WELL CONSTRUCTION FOR HOLLOW STEM AUGER BOREHOLES

PURPOSE

Wells will be installed within selected boreholes for the purpose of evaluating groundwater characteristics. Well installation procedures depend upon the drilling method. This procedure describes well construction and installation for boreholes drilled using the hollow stem auger method. Refer to the TurnKey's Hollow Stem Auger Drilling Procedures FOP. Nominal dimensions and materials for the well are shown in the attached well construction diagram.

PROCEDURE

1. Advance borehole in accordance with the TurnKey's Hollow Stem Auger Drilling Procedure FOP to the required depth. The nominal inside diameter (ID) of the auger stem used should be at least 2 inches larger than the outside diameter (OD) of the riser and screen selected for the well installation. Record the monitoring well construction on the Field Borehole/Monitoring Well Installation Log (sample attached) (see Documentation Requirements for Drilling and Well Installation FOP).

2. Remove the drill rods and center bit/plug from the auger stem and verify borehole depth using weighted measuring tape.

3. In the event of an over drill (i.e. borehole depth is more than one foot greater than desired base of screen depth), use bentonite chips poured through the auger stem to seal the over drilled portion of the borehole. Be sure to note bentonite chip thickness on Field Borehole/Monitoring Well Installation Log.

4. Add a maximum of 6 inches of filter pack material through the auger stem to the base of the borehole. (Note: This step may be avoided if dense non-aqueous phase liquids are suspected to be present and it is desirable to have the screen and/or sump at the base of the borehole.)

5. Measure the length of the well string (i.e. riser and screen), and lower the well string into the well assembly to the desired depth. All measurements during the well installation process will be accurate to 0.1 foot.

6. Surface pour filter pack material into the annulus between the well and the auger stem as the augers are gradually withdrawn from the borehole. Use a weighted tape to confirm that the level of sand is maintained within the augers at all times. Record material volumes used.

7. After filter pack materials are brought to the required level, surface pour bentonite chips or pellets into the annulus between the well and the auger stem to form the filter pack seal. If necessary to avoid bridging, delayed hydration (coated) pellets may be used. Record the volume of material used.

8. Allow the bentonite chips/pellets to adequately hydrate for approximately 30 to 45-minutes. Cap or cover the well top of riser.

9. Mix cement/bentonite grout to a smooth consistency using a centrifugal or reciprocating pump. Do not hand mix. All water used must be potable quality. Record the volume of water used.

10. Fill the remaining annulus between the well and the auger stem with grout by surface pouring or pumping, and begin withdrawal of the auger string. Periodically top the auger string off with additional grout. If groundwater is present within the annulus above the bentonite chip/pellet seal, cement/bentonite grout will be pressure tremie grouted from bottom to top in order to displace groundwater from the borehole.

11. When the auger string is withdrawn, center the upper portion of the well riser within the borehole, and place drums or barricades around the well for protection while the grout cures. Place and lock a security cap (i.e., J-plug) in the opening of the well riser.

12. Leave the well undisturbed for at least 24 hours to allow the grout to cure. If excessive grout fallback occurs, top off as necessary with bentonite chips or additional grout.

13. Construct the surface completion as shown in the attached Typical Monitoring Well Detail (Figure 1). Select flush completions for all locations in active operational or high traffic areas, or in other areas where an above grade completion would be undesirable. Use aboveground completions in all other areas.

14. Place a dedicated lock on the well or protective casing, and keep well locked when not actively attended.

15. Permanently label the well with the appropriate well identifier as determined by the Project Manager or specified in the Work Plan.

16. Permanently mark a survey location on the north side at the top of the casing with a saw cut. Survey all wells for horizontal location and elevation, using a surveyor licensed by the State of New York. Coordinates and elevations will be provided in a coordinate system consistent with previous well surveys at the Site. Information obtained will include location (*x* and *y*) of the well, and elevation (*z*) of the ground surface, the pad, and the top of riser.

17. Develop the well as described in the TurnKey's Field Operating Procedure for Monitoring Well Development.

18. Manage all waste materials generated during well installation and development as described in the TurnKey's Field Operating Procedure for Management of Investigation Derived Waste.

ATTACHMENTS

Field Borehole/Monitoring Well Installation Log (sample)
Typical Monitoring Well Detail (Figure 1)

REFERENCES

TurnKey FOPs:

015 Documentation Requirements for Drilling and Well Installation
026 Hollow Stem Auger Drilling Procedures
032 Management of Investigation Derived Waste
036 Monitoring Well Development Procedures

MONITORING WELL CONSTRUCTION FOR HOLLOW STEM AUGER BOREHOLES

FIELD BOREHOLE/MONITORING WELL INSTALLATION LOG

PROJECT:			**Log of Well No.:**	
BORING LOCATION:			ELEVATION AND DATUM:	
DRILLING CONTRACTOR:			DATE STARTED:	DATE FINISHED:
DRILLING METHOD:			TOTAL DEPTH:	SCREEN INTERVAL:
DRILLING EQUIPMENT:			DEPTH TO WATER: FIRST: / COMPL.:	CASING:
SAMPLING METHOD:			LOGGED BY:	
HAMMER WEIGHT:	DROP:		RESPONSIBLE PROFESSIONAL:	REG. NO.

Depth (fbgs)	SAMPLES: Sample No.	Sample	Blows (per 6")	SPT N-Value	Recovery	PID Scan (ppm)	SAMPLE DESCRIPTION	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
							USCS Classification: Color, Moisture Condition, % of Soil Type, Fabric, Bedding, Weathering/Fracturing, Odor, Other	
							SURFACE ELEVATION (FMSL):	

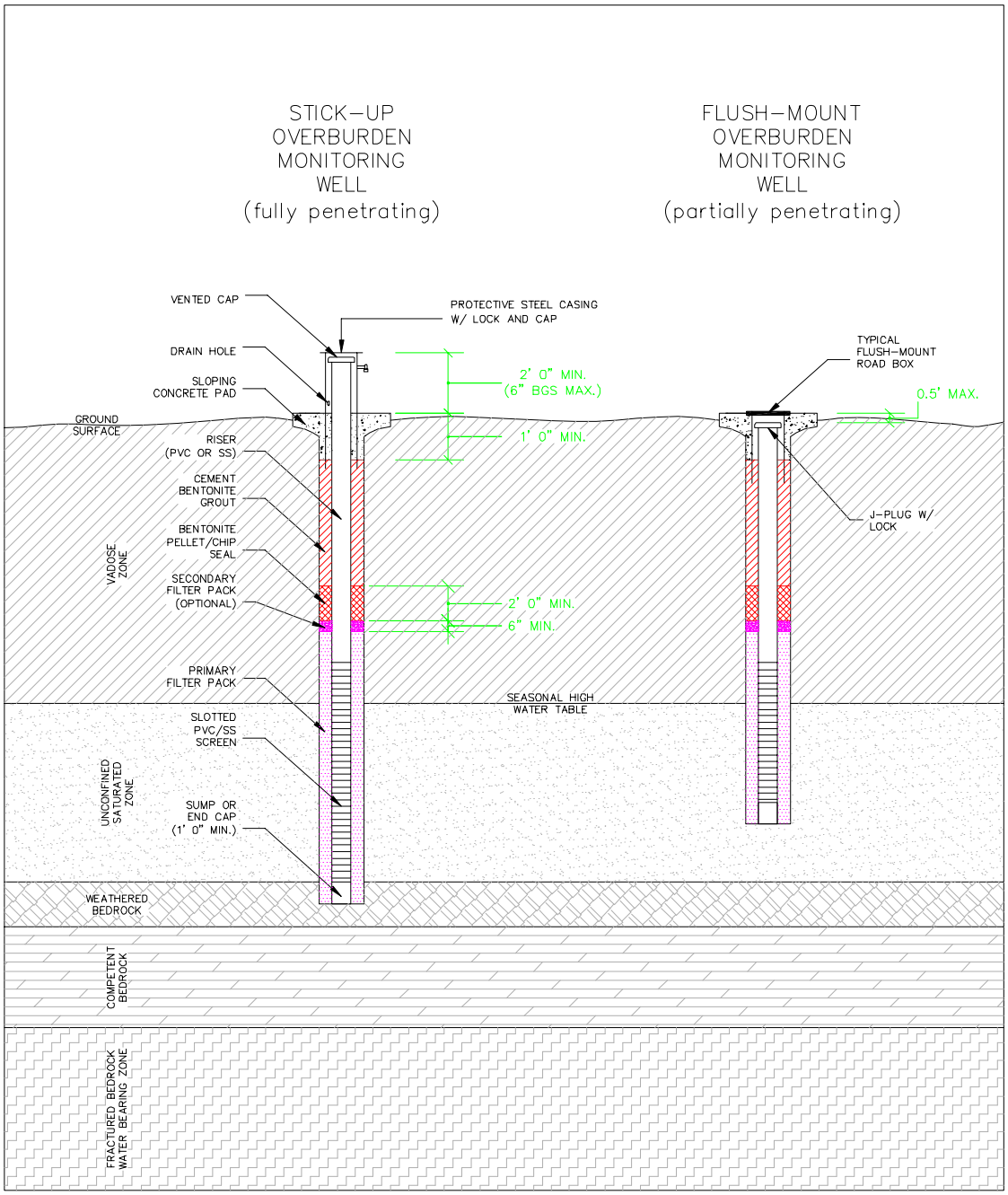
SAMPLE

Project No:	**TurnKey Environmental Restoration, LLC**	Figure

FOP 033.0

MONITORING WELL CONSTRUCTION FOR HOLLOW STEM AUGER BOREHOLES

FIGURE 1



TurnKey Environmental Restoration, LLC

FIELD OPERATING PROCEDURES

Monitoring Well Construction in Bedrock

FOP 035.0

MONITORING WELL CONSTRUCTION IN BEDROCK

PURPOSE

This guideline presents a method for the construction of monitoring wells and piezometers in consolidated materials (i.e., bedrock).

PROCEDURE

1. Follow TurnKey's Drill Site Selection Procedure FOP prior to implementing any drilling activity.

2. Advance boring to top of competent bedrock as per TurnKey's Hollow Stem Auger (HSA) Drilling Procedures FOP and/or the Overburden Casing Installation Procedures FOP, or approved other as per the project work plan.

3. Advance the boring into consolidated bedrock by standard rock coring procedures (i.e., TurnKey's Air Rotary Drilling Procedure FOP or approved other as per the project work plan) using a triple wall core barrel of NX or HQ size. Log bedrock core in accordance with TurnKey's Rock Core Classification FOP. Temporary casing may be used if circulation of drill water is desired.

4. In the event of an over drill (i.e. borehole depth is more than one foot greater than desired base of screen depth), use bentonite chips poured through the auger stem to seal the over drilled portion of the borehole. Be sure to note bentonite chip thickness on Field Borehole/Monitoring Well Installation Log (sample attached).

5. Review the borehole/well installation program with the drilling contractor to ensure that the contractor has the necessary equipment and supplies and is familiar with the program requirements.

6. Perform packer permeability testing in accordance with TurnKey's Pressure Packer Test FOP as determined by project requirements.

7. Construct the open hole or screened well using appropriate materials identified in TurnKey's Well/Piezometer Construction Materials and Design FOP. Typical bedrock monitoring well construction is presented in Figure 1 (attached) and described in the following steps:

A. <u>Screened Installations</u>

a. Ream NX core hole to nominal 4-inch diameter with 3 ⅞-inch roller bit.

b. Verify borehole depth using weighted measuring tape. (Ensure that the rig is turned off and all equipment that may obstruct well installation or represent a safety hazard is removed.)

c. Add a minimum of two inches to a maximum of six inches of filter pack material of appropriate grade through the permanent or temporary casing to the base of the borehole. (Note: This step may be avoided if dense non-aqueous phase liquids are suspected to be present and it is desirable to have the screen at the base of the borehole or a well constructed with a sump (1 foot minimum).

d. Insert well screen and riser pipe equipped with centralizers located at the center of the well string and/or immediately above the well screen into borehole through the permanent or temporary casing.

e. Add filter pack materials to the screen section of the well through a tremie pipe while slowly backing temporary casing (if used) out of the borehole. The primary filter pack, when co0mplete, should extend no more than two feet above the well screen within the borehole. Measure the depth of the sand pack carefully and frequently with a weighted tape while adding sand.

f. Add a thin (6-inch) layer of secondary filter pack material above the primary filter pack as required.

g. Add bentonite pellet seal above the secondary filter pack and again remove the temporary casing slowly (if used). The bentonite seal should extend at least one foot above the top of the filter pack section. Measure the depth with a weighted tape. (Note: If bentonite seal is placed above the ground water level within the borehole, potable water should be added to hydrate the bentonite pellets.) The required hydration time for the pellets should be established prior to setting the seal. (Note: The position of the bentonite seal is dependent on the program requirements.)

h. Tremie grout into the remaining annular space under pressure to 3 feet below surface while slowly backing the HSA or temporary casing out of the borehole. Allow grout to set up for 6 to 12 hours, install protective casing, with surface weep holes, cap and lock. Complete concrete surface completion sloping away from protective casing. Under circumstances where the borehole is deep and the formation has a low hydraulic conductivity, it may be desirable to add potable water to the well prior to grouting to offset the pressure (weight) of the grout to minimize the potential for the grout to penetrate the sand pack.

i. Place a dedicated lock on the well or protective casing, and keep well locked when not actively attended.

j. Permanently label the well with the appropriate well identifier on the protective casing or install a permanent marker post as determined by the Project Manager or specified in the Work Plan.

k. Permanently mark a survey location on the north side at the top of the casing with a saw cut. Survey all wells for horizontal location and elevation, using a surveyor licensed by the State of New York. Coordinates and elevations will be provided in a coordinate system consistent with previous well surveys at the Site. Information obtained will include location (*x* and *y*) of the

well, and elevation (±) of the ground surface, the pad, and the top of riser.

l. Develop the well as described in the TurnKey's Field Operating Procedure for Monitoring Well Development.

m. Manage all waste materials generated during well installation and development as described in the TurnKey's Field Operating Procedure for Management of Investigation Derived Waste.

n. Document all soil/bedrock properties and sample locations (if any) in the Project Field Book and on Field Borehole/Monitoring Well Installation Logs (sample attached) in accordance with TurnKey's Field Operating Procedure for Documentation Requirements for Drilling and Well Installation. Specifically, total depth, depth of sample collection, personnel, etc.

B. Open Bedrock Installations

a. Open bedrock boreholes should only be used where the length of the open borehole is less than about twenty feet.

b. Once bedrock is encountered during conventional drilling using hollow stem augers or temporary casing the hollow stem augers or temporary casing should be seated into the top of bedrock. The rig should be converted to rock coring and the borehole advanced approximately five feet into bedrock or until two feet of competent bedrock is encountered, based on inspection of the rock core. The core hole should then be reamed using an appropriate sized bit to create a socket into the top of rock.

c. Verify borehole depth using weighted measuring tape. (Ensure that the rig is turned off and all equipment, which may represent a hazard, is removed.)

d. Appropriately sized permanent casing (containing a drillable plug at its base if tremie grout methods are used) should then be centered in the socket. Using tremie pipe, pressure packer or other methods, which introduce grout from the base of the annular space, grout the borehole annulus from bottom to top of borehole. An optional method involves grouting the bedrock socket and inserting the casing to the base of socket prior to the grout setting up. If a bentonite pellet s4eal is used at the base of the annular space before placement of the grout, a minimum of 60 minutes should be allowed for the bentonite to swell before grouting. Select the size and shape of the seal such that the bentonite can reach the socket and form a complete seal around the casing.

e. Allow 48 hours for the grout to set and assess the integrity of the grout seal by either filling the casing with potable water and monitoring water level decline or bailing the casing dry and monitoring any water level increase.

f. Drilling may proceed though the casing following hydrostatic testing of the grout seal, to create an open borehole to predetermined depth. After drilling is complete, install protective casing, with surface weep holes, cap and lock.

g. Place a dedicated lock on the well or protective casing, and keep well locked when not actively attended.

h. Permanently label the well with the appropriate well identifier on the protective casing or install a permanent marker post as determined by the Project Manager or specified in the Work Plan.

i. Permanently mark a survey location on the north side at the top of the casing with a saw cut. Survey all wells for horizontal location and elevation, using a surveyor licensed by the State of New York. Coordinates and elevations will be provided in a

coordinate system consistent with previous well surveys at the Site. Information obtained will include location (*x* and *y*) of the well, and elevation (*z*) of the ground surface, the pad, and the top of riser.

j. Develop the well as described in the TurnKey's Field Operating Procedure for Monitoring Well Development.

k. Manage all waste materials generated during well installation and development as described in the TurnKey's Field Operating Procedure for Management of Investigation Derived Waste.

l. Document all soil/bedrock properties and sample locations (if any) in the Project Field Book and on Field Borehole/Monitoring Well Installation Logs (sample attached) in accordance with TurnKey's Field Operating Procedure for Documentation Requirements for Drilling and Well Installation. Specifically, total depth, depth of sample collection, personnel, etc.

ATTACHMENTS

Field Borehole/Monitoring Well Installation Log (sample)
Typical Monitoring Well Detail (Figure 1)

REFERENCES

New York State Department of Environmental Conservation, July 1988, *Drilling and Monitoring Well Installation Guidance Manual.*

TurnKey FOPs:
003 Air Rotary Drilling Procedure
015 Documentation Requirements for Drilling and Well Installation
017 Drill Site Selection Procedure
026 Hollow Stem Auger Drilling Procedures

032 Management of Investigation Derived Waste
036 Monitoring Well Development Procedures
041 Overburden Casing Installation Procedure
042 Pressure Packer Test Procedure
043 Rock Core Classification Procedure
070 Well/Piezometer Construction Materials and Design

FOP 035.0

MONITORING WELL CONSTRUCTION IN BEDROCK

FIELD BOREHOLE/MONITORING WELL INSTALLATION LOG

PROJECT:			**Log of Well No.:**	
BORING LOCATION:			ELEVATION AND DATUM:	
DRILLING CONTRACTOR:			DATE STARTED:	DATE FINISHED:
DRILLING METHOD:			TOTAL DEPTH:	SCREEN INTERVAL:
DRILLING EQUIPMENT:			DEPTH TO WATER: FIRST: / COMPL.:	CASING:
SAMPLING METHOD:			LOGGED BY:	
HAMMER WEIGHT:	DROP:		RESPONSIBLE PROFESSIONAL:	REG. NO.

Depth (fbgs)	SAMPLES: Sample No.	Sample	Blows (per 6")	SPT N-Value	Recovery	PID Scan (ppm)	SAMPLE DESCRIPTION USCS Classification: Color, Moisture Condition, % of Soil Type, ... Fabric, Bedding, Weathering/Fracturing, Odor, Other SURFACE ELEVATION (FMSL):	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS

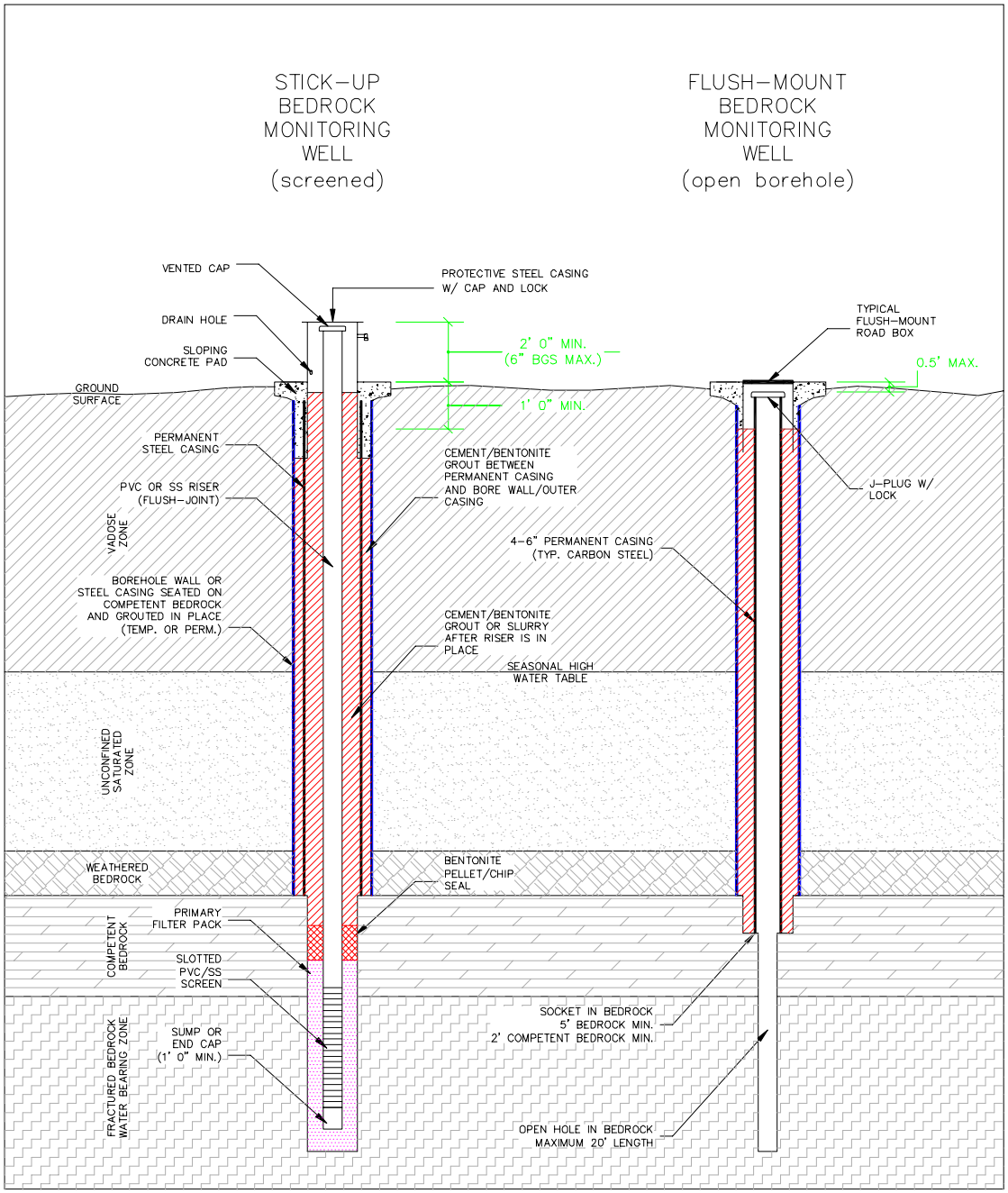
SAMPLE

Project No:	**TurnKey Environmental Restoration, LLC**	Figure

FOP 035.0

MONITORING WELL CONSTRUCTION IN BEDROCK

FIGURE 1



TurnKey Environmental Restoration, LLC

Field Operating Procedures

Monitoring Well Development Procedures

FOP 036.0

MONITORING WELL DEVELOPMENT PROCEDURES

PURPOSE

This procedure describes the methods for the development of newly installed monitoring wells and re-development of existing monitoring wells that have been inactive for an extended period of time (i.e., one year or more). Monitoring wells are developed after installation in order to remove introduced water and drilling fluids, reduce the turbidity of the water, and improve the hydraulic communication between the well and the water-bearing formation. Well development will not commence until the annular grout seal has cured, but will be performed within ten calendar days of well installation.

PROCEDURE

1. All well development will include surge blocking or false bailing with one or more of the following fluid removal methods. Well development activities may include:

    - Bailing
    - Air Lifting
    - Submersible Pumping
    - Other methods as approved by the TurnKey Field Team Leader.
    - The appropriate water removal method will be selected based on water level depth and anticipated well productivity.

2. Assemble and decontaminate equipment (if necessary), and place in the well. Reference the TurnKey's Field Operating Procedure for Non-Disposable and Non-Dedicated Sampling Equipment Decontamination.

3. Alternate the use of agitation methods with water removal methods, using the former to suspend solids in the well water, and the latter to remove the turbid water. For example, use a vented surge block to agitate the well, moving up and down within the screened interval and then use a pump to clear the well. A bailer may be used for both purposes, by surging with the bailer (false

bailing) for a period within the screened interval, then bailing a volume of water from the well.

4. When using surging methods, initiate this activity gradually, with short (2 to 3 feet) strokes. After several passes across the screened interval, increase the speed and length of the surge strokes.

5. Continue development until the following objectives are achieved:

   - Field parameters stabilize to the following criteria:
     - Dissolved Oxygen: ± 0.3 mg/L
     - Turbidity: ± 10%
     - Specific Conductance: ± 3%
     - ORP: ± 10 mV
     - pH: ± 0.1 units
   - The well will generate non-turbid water during continued pumping typically less than 50 NTU.
   - A minimum of 10 well volumes has been evacuated from the well.
   - In the case of lost water during drilling activities, the volume of water removed exceeds twice the volume of water lost to the formation during the drilling process, as indicated by the water balance.

6. Document the development methods, volumes, field parameter measurements, and other observations on the attached Groundwater Well Development Log (sample attached).

ATTACHMENTS

Groundwater Well Development Log (sample)

REFERENCES

TurnKey FOPs:
040 Non-Disposable and Non-Dedicated Sampling Equipment Decontamination

MONITORING WELL DEVELOPMENT PROCEDURES

GROUNDWATER WELL DEVELOPMENT LOG

Project Name:	WELL NUMBER:
Project Number:	Sample Matrix:
Client:	Weather:

WELL DATA: DATE: TIME:

Casing Diameter (inches):	Casing Material:
Screened interval (fbTOR):	Screen Material:
Static Water Level (fbTOR):	Bottom Depth (fbTOR):
Elevation Top of Well Riser (fmsl):	Datum Ground Surface: Mean Sea Level
Elevation Top of Screen (fmsl):	Stick-up (feet):

PURGING DATA: DATE: START TIME: END TIME:

VOLUME CALCULATION:

(A) Total Depth of Well (fbTOR):	
(B) Casing Diameter (inches):	
(C) Static Water Level (fbTOR):	
One Well Volume (V, gallons): $V = 0.0408 [(B)^2 \times \{ (A) - (C) \}]$	

*Use the table to the right to calculate one well

Volume Calculati

Well Diam	Volume gal/ft
1"	.041
4"	0.65
	1.020
	1.469
8"	2.611

Stabilization Criteria

Pa ter	Criteria
	+/- 0.3 mg/L
bidity	+/- 10%
SC	+/- 3%
ORP	+/- 10 mV
pH	+/- 0.1 unit

Field Personnel:

EVACUATION STABILIZATION

Time	Water Level (fbTOR)	Accumulat Volume (gallons)		Ter (degre	ific nce (m h)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Appearance & Odor

REMARKS:

PREPARED BY:

SAMPLE

BENCHMARK
ENVIRONMENTAL
ENGINEERING &
SCIENCE, PLLC

FIELD OPERATING PROCEDURES

Non-Aqueous Phase Liquid (NAPL) Detection and Sample Collection Procedure

FOP 039.1

NON-AQUEOUS PHASE LIQUID DETECTION AND SAMPLE COLLECTION PROCEDURE

PURPOSE

This procedure describes the methods to detect the presence and sample collection of Non-Aqueous Phase Liquid (NAPL) in groundwater monitoring wells prior to purging activities. If NAPL is suspected, all activities should be performed with proper personnel protective equipment (PPE).

DETECTION PROCEDURE

Groundwater monitoring wells suspected of containing NAPL will be sounded with an interface probe, or similar device, in accordance with the following.

1. Inspect the well/piezometer for signs of vandalism or damage and record condition on the Groundwater Field Form (sample attached). Specifically, inspect the integrity of the following: concrete surface seal, lock, protective casing and well cover, well casing and J-plug/cap. Report any irregular findings to the Project Manager.

2. Unlock and remove the well protective cap or cover and place on clean plastic to avoid introducing foreign material into the well.

3. Calibrate the photoionization detector (PID) in accordance with the Benchmark Field Operating Procedure for Calibration and Maintenance of Portable Photoionization Detector.

4. Monitor the well for organic vapors using a PID, as per the Work Plan. If a reading of greater than 5 ppm is recorded, the well should be allowed to vent until levels drop below 5 ppm before proceeding with purging. Record PID measurements on the Groundwater Field Form (sample attached).

5. Slowly lower the interface probe down the well, avoiding contact with the well casing. Upon contact with the static liquid level in the well, the interface

probe will signal contact with an audible tone and/or a visible light mounted inside the reel.

Note:

- If the signal is constant, the probe is in contact with groundwater; and
- If the signal oscillates, the probe is in contact with NAPL.

6. Record the depth, type of liquid encountered (if applicable) and any other related information in the Project Field Book and on a Groundwater Field Form (sample attached).

7. Slowly lower the interface probe to the well bottom. Record the depth(s) and type(s) of any additional phases encountered.

8. Slowly raise the interface probe to the surface, avoiding contact with the well casing.

9. Place the interface probe and storage reel in a plastic bag for subsequent decontamination in accordance with the Benchmark's Field Operating Procedure for Non-Disposable and Non-Dedicated Sampling Equipment Decontamination.

SAMPLE COLLECTION PROCEDURE

All NAPL samples collected from groundwater monitoring wells will be collected in accordance with the following.

1. Place plastic sheeting on the ground around the well to prevent equipment from coming in contact with soil and also to prevent the surface transmission of NAPL.

2. All sampling personnel will don the appropriate PPE in accordance with the site health and safety plan.

3. Measure the static water level and NAPL level(s) using an interface probe as described in the previous section.

4. Determine depth to NAPL layer and thickness. Record appropriate data in the Project Field Book and on a Groundwater Sample Collection Log form (sample attached).

DNAPL SAMPLE COLLECTION

The following procedure should be used in sampling dense, heavier than water NAPL (i.e., with a high specific gravity) (DNAPL).

1. Collect samples using a translucent double check valve bailer (i.e., a bailer with a ball valve on both the top and bottom) constructed of Teflon, polyethylene or PVC which is connected to polypropylene rope for lowering into the well. All non-dedicated equipment shall be decontaminated in accordance with the Benchmark Field Operating Procedure for Non-Disposable and Non-Dedicated Sampling Equipment Decontamination.

2. Remove wrapping (i.e., aluminum foil, manufacturers packaging etc.), attach bailer to new polypropylene rope and slowly lower the bailer until it contacts the well bottom.

3. Slowly raise and lower the bailer to create a gentle surging action thereby inducing DNAPL into the bailer past the bottom ball valve.

4. Slowly raise the bailer to the surface. Avoid contact of the bailer line with the well casing and/or ground surface.

5. Observe the DNAPL through the translucent wall of the bailer and check if the immiscible phases have separated. If not, allow the bailer to stand upright until the phases have separated.

6. Carefully attach a bottom-emptying device with stopcock to the bottom of the bailer and discharge the DNAPL gently down the side of the sample bottle to minimize turbulence.

7. Repeat steps 2 through 6 until a sufficient sample volume is obtained.

8. Cap the sample bottle and label, preserve and ship samples in accordance with the Benchmark Field Operating Procedure for Sample Labeling, Storage and Shipment Procedures.

9. Place the used plastic sheeting, bailer and polyethylene rope in a plastic bag for subsequent decontamination or disposal.

10. Document the sampling procedures and related information in the Project Field Book and on a Groundwater Sample Collection Log form (sample attached).

LNAPL SAMPLE COLLECTION

The following procedure should be used in sampling lighter than water NAPL (i.e., with a low specific gravity) (LNAPL).

1. Collect samples using a translucent double check valve bailer (i.e., a bailer with a ball valve on both the top and bottom) constructed of Teflon, polyethylene or PVC which is connected to polypropylene rope for lowering into the well. All non-dedicated equipment shall be decontaminated in accordance with the Benchmark Field Operating Procedure for Non-Disposable and Non-Dedicated Sampling Equipment Decontamination.

2. Remove wrapping (i.e., aluminum foil, manufacturers packaging etc.), attach bailer to new polypropylene rope and slowly lower the bailer down the well into the immiscible phase of LNAPL. Care should be taken to lower the bailer just through the LNAPL layer, but not significantly down into the underlying groundwater.

3. Slowly raise the bailer to the surface. Avoid contact of the bailer line with the well casing and/or ground surface.

4. Observe the LNAPL through the translucent wall of the bailer and check if the immiscible phases have separated. If not, allow the bailer to stand upright until the phases have separated.

5. Carefully attach a bottom-emptying device with stopcock to the bottom of the bailer and decant the denser groundwater portion of the bailer contents into a DOT-approved 55-gallon drum for proper disposal.

6. Discharge the LNAPL gently down the side of the sample bottle to minimize turbulence.

7. Repeat steps 2 through 6 until a sufficient sample volume is obtained.

8. Cap the sample bottle and label, preserve and ship samples in accordance with the Benchmark Field Operating Procedure for Sample Labeling, Storage and Shipment Procedures.

9. Place the used plastic sheeting, bailer and polyethylene rope in a plastic bag for subsequent decontamination or disposal.

10. Document the sampling procedures and related information in the Project Field Book and on a Groundwater Sample Collection Log form (sample attached).

ATTACHMENTS

Groundwater Well Purge & Sample Collection Log (sample)

REFERENCES

Benchmark FOPs:

010 *Calibration and Maintenance of Portable Flame Ionization Detector*
011 *Calibration and Maintenance of Portable Photoionization Detector*
040 *Non-Disposable and Non-Dedicated Sampling Equipment Decontamination*
046 *Sample Labeling, Storage and Shipment Procedures*

NON-AQUEOUS PHASE LIQUID DETECTION AND SAMPLE COLLECTION PROCEDURE

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

GROUNDWATER WE
PURGE & SAMPLE COLLECTION L

Project Name:	WELL NUMBER:
Project Number:	Sample Matrix:
Client:	Weather:

WELL DATA: DATE: | TIME:

Casing Diameter (inches):	Casing Material:
Screened interval (fbTOR):	Screen Material:
Static Water Level (fbTOR):	Bottom Depth (fbTOR):
Elevation Top of Well Riser (fmsl):	Ground Surface Elevation (fmsl):
Elevation Top of Screen (fmsl):	Stick-up (feet):

PURGING DATA: DATE: | START TIME: | END TIME:

Method:	Is purge equipement dedicated to sample location? yes
No. of Well Volumes Purged:	Was well purged to dryness? yes
Standing Volume (gallons):	Was well purged below top of sand pack? yes
Volume Purged (gallons):	Condition of Well:
Purge Rate (gal/min):	Field Personnel:

VOLUME CALCULATION:

(A) Total Depth of Well (fbTOR):	
(B) Casing Diameter (inches):	
(C) Static Water Level (fbTOR):	
One Well Volume (V, gallons): V = 0.0408 [$(B)^2$ x { (A) - (C) }]	

* Use the table to the right to calculate one well volume by subtracting C from A, then multiplying by the volume calculation in the table per well diamter

Volume Calculation

Well Diameter	Volume gal/ft
1"	0.041
2"	0.163
3"	0.367
4"	0.653
5"	1.020
6"	1.469

Stabilization Criteria

Parameter	Criteria
pH	+/- 0.1 un
SC	+/- 3%
Turbidity	+/- 10%
DO	+/- 0.3 m
ORP	+/- 10 mV

EVACUATION STABILIZATION TEST DATA:

Time	Water Level (fbTOR)	Accumulated Volume (gallons)	pH (units)	Temperature (degrees C)	Specific Conductance (uS/cm)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Appearance Odor
		initial							

SAMPLING DATA: DATE: | START TIME: | END TIME:

Method:	Is sampling equipement dedicated to sample location? yes
Initial Water Level (fbTOR):	Was well sampled to dryness? yes
Final Water Level (fbTOR):	Was well sampled below top of sand pack? yes
Air Temperature (°F):	Field Personnel:
Source and type of water used in the field for QC purposes:	

PHYSICAL & CHEMICAL DATA:

DESCRIPTION OF WATER SAMPLE		
Odor		
Color		
NAPL		
Contains Sediment?	yes	no

WATER QUALITY MEASUREMENTS							
Sample	Time	pH (units)	TEMP. (°C)	SC (uS)	TURB. (NTU)	DO (ppm)	ORP (mV)
initial							
final							

REMARKS:

PREPARED BY:

SAMPLE

TurnKey Environmental Restoration, LLC

FIELD OPERATING PROCEDURES

Non-Disposable and Non-Dedicated Sampling Equipment Decontamination

FOP 040.1

NON-DISPOSABLE AND NON-DEDICATED SAMPLING EQUIPMENT DECONTAMINATION

PURPOSE

This procedure is to be used for the decontamination of non-disposable and non-dedicated equipment used in the collection of environmental samples. The purpose of this procedure is to remove chemical constituents from previous samples from the sampling equipment. This prevents these constituents from being transferred to later samples, or being transported out of controlled areas.

HEALTH AND SAFETY

Nitric acid is a strong oxidizing agent as well as being extremely corrosive to the skin and eyes. Solvents such as acetone, methanol, hexane and isopropanol are flammable liquids. Limited contact with skin can cause irritation, while prolonged contact may result in dermatitis. Eye contact with the solvents may cause irritation or temporary corneal damage. Safety glasses with protective side shields, neoprene or nitrile gloves and long-sleeve protective clothing must be worn whenever acids and solvents are being used.

PROCEDURE – GENERAL EQUIPMENT

Bailers, split-spoons, steel or brass split-spoon liners, Shelby tubes, submersible pumps, soil sampling knives, and similar equipment will be decontaminated as described below.

1. Wash equipment thoroughly with non-phosphate detergent and potable-quality water, using a brush where possible to remove any particulate matter or surface film. If the sampler is visibly coated with tars or other phase-separated hydrocarbons, pre-wash with acetone or isopropanol, or by steam cleaning. Decontamination will adhere to the following procedure:

a. Rinse with potable-quality water; if the sampling equipment is very oily and use of a solvent is necessary, rinse with pesticide-grade isopropanol.

b. Rinse with potable-quality water;

c. Rinse with deionized water demonstrated analyte-free, such as distilled water;

d. Air dry; and

e. Store in a clean area or wrap in aluminum foil (shiny side out) or new plastic sheeting as necessary to ensure cleanliness.

2. All non-dedicated well evacuation equipment, such as submersible pumps and bailers, which are put into the well, must be decontaminated following the procedures listed above. All evacuation tubing must be dedicated to individual wells (i.e., tubing cannot be reused). However, if submersible pump discharge tubing must be reused, the tubing and associated sample valves or flow-through cells used in well purging or pumping tests will be decontaminated as described below:

a. Pump a mixture of potable water and a non-phosphate detergent through the tubing, sample valves and flow cells, using the submersible pump.

b. Steam clean or detergent wash the exterior of the tubing, sample valves, flow cells and pump.

c. Pump potable water through the tubing, sample valve, and flow cell until no indications of detergent (e.g. foaming) are observed.

d. Double rinse the exterior of the tubing with potable water.

e. Rinse the exterior of the tubing with distilled water.

f. Store in a clean area or wrap the pump and tubing assembly in new plastic sheeting as necessary to ensure cleanliness until ready for use.

3. All unused sample bottles and sampling equipment must be maintained in such a manner that there is no possibility of casual contamination.

4. Manage all waste materials generated during decontamination procedures as described in the TurnKey's Field Operating Procedure for Management of Investigation Derived Waste.

PROCEDURE – SUBMERSIBLE PUMPS

Submersible pumps used in well purging or purging tests will be decontaminated thoroughly each day before use as well as between well locations as described below:

Daily Decontamination Procedure:

1. Pre-rinse: Operate the pump in a basin containing 8 to 10 gallons of potable water for 5 minutes and flush other equipment with potable water for 5 minutes.

2. Wash: Operate the pump in 8 to 10 gallons of non-phosphate detergent solution (i.e., Alconox) for 5 minutes and flush other equipment with fresh detergent solution for 5 minutes.

3. Rinse: Operate the pump in a basin of potable water for 5 minutes and flush other equipment with potable water for 5 minutes.

4. Disassemble pump.

5. Wash pump parts with a non-phosphate detergent solution (i.e., Alconox). Scrub all pump parts with a test tube brush or similar device.

6. Rinse pump with potable water.

7. Rinse the inlet screen, the shaft, the suction interconnection, the motor lead assembly, and the stator housing with distilled/deionized water.

8. Rinse the impeller assembly with 1% nitric acid (HNO_3).

9. Rinse the impeller assembly with isopropanol.

10. Rinse the impeller assembly with distilled/deionized water.

Between Wells Decontamination Procedure:

1. Pre-rinse: Operate the pump in a basin containing 8 to 10 gallons of potable water for 5 minutes.

2. Wash: Operate the pump in 8 to 10 gallons of non-phosphate detergent solution (i.e., Alconox) for 5 minutes.

3. Rinse: Operate the pump in a basin of potable water for 5 minutes.

4. Final rinse the pump in distilled/deionized water.

ATTACHMENTS

None

REFERENCES

TurnKey FOPs:
032 Management of Investigation-Derived Waste

TurnKey Environmental Restoration, LLC

FIELD OPERATING PROCEDURES

Overburden Casing Installation Procedure

FOP 041.0

OVERBURDEN CASING INSTALLATION PRCEDURES

PURPOSE

This guideline presents a method for the installation of casing to prevent downhole contamination of hazardous compounds from shallow overburden material. This method is particularly applicable where contaminated strata overlie uncontaminated strata of lower permeability. The method can be used with hollow stem auger drilling or rotary wash drilling (where temporary casing is used). This guideline also presents a method for the evaluation of the integrity of the grout seal around an overburden casing, which has been positioned into a confining layer.

CASING INSTALLATION PROCEDURE

1. Advance boring by appropriate drilling methods, through the contaminated strata a short distance (1 to 2 feet) into an underlying lower permeable unit.

2. Calculate the volume of the borehole base on the bit/auger head or steel casing diameter plus 10% and determine the volume of grout to be emplaced. Generally, the total mixed volume is the borehole volume plus 20%.

3. Identify the equipment to be used for the preparation and mixing of the grout. Ensure the volume of the tanks to be used for mixing has been measured adequately. Document these volumes on the Field Borehole/Monitoring Well Installation Log (sample attached).

4. Identify the source of the water to be used for the grout and determine its suitability for use. In particular, water with high sulfate, or chloride levels or heated water should not be used. These types of waters can cause operational difficulties or modify the set-up for the grout.

5. Identify the equipment to be used for emplacing the grout. Ensure that the pump to be used has adequate pressure to enable complete return to surface.

6. Identify the volumes to be pumped at each stage or in total if only one stage is to be used.

7. Begin mixing the grout to be emplaced. Grout specifications generally have mixture ratios as follows:

Grout Slurry Composition (% Weight)		
1.5 to 3.0%	-	Bentonite (Quick Gel)
40 to 60 %	-	Cement (Portland Type I)
40 to 60 %	-	Potable Water

8. Record the type and amount of materials used during the mixing operation. Ensure the ratios are within specifications tolerance.

9. Begin pumping the grout through the return line bypass system to confirm all pump and surface fittings are secure.

10. Remove drill rods and center plug (or clean out temporary casing) and insert a tremie pipe to the bottom of the boring. Pump the cement/bentonite grout slurry through the tremie pipe until grout return is observed at grade and no bridging of the slurry is evident. Slowly withdraw the augers (or casing) from the boring while maintaining the grout level at grade. Record the times and volumes emplaced on the Field Borehole/Monitoring Well Installation Log (sample attached).

11. Document the return circulation of grout. This may be facilitated by using a colored dye or other tagging method if a mudded borehole condition exists prior to grout injection.

12. Place a drillable plug (preferably untreated wood) at the downhole end of black steel or other appropriate casing, insert the casing through the slurry, and seat it into the underlying formation.

13. Allow grout to set for 24 to 48 hours.

HYDROSTATIC TESTING OF CASING PROCEDURE

1. Following adequate setting time for the grout, drill through the grout inside the casing until the top of the confining layer has been reached (refer to Field Borehole/Monitoring Well Installation Log during casing installation).

2. Fill the casing with potable water and measure the water level within the casing with a water level indicator to the nearest 0.01-foot and record the measurement on the Pipe Leakage Testing Log (sample attached).

3. Monitor the water level for 30 minutes and record the final water level within the casing with a water level indicator to the nearest 0.01-foot and record the measurement on the Pipe Leakage Testing Log (sample attached).

4. Should the water level drop more than the allowable volume calculated using the following equation, the seal shall be regrouted at the Subcontractor's expense.

$$Q_{(allowable)} = 2.75\ DKH$$

Where:
$Q_{(allowable)}$ = Flow rate during a 30 minute test
D = Inside diameter of overburden casing
K = Confining layer hydraulic conductivity (see Table 1)
H = Head of water applied

Note: Be sure to use consistent units of measure.

ATTACHMENTS

Field Borehole/Monitoring Well Installation Log (sample)
Pipe Leakage Testing Log (sample)

Table 1 – Range of Values of Hydraulic Conductivity and Permeability

REFERENCES

Freeze, R.A. and J.A. Cherry. 1979. *Groundwater*. Prentice-Hall, Inc., Englewood, New Jersey, 604 p.

TurnKey FOPs:
018 Drilling and Excavation Equipment Decontamination Protocols

FIELD GEOPROBE BOREHOLE \ TEMPORARY WELL INSTALLATION LOG

PROJECT:			**Log of Temp. Well No.:**	
BORING LOCATION:			ELEVATION AND DATUM:	
DRILLING CONTRACTOR:			DATE STARTED:	DATE FINISHED:
DRILLING METHOD:			TOTAL DEPTH:	SCREEN INTERVAL:
DRILLING EQUIPMENT:			DEPTH TO WATER: FIRST: / COMPL.:	CASING:
SAMPLING METHOD:			LOGGED BY:	
HAMMER WEIGHT:	DROP:		RESPONSIBLE PROFESSIONAL:	REG. NO.

Depth (fbgs)	SAMPLES: Sample No.	Sample	Blows (per 6")	SPT N-Value	Recovery	PID Scan (ppm)	SAMPLE DESCRIPTION USCS Classification: Color, Moisture Condition, % of Soil Typ…, Plasti… Fabric, Bedding, Weathering/Fracturing, Odor, O… SURFACE ELEVATION (FMSL):	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS

SAMPLE

Project No:	**TurnKey Environmental Restoration, LLC**	Figure

PIPE LEAKAGE TESTING LOG

Project: Location:

Client: Date:

Job No: Personnel:

Location Description	Test Procedure (Air or Hydrostatic)	QC Initials	Readings				Elapsed Time (minutes)	Change in Pressure/ Water Level (psi/fbMP)	Pass/Fail	Passing Retest Date	Comments/Notes
			Start		End						
			Pressure or Water Level	Time	Pressure or Water Level	Time					

SAMPLE

Prepared By: Date:

TABLE 1: (From Freeze and Cherry, page 29.)

Table 2.2 Range of Values of Hydraulic Conductivity and Permeability

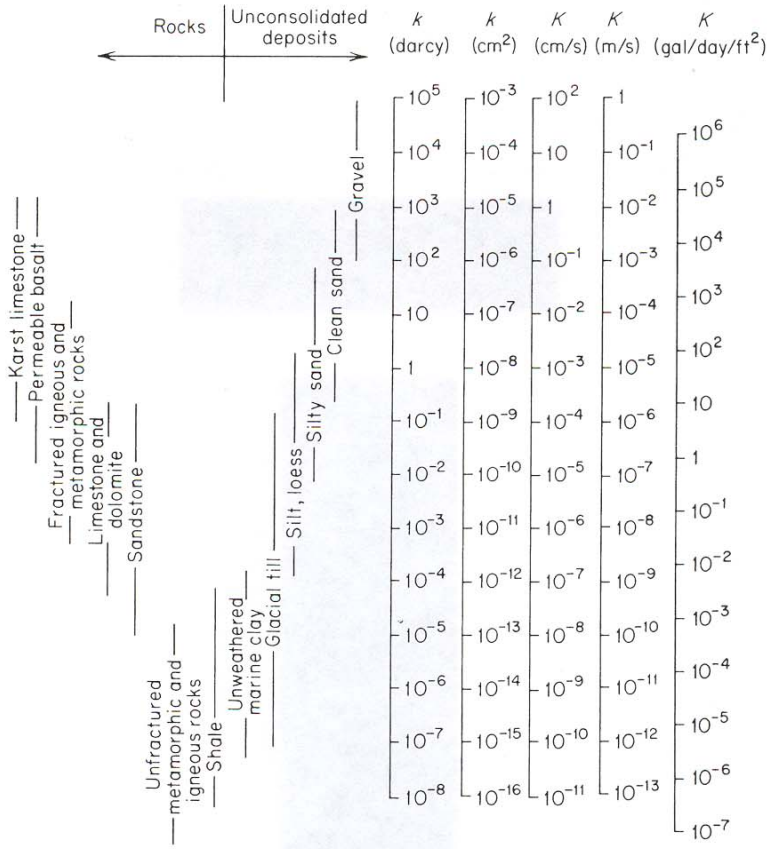


Table 2.3 Conversion Factors for Permeability and Hydraulic Conductivity Units

	Permeability, k*			Hydraulic conductivity, K		
	cm^2	ft^2	darcy	m/s	ft/s	U.S. gal/day/ft^2
cm^2	1	1.08×10^{-3}	1.01×10^{8}	9.80×10^{2}	3.22×10^{3}	1.85×10^{9}
ft^2	9.29×10^{2}	1	9.42×10^{10}	9.11×10^{5}	2.99×10^{6}	1.71×10^{12}
darcy	9.87×10^{-9}	1.06×10^{-11}	1	9.66×10^{-6}	3.17×10^{-5}	1.82×10^{1}
m/s	1.02×10^{-3}	1.10×10^{-6}	1.04×10^{5}	1	3.28	2.12×10^{6}
ft/s	3.11×10^{-4}	3.35×10^{-7}	3.15×10^{4}	3.05×10^{-1}	1	6.46×10^{5}
U.S. gal/day/ft^2	5.42×10^{-10}	5.83×10^{-13}	5.49×10^{-2}	4.72×10^{-7}	1.55×10^{-6}	1

*To obtain k in ft^2, multiply k in cm^2 by 1.08×10^{-3}.

TurnKey Environmental Restoration, LLC

Field Operating Procedures

Pressure Packer Test Procedure

FOP 042.0

PRESSURE PACKER TEST PROCEDURE

PURPOSE

This procedure is presented for calculating the permeability of the bedrock within a borehole. It is most valid when stratum thickness is at least five times the diameter of the hole tested. The packer test is a method of monitoring the rate of disappearance of water in a confined, high-pressure environment. Generally, a portion of the borehole to be tested is sealed off with inflatable packers, which expand to the walls of the borehole to prohibit movement of water past the packer. The seal allows water pumped into the test zone between the packers to escape only into the available joints and interstices of the rock.

EQUIPMENT

1. Pneumatic Packers – Pneumatic packers consist of metal and rubber cylinders whose central rubber portions are a minimum of 12 inches in length and are pneumatically inflatable to seal off a zone of the borehole. The packers are attached together by a perforated pipe to allow water to escape into the test zone.

2. Water Flow Meter – Measures water flow in gallons. This meter shall be easily readable and calibrated to an accuracy within 1.5% (i.e., 0.75 gallons over 50 gallons). The units of graduation shall not exceed 1 gallon.

3. Water Pressure Gauge – Measures water pressure in pounds per square inch (psi). This gauge shall be easily readably and calibrated to an accuracy of ± 2.5 psi. The units of graduation shall not exceed 5 psi.

4. Surge Chamber (optional) – A heavy, metal, air-filled cylinder installed to prevent the pulsating water delivery yielded by some pumps. The surge chamber should be capable of withstanding the maximum water pressure.

5. Flow Valve (optional) – Controls flow from the pump into the test system and water pressure as shown on the water pressure gauge.

6. Bypass Valve – Permits bypassing any desired portion of the flow back into the pump.

7. Nitrogen Tank or Compressed Air – Nitrogen or compressed air shall be used to inflate the pneumatic packers because of their nonflammable character. The tank shall be equipped with a pressure regulator and gauges.

8. Minimum Nominal ¾-inch I.D. Pipe – Used to lower the packer assembly to the appropriate depth and transport water down to the test zone.

9. Air Hose – The air hose shall be made of materials capable of withstanding twice the allowable net pressure of the pneumatic packers.

10. Pumps – A positive displacement or Moyno pump having a minimum capacity of 20 gpm at a pressure of 100 psi should be used.

DATA COLLECTION PROCEDURES

1. Test the water flow meter prior to use by running a known volume through the meter and checking its calibration.

2. Record on the Pressure Packer Testing Log form (sample attached) all measurements listed below:

   - Length of zone tested (note: this must be at least five times greater than the hole diameter;
   - Length of packer, rubber portion only;
   - Length of portion of hole not tested if double packer assembly is used;
   - Length of entire assembly;

- Elevation difference between water pressure gauge and mid-point of test segment (the water table should be allowed to stabilize for 24 hours prior to testing when practical); and

3. Calculate maximum test pressure. The maximum test pressure will not exceed a value equal to 1 psi per floor depth of hole, calculated at the midpoint of the test segment. Maximum test pressure equals the sum of the gauge pressure (P_p) and the weight of the water column between the gauge and the midpoint of the test segment (P_w). For example, if the depth to the midpoint of the test segment is 50-feet and the gauge is mounted 3-feet above the collar of the hole, then the maximum gauge pressure will be calculated as follows:

50 psi = gauge pressure (psi) = (50 + 3) x (62.4/144)
= gauge pressure (psi) = 53 x 0.43333
= gauge pressure (psi) = 22.97 psi

50 – 22.97 = 27.03 psi
Maximum gauge pressure = 27 psi

4. Select the packer pressure. The approximate packer pressure can be determined as follows:

P_p = packer pressure = inflation (resistance of rubber) pressure in air + ½ of hydrostatic head on the packer (approximate static water pressure) + 1.2 P_w max.

The packer pressure shall not exceed the design pressure of the packer. The nitrogen or compressed air tank shall be set at the selected packer pressure and the pressure recorded on the filed form.

5. Thoroughly clean the borehole and allow the water table 24 hours to stabilize, if practical.

6. Insert packer assembly into borehole and inflate. The hole should be tested from the bottom upwards.

7. Begin water flow at the appropriate pressure and allow the necessary time interval depending upon the grain of test material.

8. Conduct water pressure testing in four phases as outlined below:

Phase No.	Test Pressure	Packer Pressure
1	(½) P_w	P_p
2	P_w	P_p
3	P_w	P_p plus 20 psi

If there is no water taken in during Phase 2, the geologist or engineer may end the test.

The third phase is a check on the second phase to determine whether leakage past the packer has occurred. Increase of packer pressure of 20 psi is often sufficient, but higher increases may be used as the situation dictates.

9. Take gauge measurements every 30 seconds for the first 5 minutes of operation, and every 60 seconds thereafter until stabilization; i.e., until three or more readings of water intake and pressure taken at 5-minute intervals are essentially equal.

10. The geologist or engineer may end the test if the following occurs:

- In the event that a zone will not take water in the first 3 minutes of testing;
- In the event that a zone will not hold water test pressure of (½) P_w; or
- In the event that the measure flow in Phase 3 is greater than that in Phase 2 (i.e., hydraulic jacking of the rock).

DOCUMENTATION OF TEST RESULTS

1. All readings and other pertinent test data shall be recorded on the Pressure Packer Testing Log form (sample attached).

2. A pressure test report shall be completed by the drilling contractor or geologist or engineer, or both, for each test conducted. This includes all measurements taken prior to the test as well as all test results.

3. A field log shall also be kept to list all tests performed and their locations.

CALCULATION OF HYDRAULIC CONDUCTIVITY

Calculate hydraulic conductivity according to procedures given in Ground Water Manual, 1985, U.S. Department of Interior, Bureau of Reclamation.

ATTACHMENTS

Pressure Packer Testing Log (sample)

REFERENCES

None

FOP 042.0

PRESSURE PACKER TEST PROCEDURE

PRESSURE PACKER TESTING LOG

Project Name:	Ground Elevation:	**Boring No.:**
Project Location:	Water Level (fbMP):	Total Depth:
Job Number:	Water Level (fmsl):	Top of Rock: Depth:
Date:	Pressure Gauge No.:	Test Interval: Depth:
Contractor:	Flow Meter No.:	Water Pipe Length:
Driller: Helper:		Water Pipe I.D.:
BM Personnel:		Elevation (fmsl):

Gauge Pressure: _____ Packer Infl't'n Press.: _____			Gauge Pressure: _____ Packer Infl't'n Press.: _____			Gauge Pressure: _____ Packer Infl't'n Press.: _____			Gauge Pressure: _____ Packer Infl't'n Press.: _____			Test Configuration
Elapsed Time (min.)	Flow Reading (gallons)	D Flow	Elapsed Time (min.)	Flow Reading (gallons)	D Flow	Elapsed Time (min.)	Flow Reading (gallons)	D Flow	Elapsed	Flow Reading (gallons)	D Flow	
Remarks:			Remarks:			Remarks:			Remarks:			SINGLE ☐ DOUBLE ☐ Tape/Rule No.

SAMPLE

Prepared By: _____ Date: _____

TurnKey Environmental Restoration, LLC

Field Operating Procedures

Rock Core Classification Procedure

FOP 043.0

ROCK CORE CLASSIFICATION PROCEDURE

PURPOSE

This guideline presents rock classification procedures and descriptive terminology for rock core samples collected by standard bedrock coring methods. Rock coring is defined as the removal of continuous formation sample from a borehole. To the extent possible, rock core samples are recovered undamaged, preserving the physical and mechanical integrity of the bedrock. The formation material may be solid rock, friable rock, conglomerates, unconsolidated sands, coal, shales, gumbos, or clays. Rock core drilling is accomplished with mechanical, engine-powered rotary drills designed to drill rock and to recover the undisturbed cylindrical cores of rock material. All core drills are equipped with pumps or compressors to circulate drill media through use of water, drilling mud, air, or air-foam to cool and lubricate the coring bits and to transport the drill cuttings out of the borehole. Rock coring can be conducted by various methods with a variety of tools in a wide range of borehole sizes.

A common field method of rock coring techniques and core barrel size employed by TurnKey is as follows. Hollow stem augers (size varies) are advanced to refusal at the overburden/bedrock interface, seated into the bedrock and temporarily left in place during rock coring activities to prevent sloughing of the overburden soils. Overburden steel casing may be driven to the overburden/bedrock interface as an alternative to hollow stem augers (see TurnKey's FOP 041.0: Overburden Casing Installation Procedures). Once the augers are seated, an NX sized double-tube, swivel-type core barrel is attached to rotary drill rods and lowered to the bottom of the borehole. The drill rig rotates the drill rods and core barrel assembly, generally at intervals, or runs, of 5 or 10 feet, depending on the length of the core barrel and/or competency of bedrock (i.e., highly fractured bedrock generally will not allow runs longer than 5-feet in length, however competent massive bedrock is conducive to a 10-foot run). An NX core barrel will obtain a 2.155-inch diameter bedrock core sample creating a 2.98-inch diameter hole. Following coring activities, a 3⅞-inch tri-cone roller bit

is used to ream the borehole to the desired depth to facilitate monitoring well installation. Figure 1 illustrates a standard double-tube, swivel-type core barrel in action.

PROCEDURE

1. Label the core box in accordance with the Labeling, Storing, and Transport of Rock Core Boxes section of this FOP (see Figure 2).

2. Upon advancing the core barrel the appropriate run length (generally 5 or 10 feet in length) and retrieving the core barrel from the borehole, assist the driller as necessary to remove the bedrock core from the core barrel placing the core sample in a standard core box as shown in Figure 2 (i.e., with core box lid flipped open and away, start placing core in upper left hand corner moving left to right, top to bottom). Extreme care should be taken so as not to cause mechanical breaking of the core sample. A rubber mallet should be used to strike the outside of the core barrel to dislodge the core sample.

3. The beginning of each core run should be marked on the core and also noted with a marked wooden block (see Figure 2).

4. Place the core sample in good light, remove any extraneous material and wash the sample to clean it of drilling fluid, residue or mudcake.

5. Label the fractures and mark the core:

    a. Place a strike mark perpendicular across all fractures judged to be "natural"
    b. Place a two-color parallel strike mark along the entire core to indicate correct end up
    c. Photograph core with color chart and scale (as necessary)

6. Calculate core recovery and rock quality designation in accordance with TurnKey's FOP 044.0: Rock Quality Designation (RQD) Procedure.

7. Describe the wetted rock core sample according to the following hierarchy (see next section):

a. Formation Name
b. Rock Type
c. Field Strength
d. Color
e. Texture
f. Structure
g. Decomposition/Weathering
h. Disintegration
i. Bedding Thickness
j. Hardness
k. Fracturing

8. Document descriptions in the Project Field Book and on the appropriate field forms (Field Borehole Log or Field Borehole/Monitoring Well Installation Log; samples attached).

ROCK CORE LOG DESCRIPTIONS

Rock classification procedures presented in this FOP generally use the Bureau of Reclamation Standards (reference 1), the Standard Practice for Rock Core Drilling and Sampling of Rock for Site Investigation (ASTM D 2113) (reference 2) and the Field Guide for Rock Core Logging and Fracture Analysis prepared by Midwest Geosciences Group Press (2001 – 2004) (reference 3). The detail of description provided for a particular material should be dictated by the complexity and objectives of the project. However, since field work completed for one purpose is often later used for another, an attempt should always be made to describe the rock core as completely as possible.

Intensely weathered or decomposed bedrock that is friable and can be reduced to gravel size or smaller by normal hand pressure should be classified as a soil, however when performing rock coring activities as part of landfill construction, such material is considered bedrock which requires a minimum of ten feet vertical separation be maintained between the base of a constructed landfill liner and bedrock (viz. 6NYCRR Part 360-2.13(e)). If the weathered or decomposed bedrock is classified as a soil, the classified soil should be followed by the parent bedrock name in parenthesis.

Use the following descriptive terms when classifying bedrock core samples:

1. **FORMATION NAME** – Use formal state geological survey nomenclature when possible, if not possible; assign a site-specific unit name according to stratigraphic position.

2. **ROCK TYPE** – Document rock lithology. The following basic names are applied to sedimentary rock types common to New York State:

    - ***Sandstone*** – Made up predominantly of granular materials ranging between 1/16 and 2 inches in diameter.
    - ***Siltstone*** – Made up of granular materials less than 1/16 inch in diameter. Fractures irregularly. Medium thick to thick bedded.
    - ***Claystone*** – Very fine-grained rock made up of clay and silt-size materials. Fractures irregularly. Very smooth to touch. Generally has irregularly spaced pitting on surface of drilled cores.
    - ***Shale*** – A fissile very fine-grained rock. Fractures along bedding planes.
    - ***Limestone*** – Rock made up predominantly of calcite ($CaCO_3$). effervesces upon the application of hydrochloric acid.
    - ***Coal*** – Rock consisting mainly of organic remains.
    - ***Others*** – Numerous other rock types are present in the geologic section. Their overall abundance is dependent upon geographical location. These include halite, gypsum, dolomite, anhydrite, lignite, etc.

    In most cases, a rock will be a combination of several rock types, (e.g., sandy siltstone, or silty sandstone). The modifier indicates that a significant portion of the rock type is composed of the modifier. Other modifiers include carbonaceous, calcareous, siliceous, etc.

    Grain size diameters are used for the classification of clastic sedimentary rocks. The attached Table 1 specifies the classification that should be applied to sedimentary rocks. For field determination of grain sizes, a scale can be used for the coarse grained rocks. The division between very fine sand and silt is probably not measurable in the field. The boundary should be determined by use of a hand lens. If the grain cannot be seen with the naked

eye but are distinguishable with a hand lens, the rock is a siltstone. If the grains are not distinguishable with a hand lens, the rock is a claystone.

A general list of common rock types is presented at Figure 3 (attached).

3. **FIELD STRENGTH**
   - ***Very Weak*** – crumbled by hand, scratched easily with thumbnail
   - ***Weak*** – broken by hand into pieces, peeled by pocket knife
   - ***Moderate*** – broken with difficulty in two hands, easily scratched with knife
   - ***Strong*** – scratched with knife, indentation made by firm blow with rock hammer
   - ***Very Strong*** – chipped by firm blow with rock hammer

4. **COLOR** - Rock colors should be described utilizing a Munsell Color Chart. A single color descriptor proceeded, when necessary, by a modifier to denote variations in shade or color mixtures should be used when describing. A rock could, therefore be referred to as "gray' or "light gray". Since color can be utilized in correlating units between sampling locations, it is important that color descriptions be kept consistent throughout the field operations.

   Rock core samples should be classified while fresh and wet. If sample is not fresh or wet, note any discoloration due to oxidation, noting the distribution and occurrence. If no discoloration has occurred, note any distribution, position, and occurrence of secondary color(s) if present.

5. **TEXTURE**
   - ***Sedimentary Rocks***
     - *Microcrystalline* – crystals are indistinguishable (for [bio]chemical rocks)
     - *Aphanitic* – constituents are indistinguishable (for detrital rocks)
     - *Fossiliferous* – fossilized
     - *Grain size* – note degree of cementation and grading when applicable
       - Fine-grained: 0.06 mm to 0.25 mm
       - Medium-grained: 0.25 mm to 0.5 mm

- Coarse-grained: 0.5 mm to 2.0 mm

- ***Metamorphic Rocks***
  - *Slatey* – grains are indistinguishable, may be cleavable but can be oblique to bedding, dull
  - *Phyllitic* - grains are indistinguishable, parallelism is silky, or crenulated (small scale folds)
  - *Schistose* – grains are platy or elongated and parallel
  - *Gneissic* – crudely foliated with subparallel and unevenly distributed grains
  - *Nonfoliated* – no visible orientation of grains

- ***Igneous Rocks***
  - *Contains megacrysts*
    - Porphyritic – compatible in composition, larger crystals (phenocrysts) are set in a finer-grained groundmass, which may be crystalline or glassy or both
    - Xenocrystic – foreign in composition, a crystal that resembles a phenocrysts in igneous rock but is foreign to the body of rock in which it occurs
  - *Aphanitic* – grains are indistinguishable with the unaided eye
  - *Phaneritic* – grains are distinguishable with the unaided eye

6. **STRUCTURE**

- ***Massive*** – uniform
- ***Thickly Bedded or Foliated or Banded*** – bedding, foliation, or bands from 1 to 10 feet (300 mm to 3m)
- ***Medium Bedded or Foliated or Banded*** – bedding, foliation, or bands from 0.3 to 1 foot (100 to 300 mm)
- ***Thinly Bedded or Foliated or Banded*** – bedding, foliation, or bands from 0.03 to 0.3 foot (10 to 100 mm)
- ***Laminated or Intensely Foliated or Intensely Banded*** – laminations, foliation, or bands from less than 0.03 feet (< 10 mm)

7. **DECOMPOSITION/WEATHERING** - The degree of decomposition/ weathering is a significant parameter that is important in determining decomposition/weathering profiles and is also useful in engineering designs. The following terms can be applied to distinguish the degree of decomposition/weathering.

    - ***Fresh*** – no decomposition or discoloration apparent. Rock shows little or no weathering effect. Fractures or joints have little or no staining and rock has a bright appearance.
    - ***Slightly Decomposed*** – mostly fresh but discoloration near fractures. Rock has some staining which may penetrate several centimeters into the rock. Clay filling of joints may occur. Feldspar grains may show some alteration.
    - ***Moderately Decomposed*** – mostly discolored, easily broken by rock hammer. Most of the rock, with exception of quartz grains, is stained. Rock is weakened due to decomposition/weathering and can be easily broken with hammer.
    - ***Highly Decomposed*** – completely discolored, easily broken by hand. All bedrock including quartz grains is stained. Some of the rock is weathered to the extent of becoming a soil. Rock is very weak.
    - ***Residual Soil*** (note pedogenic development, pertaining to soil formation) – can be crumbled by hand (and in near-surface position).

8. **DISINTIGRATION**

    - ***Competent*** – no mineralization or dissolution (to either bedrock or cementation)
    - ***Slightly Disintegrated*** – trace mineralization or dissolution
    - ***Moderately Disintegrated*** – some mineralization or dissolution
    - ***Intensely Disintegrated*** – highly mineralized or dissolved (see Fracture Characterization for describing voids

9. **BEDDING THICKNESS** - Bedding thickness designations for rock classification are given in Table 2 (attached).

10. **HARDNESS** - The hardness of a rock is a function of the compaction, cementation, and mineralogical composition of the rock. A relative scale for sedimentary rock hardness is as follows:

    - ***Soft*** – Weathered, considerable erosion of core, easily gouged by screwdriver, scratched by fingernail. Soft rock crushes or deforms under pressure of a pressed hammer. This term is always used for the hardness of the saprolite (decomposed rock which occupies the zone between the lowest soil horizon and firm bedrock).
    - ***Medium soft*** – Slight erosion of core, slightly gouged by screwdriver, or breaks with crumbly edges from single hammer blow.
    - ***Medium hard*** – No core erosion, easily scratched by screwdriver, or breaks with sharp edges from single hammer blow.
    - ***Hard*** – Requires several hammer blows to break and has sharp concoidal breaks. Cannot be scratched with screwdriver.

11. **FRACTURING** - Determine the degree of fracturing or brokenness of a rock by measuring the fractures or joint spacing. After eliminating drilling breaks, the average spacing is calculated and the fracture structure is described by the following terms.

    - ***Very broken*** (V.BR.) – Less than 2 in
    - ***Broken*** (BR.) –2 in. to 1 ft.
    - ***Blocky*** (BL.) – 1 to 3 ft.
    - ***Massive*** (M.) – 3 to 10 ft.

    The structural integrity of the rock can be approximated by calculating the Rock Quality Designation (RQD) of cores recovered in accordance with TurnKey's Rock Quality Designation FOP.

    - ***Fracture Density*** – characterize fractures using the following section
        - *Unfractured* – no observed fractures
        - *Slightly Fractured* – core recovered mostly in lengths greater than 1 foot

- *Moderately Fractured* – core recovered mostly in lengths from 0.33 to 1 foot
- *Intensely Fractured* – core lengths average from 0.1 to 0.33 feet
- *Very Intensely Fractured* – core recovered mostly as non-intact (NI) fragments

FRACTURE CHARACTERIZATION GUIDE

Use the following descriptive terms when characterizing fractures within rock core samples:

1. **DEPTH** – Distance below ground surface

2. **TYPE**
   - ***Joint*** – structural break where little or no differential movement has occurred
   - ***Shear*** – structural break where differential movement has occurred
   - ***Bedding Plane Joint*** – division plane that separates successive layers or beds
   - ***Microjoint*** – tight, often discontinuous plane, may be separated by hand along plane
   - ***Fracture Zone*** – numerous intersecting joints
   - ***Shear Zone*** – width of fracture zone indicating numerous joints, shears, or fault
   - ***Mechanical Break*** – break due to drilling, blasting, or handling

3. **DIP ANGLE** – degrees from horizontal

4. **APERTURE FOR OPENINGS**
   - ***Wide*** – greater than 200 mm
   - ***Moderately Wide*** – 60 to 200 mm

- ***Moderately Narrow*** –20 to 60 mm
- ***Narrow*** – 6 to 20 mm
- ***Very Narrow*** – 2 to 6 mm
- ***Extremely Narrow*** – greater than 0 to 2 mm
- ***Tight*** – no visible separation

5. APPERTURE FOR VOIDS

- ***Pit (pitted)*** – pinhole openings
- ***Vug (vuggy)*** – small opening up to 4 inches
- ***Cavity*** – opening larger than 4 inches
- ***Honeycombed*** – cell-like form of vugs and pits
- ***Vesicle (vesicular)*** – openings formed by trapped gas

6. HEALING

- ***Totally Healed*** – all parts bonded, completely healed or re-cemented
- ***Moderately Healed*** – greater than 50% fractured/sheared discontinuities healed, re-cemented, or filled
- ***Partly Healed*** – less than 50% fractured/sheared discontinuities healed, re-cemented, or filled
- ***Not Healed*** – no fractures or shears are healed, re-cemented, or filled

7. INFILLING

- ***Clean*** – no apparent infilling or coating
- ***Surface Oxidation or Staining*** – oxidation or secondary staining along fracture face
- ***Decomposed or Disintegrated Rock*** – decomposition or disintegration along fracture

- ***Non-Cohesive Sediment*** – sediment that is non-plastic
- ***Cohesive Sediment*** – sediment that yields plasticity
- ***Mineralization*** (i.e., quartz, calcite, manganese, kaolin) – secondary mineralization
- ***Other (note observation)*** - other

8. UNEVENESS

- ***Rough*** – large or angular asperities (an irregularity on a fracture surface, typically a projection that reduces the aperture size
- ***Smooth*** – no asperities
- ***Slickensided*** – polished or striated
- ***Stepped*** – with near normal steps or ridges
- ***Undulating*** – with wavy surface
- ***Planar*** – with even surface

9. MOISTURE CONDITIONS

- ***Restricted*** – water flow does not appear possible along fracture
- ***Dry*** – fracture is dry, but water flow appears possible
- ***Dry with Staining or Leaching*** – fracture is dry, but shows staining or leaching
- ***Damp*** – fracture filling (where present) is damp, but no apparent water flow
- ***Wet with Minor Seepage*** – fracture filling is wet (or stained), with apparent minor seepage
- ***Wet with Continuous Seepage*** – fracture filling is washed and wet, with apparent continuous seepage

LABELING, STORING, AND TRANSPORT OF ROCK CORE BOXES

All core boxes should be clearly and correctly labeled both on the top outside of the box as well as along one end (for ease of identifying boxes when in racks) and include project name, borehole number, date, box number and depths of core inside the box (see Figure 2).

All rock cores should be stored in strong wooden boxes with suitable wooden covers that allows for easy access, protection and prevents loss of core pieces. Core boxes should be stored under cover out of rain (core shed, under plastic or weatherproof tarps) and preferably on racks rather than not directly on top of each other, which typically leads to breakage of covers and possible loss of core.

Care should be exercised when transporting rock cores so as to not to drop core boxes which may induce mechanical/non-natural breaks as well as possibly cause core pieces to fall out and become mixed out of order. The covers of core boxes should be well secured and tightly closed and fastened to prevent their opening during any transport.

REQUIRED EQUIPMENT

- Knife
- Ruler
- Permanent Marker
- 10x Hand lens
- Hydrochloric acid
- Camera
- Munsell rock color chart
- Rubber mallet
- Potable water

ATTACHMENTS

Field Borehole Log (sample)
Field Borehole/Monitoring Well Installation Log (sample)

Table 1; Grain Size Classification for Rocks
Table 2; Bedding Thickness Classification

Figure 1; Standard Double-Tube, Swivel-Type Core Barrel in Action
Figure 2; Core Placement & Core Box Labeling
Figure 3; List of Common Rock Names

REFERENCES

1. *Earth Manual*, U.S. Department of the Interior, Bureau of Reclamation, Part I, Third Edition, 1998.

2. *Field Guide for Rock Core Logging and Fracture Analysis™*, Midwest Geosciences Group Press, 2001 – 2004.

3. *Soil & Rock Logging Classification Manual (Field Guide)*, State of California, Department of Transportation, Engineering Service Center, Office of Structural Foundations, August 1995.

4. *Standard Practice for Rock Core Drilling and Sampling of Rock for Site Investigation*, ASTM D 2113.

TurnKey FOPs:
041 Overburden Casing Installation Procedures
044 Rock Quality Designation (RQD) Procedures

ROCK CORE CLASSIFICATION PROCEDURE

FIELD BOREHOLE LOG

PROJECT:		**Log of Boring No.:**	
BORING LOCATION:		ELEVATION AND DATUM:	
DRILLING CONTRACTOR:		DATE STARTED:	DATE FINISHED:
DRILLING METHOD:		TOTAL DEPTH:	SCREEN INTERVAL:
DRILLING EQUIPMENT:		DEPTH TO WATER: FIRST: / COMPL.:	CASING:
SAMPLING METHOD:		LOGGED BY:	
HAMMER WEIGHT:	DROP:	RESPONSIBLE PROFESSIONAL:	REG. NO.

Depth (fbgs)	SAMPLES: Sample No.	Sample	Blows (per 6")	SPT N-Value	Recovery	PID Scan (ppm)	SAMPLE DESCRIPTION USCS Classification: Color, Moisture Condition, % of Soil Type, Text… Plasticity, Fabric, Bedding, Weathering/Fracturing, Odor, Oth… SURFACE ELEVATION (FMSL):	REMARKS

SAMPLE

ABANDONMENT:				
Volume of cement/bentonite grout required:	V = pr2 x 7.48 =	gallons	borehole depth =	ft.
Volume of cement/bentonite grout installed:		gallons	borehole diameter =	ft.
Has bridging of grout occurred?	☐ yes ☐ no		borehole radius =	ft.
If yes, explain resolution:				
Method of installation:				
Project No:	**TurnKey Environmental Restoration, LLC**		Figure	

FIELD GEOPROBE BOREHOLE \ TEMPORARY WELL INSTALLATION LOG

PROJECT:			**Log of Temp. Well No.:**	
BORING LOCATION:			ELEVATION AND DATUM:	
DRILLING CONTRACTOR:			DATE STARTED:	DATE FINISHED:
DRILLING METHOD:			TOTAL DEPTH:	SCREEN INTERVAL:
DRILLING EQUIPMENT:			DEPTH TO WATER: FIRST: / COMPL.:	CASING:
SAMPLING METHOD:			LOGGED BY:	
HAMMER WEIGHT:	DROP:		RESPONSIBLE PROFESSIONAL:	REG. NO.

Depth (fbgs)	SAMPLES: Sample No.	Sample	Blows (per 6")	SPT N-Value	Recovery	PID Scan (ppm)	SAMPLE DESCRIPTION USCS Classification: Color, Moisture Condition, % of Soil Ty…, Plasti… Fabric, Bedding, Weathering/Fracturing, Odor, O… SURFACE ELEVATION (FMSL):	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS

SAMPLE

Project No:	TurnKey Environmental Restoration, LLC	Figure

TABLE 1

GRAIN SIZE CLASSIFICATION FOR ROCKS

Particle Name	Grain Size Diameter
Cobbles	>64 mm
Pebbles	4-64 mm
Granules	2-4 mm
Very Coarse Sand	1 – 2 mm
Coarse Sand	1 – 2 mm
Medium Sand	0.25 – 0.5 mm
Fine Sand	0.125 – 0.25 mm
Very Fine Sand	0.0625 – 0.125 mm
Silt	0.0039 – 0.0625 mm

TABLE 2

BEDDING THICKNESS CLASSIFICATION

Thickness (Metric)	Approx. English Equivalent	Classification
> 1.0 meter	>3.3 feet	Massive
30 cm – 1 meter	1.0 ft – 3.3 ft	Thick Bedded
10 cm – 30 cm	4 in. –0 1.0 ft	Medium Bedded
3 cm - 10 cm	1 in. – 4 in.	Thin Bedded
1 cm – 3 cm	2/5 in. – 1 in.	Very Thin Bedded
3 mm – 1 cm	1/8 in. – 2/5 in.	Laminated
1 mm – 3 mm	1/32 in. – 1/8 in.	Thinly Laminated
< 1 mm	<1/32 in.	Micro Laminated

FIGURE 1

STANDARD DOUBLE-TUBE, SWIVEL-TYPE CORE BARREL IN ACTION

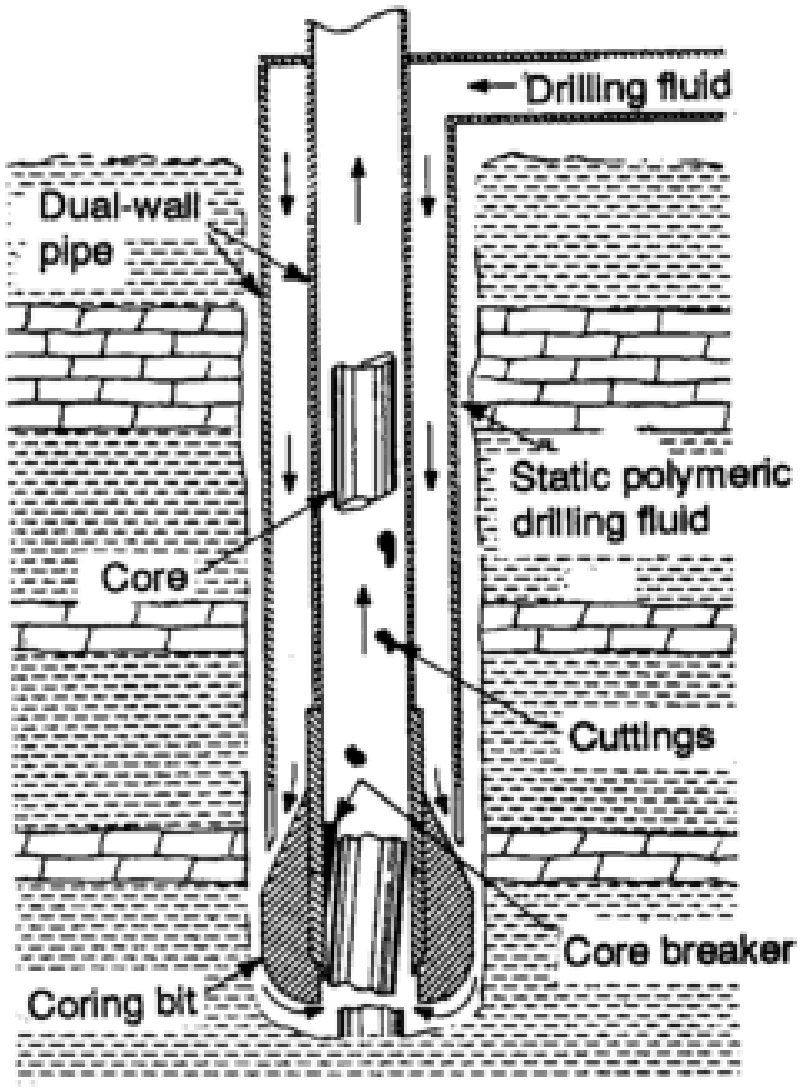


FIGURE 2

CORE PLACEMENT & CORE BOX LABELING

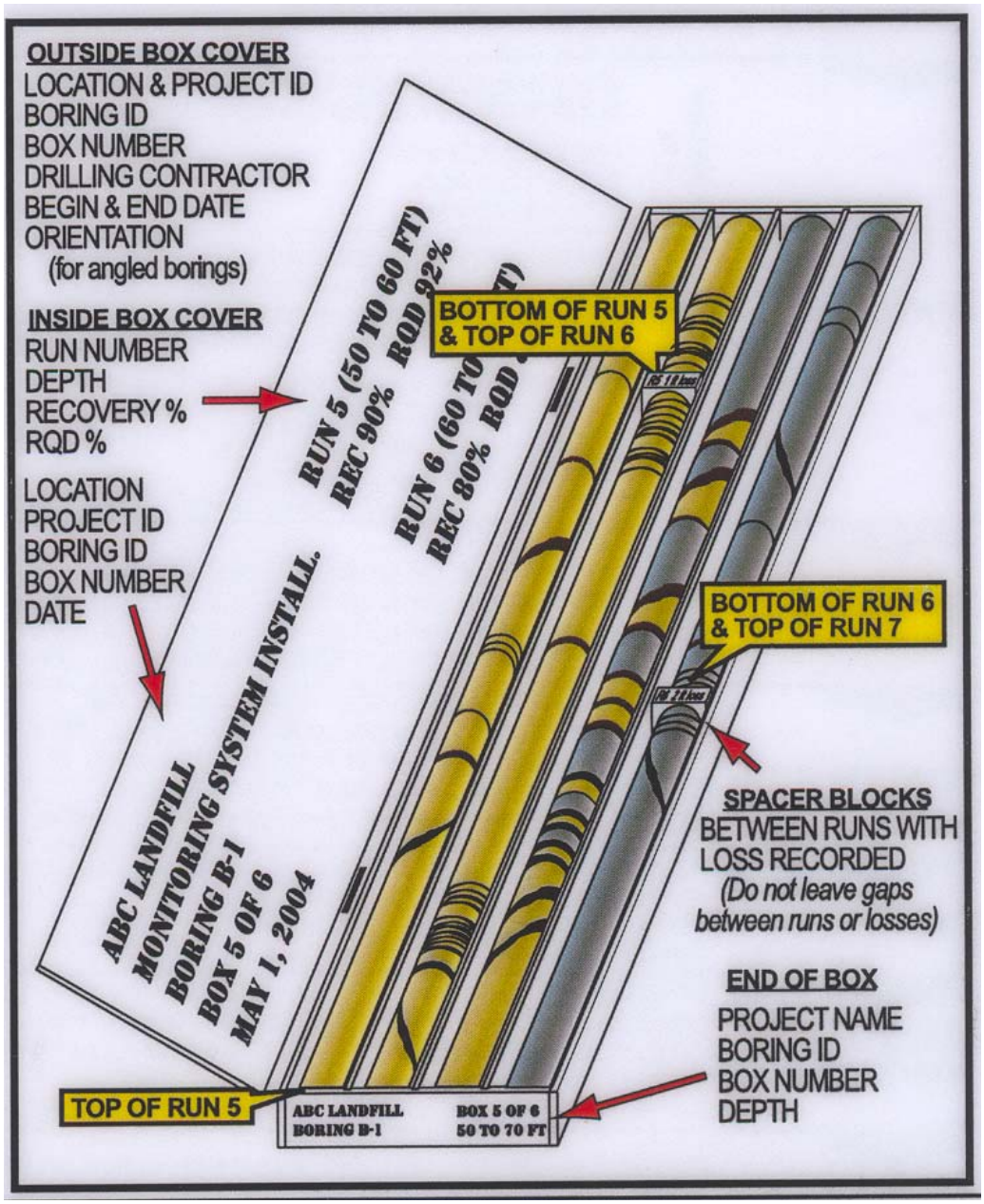
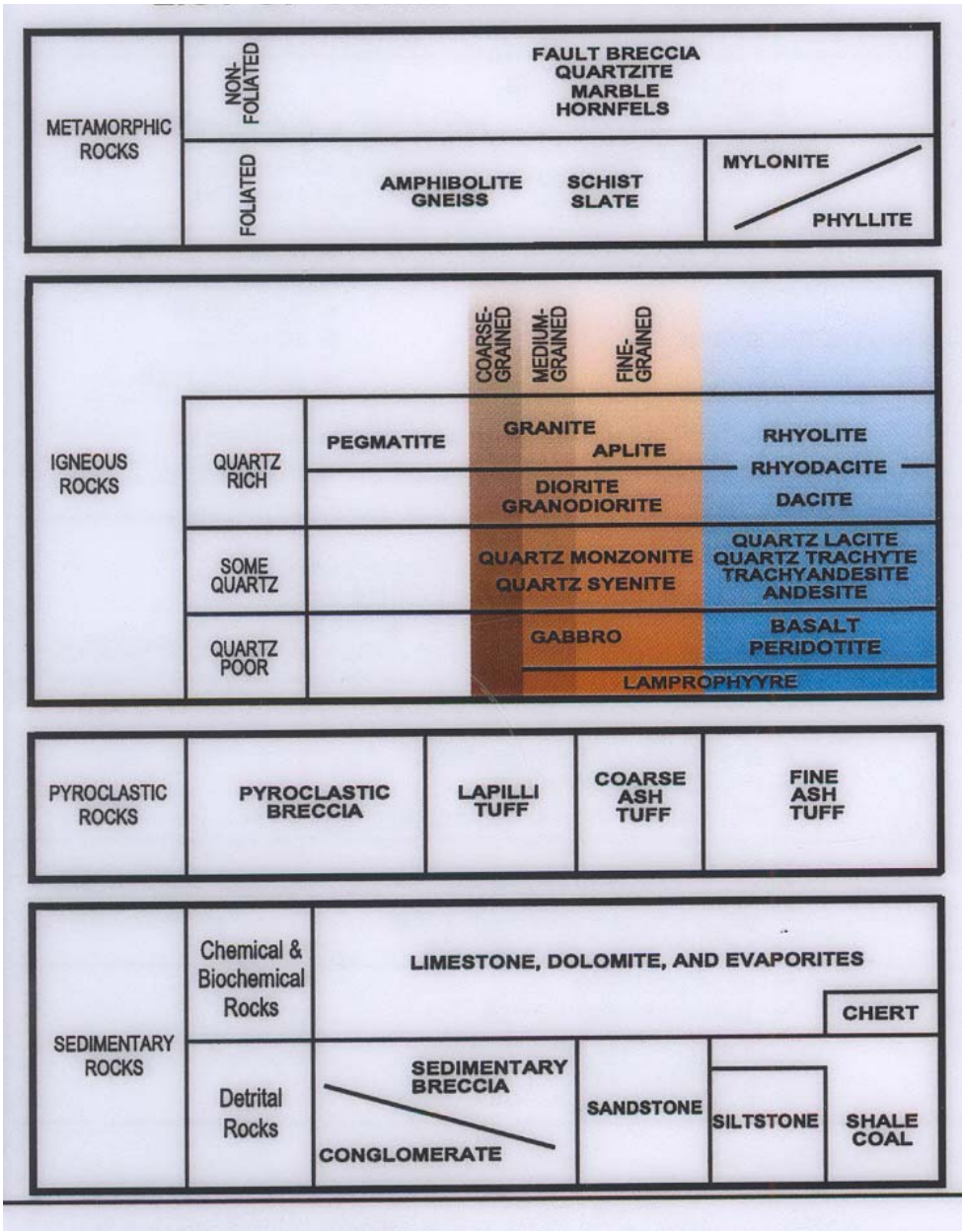


FIGURE 3

LIST OF COMMON ROCK NAMES



TurnKey Environmental Restoration, LLC

Field Operating Procedures

Rock Quality Designation (RQD) Procedure

FOP 044.0

ROCK QUALITY DESIGNATION (RQD) PROCEDURE

PURPOSE

This guideline presents a method to describe the Rock Quality Designation (RQD), which is a simple and direct means of indicating rock mass properties. RQD is based on a modified core recovery procedure, which, in turn, is based indirectly on the number of fractures and the amount of softening, or alternation in the rock mass as observed in the rock cores from the borehole. Core recovery is the ratio of the length of core recovered to the length drilled (i.e., no recovery = 0 and full recovery = 100). This procedure is an indicator of the general quality of rock for engineering purposes and provides a numerical value, which is more sensitive and consistent than gross percentage core recovery.

PROCEDURE

Sum the total length of core recovered by counting only those pieces of hard and sound core which are two times the core diameter (4 inches (10cm) for NX core) or greater in length and divide that sum by the total length of that core run. RQD is presented as a percentage and descriptive modifier as presented below.

Rock Quality Designation (RQD) (%)	Description of Rock Quality
0 – 25	Very Poor
26 – 50	Poor
51 – 75	Fair
76 – 90	Good
91 – 100	Excellent

ROCK QUALITY DESIGNATION (RQD) PROCEDURE

LIMITATIONS

1. RQD should not be applied to core less than 2 inches (5.4 cm) in diameter as a false RQD may be obtained because smaller cores can be frequently broken during the coring operation.

2. Care must be taken when removing the core from the core barrel. If a core is broken by handling or during drilling, the fresh broken pieces should be fitted together and counted as one piece.

3. Some judgment is necessary in the case of thinly bedded sedimentary rock and foliated metamorphic rocks. The method is most suitable for igneous rock, thick-bedded limestone, sandstone, etc. However, this procedure can be applied to shales, although it is necessary to log the cores immediately upon removal from the core barrel before air slaking and cracking can occur.

4. Although this procedure is less applicable where core recovery is poor, the results are indicative of poor quality rock. It should however be noted that poor drilling techniques and equipment can also cause poor recovery. It is for this reason that proper equipment and procedure along with competent supervision of the drilling procedure are imperative.

EXAMPLE

An example RQD calculation is attached to this FOP.

ATTACHMENTS

none

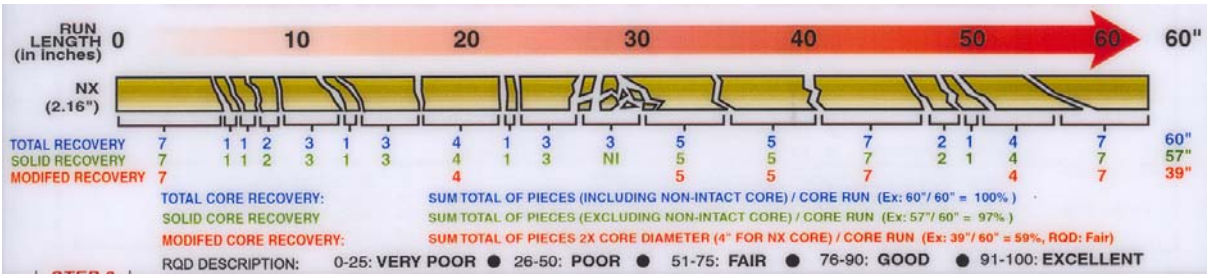
REFERENCES

none

ROCK QUALITY DESIGNATION (RQD) PROCEDURE

EXAMPLE

MODIFIED CORE RECOVERY AS AN INDEX OF ROCK QUALITY



From the figure above:

Total Core Recovery (in.)	Modified Core Recovery (in.)
7	7
1	
1	
2	
3	
1	
3	
4	4
1	
3	
3	
5	5
5	5
7	7
2	
1	
4	
7	7
60	39

NOTES:

60 inches = length of run.
Core Recovery = (60"/60") x 100 = 100%
RQD = (39"/60") x 100 = 59%, therefore RQD is Fair.

In this case, the core barrel was advanced 60 inches with a total recovery of 60 inches. However, due to fractures, soft zones, etc., the modified recovery was only 39 inches. This equates to an RQD of 59%, which can be used as a modifier in the geologic description of the rock, which in this case would be "Fair."

TurnKey Environmental Restoration, LLC

FIELD OPERATING PROCEDURES

Sample Labeling, Storage, and Shipment Procedures

FOP 046.0

SAMPLE LABELING, STORAGE & SHIPMENT PROCEDURES

PURPOSE

The collection and analysis of samples of environmental media, including soils, groundwater, surface water, and sediment, are the central activities of the field investigation. These samples must be properly labeled to preserve its identity, and properly stored and shipped in a manner that preserves its integrity and chain of custody. This procedure presents methods for these activities.

SAMPLE LABELING PROCEDURE

1. Assign each sample retained for analysis a unique 9-digit alphanumeric identification code or as indicated in the Project Work Plan. Typically, this code will be formatted as follows:

Sample I.D. Example: GW051402047	
GW	**Sample matrix** GW = groundwater; SW = surface water; SUB = subsurface soil; SS = surface soil; SED = sediment; L = leachate; A = air
05	Month of sample collection
14	Day of sample collection
02	Year of sample collection
047	Consecutive sample number

2. Consecutive sample numbers will indicate the individual sample's sequence in the total set of samples collected during the investigation/sampling event. The sample number above, for example, would indicate the 47th sample retained for analysis during the field investigation, collected on May 14, 2002.

3. Affix a non-removable (when wet) label to each sample container. The following information will be written on the label with black or blue ink that will not smudge when wet:

   - Project number
   - Sample ID (see Step 1 above)
   - Date of sample collection
   - Time of sample collection (military time only)
   - Specify "grab" or "composite" sample with an "X"
   - Sampler initials
   - Preservative(s) (if applicable)
   - Analytes for analysis (if practicable)

4. Record all sample label information in the Project Field Book and on a Sample Summary Collection Log (see attached samples), keyed to the sample identification number. In addition, add information regarding the matrix, sample location, depth, etc. to provide a complete description of the sample.

SAMPLE STORAGE PROCEDURE

1. Immediately after collection, placement in the proper container, and labeling, place samples to be retained for chemical analysis into resealable plastic bags.

2. Place bagged samples into an ice chest filled approximately half-full of double bagged ice. Blue ice is not an acceptable substitute for ice.

3. Maintain samples in an ice chest or in an alternative location (e.g. sample refrigerator) as approved by the TurnKey Field Team Leader until time of shipment. Periodically drain melt-water off coolers and replenish ice as necessary.

4. Ship samples on a daily basis, unless otherwise directed by the TurnKey Field Team Leader.

5. Maintain appropriate custody procedures on coolers and other sample storage containers at all times. These procedures are discussed in detail in the Project Quality Assurance Project Plan, Monitoring Plan or Work Plan.

6. Samples shall be kept in a secure location locked and controlled (i.e., locked building or fenced area) so that only the Project Field Team Leader has access to the location or under the constant visual surveillance of the same.

SAMPLE SHIPPING PROCEDURE

1. Fill out the chain-of-custody form completely (see attached sample) with all relevant information. The white original goes with the samples and should be placed in a resealable plastic bag and taped inside the sample cooler lid; the sampler should retain the copy.

2. Place a layer of inert cushioning material such as bubble pack in the bottom of cooler.

3. Place each bottle in a bubble wrap sleeve or other protective wrap. To the extent practicable, then place each bottle in a resealable plastic bag.

4. Open a garbage bag (or similar) into a cooler and place sample bottles into the garbage bag (or similar) with volatile organic analysis (VOA) vials near the center of the cooler.

5. Pack bottles with ice in plastic bags. At packing completion, cooler should be at least 50 percent ice, by volume. Coolers should be completely filled, so that samples do not move excessively during shipping.

6. Duct tape (or similar) cooler drain closed and wrap cooler completely in two or more locations to secure lid, specifically covering the hinges of the cooler.

7. Place laboratory label address identifying cooler number (i.e., 1 of 4, 2 of 4 etc.) and overnight delivery waybill sleeves on cooler lid or handle sleeve (Federal Express).

8. Sign the custody seal tape with an indelible soft-tip marker and place over the duct tape across the front and back seam between the lid and cooler body.

9. Cover the signed custody seal tape with an additional wrap of transparent strapping tape.

10. Place "Fragile" and "This Side Up" labels on all four sides of the cooler. "This Side Up" labels are yellow labels with a black arrow with the arrowhead pointing toward the cooler lid.

11. For coolers shipped by overnight delivery, retain a copy of the shipping waybill, and attach to the chain-of-custody documentation.

ATTACHMENTS

Soil/Sediment Sample Summary Collection Log (sample)
Groundwater/Surface Water Sample Summary Collection Log (sample)
Wipe Sample Summary Collection Log (sample)
Air Sample Summary Collection Log (sample)
Chain-Of-Custody Form (sample)

REFERENCES

None

SOIL/SEDIMENT
SAMPLE COLLECTION SUMMARY LOG

Field ID	Location	QC Type	Depth (feet)		Analytical Parameters	Containers	Date	Time	Sampler Initials	Comments (e.g. problems encountered, ref. to variance, location changes, depth changes, important matrix observations or description, gravel thickness, etc.)
			from	to						

Equipment Rinsate Blanks *- Pour clean deionized water over or through dec[illegible] sample containers. Collect at a frequency of 1 per sampling method per day. Analyze for all those parameters analyzed for in the samples collected the same day. H[illegible] Metals analyzed for that day (except Hexavalent Chromium which needs a separate container). Match equipment used for constituents of concern to rinsate analyte. [illegible] water manufacturers info & date.*

MS/MSD/MSB *- Collect at a frequency of 1 per 20 samples of each [illegible] day. A[illegible] rs analyzed for the samples collected the same day.*

Field Blank *- Pour clean deionized water (used as final decon rinse w[illegible] e sampling site. Collect field blanks at a frequency of 1 per lot of deionized water. Note water lot number and dates in use for decon in 'Comments' section.*

Investigation Derived Waste (IDW) Characterization *- One co[illegible] rums of decon fluids and soil. Please note number of drums and labels on collection log.*

Notes:

1. See QAPP for sampling frequency and actual numb[illegible]
2. CWM - clear, wide-mouth glass jar with Teflon-lined ca[illegible]
3. HDPE - high density polyethylene bottle.
4. MS/MSD/MSB - Matrix Spike, Matrix Spike Duplicate, Matrix Spike Blank.
5. BD - Blind Duplicate - indicate location of duplicate.

SAMPLE

GROUNDWATER/SURFACE WATER SAMPLE COLLECTION SUMMARY LOG

Field ID	Location	QC Type	Depth (feet)		Analytical Parameters	Containers	Date	Time	Sampler Initials	Comments (e.g. problems encountered, ref. to variance, location changes, depth changes, important matrix observations or description, gravel thickness, etc.)
			from	to						

Equipment Rinsate Blanks *- Pour clean deionized water over or through dec[illegible] sample containers. Collect at a frequency of 1 per sampling method per day. Analyze for all those parameters analyzed for in the samples collected the same day. H[illegible] Metals analyzed for that day (except Hexavalent Chromium which needs a separate container). Match equipment used for constituents of concern to rinsate analyte.* [illegible] *water manufacturers info & date.*

MS/MSD/MSB *- Collect at a frequency of 1 per 20 samples of each [illegible] day. A[illegible] rs analyzed for the samples collected the same day.*

Field Blank *- Pour clean deionized water (used as final decon rinse w[illegible] e sampling site. Collect field blanks at a frequency of 1 per lot of deionized water. Note water lot number and dates in use for decon in 'Comments' section.*

Investigation Derived Waste (IDW) Characterization *- One co[illegible] rums of decon fluids and soil. Please note number of drums and labels on collection log.*

Notes:

1. See QAPP for sampling frequency and actual numb[illegible]
2. CWM - clear, wide-mouth glass jar with Teflon-lined c[illegible]
3. HDPE - high density polyethylene bottle.
4. FD - Field Duplicate.
5. MS/MSD/MSB - Matrix Spike, Matrix Spike Duplicate, Matrix Spike Blank.
6. BD - Blind Duplicate.

SAMPLE

WIPE SAMPLE COLLECTION SUMMARY LOG

Field ID	Location	QC Type	Analytical Parameters	Containers	Date	Time	Sampler Initials	Comments (e.g. problems encountered, ref. to variance, location changes, important observations or descriptions, etc.)

Notes:

1. See QAPP for sampling frequency and actual number of QC samples.
2. CWM - clear, wide-mouth glass jar with Teflon-lined cap.
3. FD - Field Duplicate.
4. FB - Field Blank.
5. RS - Rinsate.
6. No Matrix Spike, Matrix Spike Duplicate or Matrix S… Blanks fo… sa…
7. Rinsates should be taken at a rate of 1 per day … sampling … …us…le equipment is used.
8. Wipe sample FB collected by wiping unused gl… …d a… other sam… …ling into contact with sampled surface) with prepared gauze pad and place in sample jar. Take at a rate of 1 FB per 20 samples.
9. Wipe sample FDs taken adjacent to original samp… …r 2… …les.
10. **EH :** Extract and Hold

SAMPLE

AIR SAMPLE COLLECTION SUMMARY LOG

Field ID	Location	QC Type	Analytical Parameters	Containers	Date	Time	Sampler Initials	Comments (e.g. problems encountered, ref. to variance, location changes, important observations or descriptions, etc.)

Notes:

1. See QAPP for sampling frequency and actual n[illegible] of [illegible] samples.
2. SC - Summa Canister.
3. TB - Tedlar Bag (quantity).
4. No Matrix Spike, Matrix Spike Duplicate, Matrix Spike [illegible] Field [illegible]ate, Field Blanks or Rinsates collected for air samples.

SAMPLE

SAMPLE LABELING, STORAGE & SHIPMENT PROCEDURES

CHAIN OF CUSTODY RECORD

Project No.	Project Name																				
Samplers (Signature)																					
No.	Date	Time	comp	grab	Sample Identification	Number of Containers	VOCs	SVOCs	Metals												REMARKS

Possible Hazard Identification:
☐ Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B [illegible] [illegible] to Client ☐ Disposal by Lab ☐ Archive _____(mos.)

Turnaround Time Required:
Normal ☐ Rush ☐ [illegible] II. ☐ III. ☐ Project Specific (specify):_____

Relinquished by: (Signature)	Date	Time	Re[illegible]Signature)	Date	Time	REMARKS:
Relinquished by: (Signature)	Date	[illegible]	[illegible] (Signature)	Date	Time	

SAMPLE

TurnKey Environmental Restoration, LLC

FIELD OPERATING PROCEDURES

Screening of Soil Samples for Organic Vapors During Drilling Activities

FOP 047.0

SCREENING OF SOIL SAMPLES FOR ORGANIC VAPORS DURING DRILLING ACTIVITIES

PURPOSE

This procedure is used to screen soil samples for the presence of volatile organic constituents (VOCs) using a field organic vapor meter. These meters will be either photoionization detector (PID) or flame-ionization detector (FID) type. This screening is performed at the drilling and sampling location as a procedure for ensuring the health and safety of personnel at the site and to identify potentially contaminated soil samples for laboratory analysis. All soil samples will be field screened to provide a vertical profile of soil contamination by volatile organic substances.

PROCEDURE

1. Calibrate air-monitoring equipment in accordance with the appropriate TurnKey's Field Operating Procedures or manufacturers recommendations for calibration of field meters.

2. Collect split-spoon (or other sampler) samples in accordance with TurnKey's Split Spoon Sampling Procedure FOP.

3. When the split-spoon or other sampler is opened or accessed, shave a thin layer of material from the entire length of the core.

4. Scan the core visually and with the PID or FID noting stratification, visible staining, or other evidence of contamination.

5. Based on this initial scan of the sample, collect approximately 100 milliliters (ml) of soil using a decontaminated or dedicated stainless steel spatula, scoop, or equivalent. Place this soil into a labeled wide-mouth glass jar approximately ½ to ¾ full and seal with aluminum foil and a screw top cap. Alternatively, the soil may be placed into a clean, re-sealable plastic bag and sealed. Be sure to leave some headspace above the soil sample within the sealed container.

6. Place field screening sample (i.e., jar or bag) in a location where the ambient temperature is at least 70° Fahrenheit.

7. Leave the field screening sample bag for at least 30 minutes, but no more than 60 minutes.

8. Carefully remove the screw top cap from the jar and slowly insert the tip of the organic vapor meter (PID or FID) through the aluminum foil seal making the smallest hole possible. Alternatively, unseal a portion of the plastic bag just big enough to insert the probe of a calibrated PID.

9. Record the maximum reading in parts per million by volume (ppmv) on the Field Borehole Log or Field Borehole/Monitoring Well Installation Log form (see attached samples) (see Documentation Requirements for Drilling and Well Installation FOP), at the depth interval corresponding to the depth of sample collection.

ATTACHMENTS

Field Borehole Log (sample)
Field Borehole/Monitoring Well Installation Log (sample)

REFERENCES

TurnKey FOPs:

010 Calibration and Maintenance of Portable Flame Ionization Detector
011 Calibration and Maintenance of Portable Photoionization Detector
015 Documentation Requirements for Drilling and Well Installation
058 Split Spoon Sampling Procedures

FOP 047.0

SCREENING OF SOIL SAMPLES FOR ORGANIC VAPORS DURING DRILLING ACTIVITIES

FIELD BOREHOLE LOG

PROJECT:		**Log of Boring No.:**		
BORING LOCATION:		ELEVATION AND DATUM:		
DRILLING CONTRACTOR:		DATE STARTED:		DATE FINISHED:
DRILLING METHOD:		TOTAL DEPTH:		SCREEN INTERVAL:
DRILLING EQUIPMENT:		DEPTH TO WATER: FIRST:	COMPL.:	CASING:
SAMPLING METHOD:		LOGGED BY:		
HAMMER WEIGHT:	DROP:	RESPONSIBLE PROFESSIONAL:		REG. NO.

Depth (fbgs)	SAMPLES: Sample No.	Sample	Blows (per 6")	SPT N-Value	Recovery	PID Scan (ppm)	SAMPLE DESCRIPTION USCS Classification: Color, Moisture Condition, % of Soil Type, Texture, Plasticity, Fabric, Bedding, Weathering/Fracturing, Odor, Other SURFACE ELEVATION (FMSL):	REMARKS

SAMPLE

ABANDONMENT:			
Volume of cement/bentonite grout required:	V = pr2 x 7.48 =	gallons	borehole depth = ft.
Volume of cement/bentonite grout installed:		gallons	borehole diameter = ft.
Has bridging of grout occurred? ☐ yes ☐ no			borehole radius = ft.
If yes, explain resolution:			
Method of installation:			
Project No:	**TurnKey Environmental Restoration, LLC**		Figure

FOP 047.0

SCREENING OF SOIL SAMPLES FOR ORGANIC VAPORS DURING DRILLING ACTIVITIES

FIELD GEOPROBE BOREHOLE \ TEMPORARY WELL INSTALLATION LOG

PROJECT:			**Log of Temp. Well No.:**	
BORING LOCATION:			ELEVATION AND DATUM:	
DRILLING CONTRACTOR:			DATE STARTED:	DATE FINISHED:
DRILLING METHOD:			TOTAL DEPTH:	SCREEN INTERVAL:
DRILLING EQUIPMENT:			DEPTH TO WATER: FIRST: / COMPL.:	CASING:
SAMPLING METHOD:			LOGGED BY:	
HAMMER WEIGHT:	DROP:		RESPONSIBLE PROFESSIONAL:	REG. NO.

Depth (fbgs)	SAMPLES: Sample No.	Sample	Blows (per 6")	SPT N-Value	Recovery	PID Scan (ppm)	SAMPLE DESCRIPTION USCS Classification: Color, Moisture Condition, % of Soil Type, Plasticity, Fabric, Bedding, Weathering/Fracturing, Odor; SURFACE ELEVATION (FMSL):	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS

SAMPLE

Project No:	TurnKey Environmental Restoration, LLC	Figure

TurnKey Environmental Restoration, LLC

FIELD OPERATING PROCEDURES

Soil Description Procedures Using The Visual-Manual Method

FOP 054.2

SOIL DESCRIPTION PROCEDURES USING THE VISUAL-MANUAL METHOD

PURPOSE

This guideline presents a means for insuring consistent and proper field identification and description of collected soils during a project (via, split-spoon (barrel) sampler, hand auger, test pit etc.). The lithology and moisture content of each soil sample will be physically characterized by visual-manual observation in accordance with ASTM Method D2488, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure). When precise classification of soils for engineering purposes is required, the procedures prescribed in ASTM Method D2487 (Standard Practice for Classification of Soils for Engineering Purposes [Unified Soil Classification System, USCS]) will be used. The method of soil characterization presented herein describes soil types based on grain size, liquid and plastic limits, and moisture content based on visual examination and manual tests. When using this FOP to classify soil, the detail of description provided for a particular material should be dictated by the complexity and objectives of the project. However, more often than not, "after the fact" field information is required later in the project, therefore, every attempt to describe the soil as completely as possibly should be made.

Intensely weathered or decomposed rock that is friable and can be reduced to gravel size or smaller by normal hand pressure should be classified as a soil. The soil classification would be followed by the parent rock name in parenthesis. Projects requiring depth to bedrock determinations should always classify weathered or decomposed bedrock as bedrock (i.e., landfill siting). The project manager should always be consulted prior to making this determination.

SOIL DESCRIPTION PROCEDURES USING THE VISUAL-MANUAL METHOD

PROCEDURE

Assemble necessary equipment and discuss program requirements with drilling contractor.

1. Calibrate air-monitoring equipment in accordance with the appropriate TurnKey's Field Operating Procedures or manufacturers recommendations for calibration of field meters.

2. Collect desired soil sample in accordance with appropriate TurnKey FOP (i.e., split-spoon sampling, hand augering, test pitting etc.).

3. Shave a thin layer off the entire length of the sample to expose fresh sample.

4. Photograph and scan the sample with a photoionization detector (PID) at this time, if applicable, in accordance with TurnKey's Screening of Soil Samples for Organic Vapors During Drilling Activities FOP.

5. Describe the sample using terminology presented in the Descriptive Terms section below.

6. Record all pertinent information in the Project Field Book and Field Borehole Log (sample attached) or Field Borehole/Monitoring Well Installation Log (sample attached).

7. After the sample has been described, place a representative portion of the sample in new, precleaned jars or self-sealing plastic bags for archival purposes (if required). Label the jar or bag with the sample identification number, sample interval, date, project number and store in a secure location.

8. If the soil is to be submitted to a laboratory for analysis, collect the soil sample with a dedicated stainless steel sampling tool, place the sample into the appropriate laboratory-supplied containers, and store in an ice-chilled cooler staged in a secure location in accordance with TurnKey's Sample Labeling, Storage and Shipment Procedures FOP.

9. All remaining soil from soil sample collection activities shall be containerized in accordance with TurnKey's Management of Investigative-Derived Waste (IDW) FOP and/or the Project Work Plan.

DESCRIPTIVE TERMS

All field soil samples will be described using the Unified Soil Classification System (USCS) presented in Figures 1 and 2 (attached). In addition to ASTM Method D2488, Method D1586, Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils (a.k.a., Standard Penetration Test, STP), when implemented, can also be used to classify the resistance of soils. In certain instances, it is desirable to supplement the USCS classification with a geologic interpretation of the soil sample that is supported by the soil descriptive terms presented in this section. The project manager should be consulted when making any geologic interpretation. Field test methods are provided to assist field personnel in classifying soil and are identified by a bold blue **FTM** and shaded. Classification of sampled soils will use the following ASTM descriptive terms and criteria:

- **Group Name** (USCS, see Figure 2)
- **Group Symbol** (USCS, see Figure 2) – only use if physical laboratory testing has been performed to substantiate. The USCS can be applied to most unconsolidated materials, and is represented by a two-letter symbol, except Peat (Pt).
  - The first letter includes: G (gravel), S (sand), M (silt), C (clay), and O (organic).
  - The second letter includes: P (poorly graded or uniform particle sizes), W (well graded or diversified particle sizes), H (high plasticity), and L (low plasticity).
  - Examples:
    - GW = well graded gravels and gravel-sand mixtures, little or no fines
    - GP = poorly graded gravels and gravel-sand mixtures, little or no fines
    - GM = silty gravels, gravel-sand-silt mixtures

- GC = clayey gravels, gravel-sand-clay mixtures
- SW = well graded sands and gravelly sands, little or no fines
- SP = poorly graded sands and gravelly sands, little or no fines
- SM = silty sand, sand-silt mixtures
- SC = clayey sand sand-clay mixtures
- ML = inorganic silts, very fine sands, rock flour, silty or clayey fine sands
- CL = inorganic clays of low to medium plasticity, gravelly/sandy/silty/lean clays
- OL = organic silts and organic silty clays of low plasticity
- MH = inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts (very rare)
- CH = inorganic clays of high plasticity, fat clays
- OH = organic clays of medium to high plasticity
- Pt = peat, muck, and other highly organic soils

- **Angularity** (ASTM D2488; Table 1)
  - Angular – particles have sharp edges and relatively planar sides with unpolished surfaces
  - Subangular – particles are similar to angular description but have rounded edges
  - Subrounded – particles have nearly planar sides but have well-rounded corners and edges
  - Rounded – particles have smoothly curved sides and no edges
- **Particle Shape** (ASTM D2488; Table 2)
  - Flat – particles with width/thickness > 3
  - Elongated – particles with length/width > 3
  - Flat and Elongated – particles meet criteria for both flat and elongated
- **Moisture Condition** (ASTM D2488; Table 3)
  - Dry – absence of moisture, dusty, dry to the touch
  - Moist – damp, but no visible water
  - Wet – visible free water, usually soil is below water table
- **Reaction with Hydrochloric Acid (HCL)** (ASTM D2488; Table 4)
  - None – no visible reaction

- Weak – some reaction, with bubbles forming slowly
- Strong – violent reaction, with bubbles forming immediately

- **Consistency of Cohesive Soils** (ASTM D2488; Table 5)
  - Very soft – squeezes between fingers when fist is closed; easily penetrated several inches by fist (SPT = 2 or less)
  - Soft – easily molded by fingers; easily penetrated several inches by thumb (SPT = 2 to 4)
  - Firm – molded by strong pressure of fingers; can be penetrated several inches by thumb with moderate effort (SPT = 4 to 8)
  - Stiff – dented by strong pressure of fingers; readily indented by thumb but can be penetrated only with great effort (SPT = 8 to 15)
  - Very stiff – readily indented by thumbnail (SPT = 15 to 30)
  - Hard – indented with difficultly by thumbnail (SPT >30)
- **Cementation** (ASTM D2488; Table 6)
  - Weak – crumbles or breaks with handling or slight finger pressure
  - Moderate – crumbles or breaks with considerable finger pressure
  - Strong – will not crumble or break with finger pressure
- **Structure (Fabric)** (ASTM D2488; Table 7)
  - Varved – alternating 1 mm to 12 mm (0.04 – 0.5 inch) layers of sand, silt and clay
  - Stratified – alternating layers of varying material or color with the layers less than 6 mm (0.23 inches) thick; note thickness
  - Laminated – alternating layers of varying material or color with the layers less than 6 mm (0.23 inches) thick; note thickness
  - Fissured – contains shears or separations along planes of weakness
  - Slickensided – shear planes appear polished or glossy, sometimes striated

- Blocky – cohesive soil that can be broken down into small angular lumps which resist further breakdown
- Lensed – inclusion of small pockets of different soils, such as small lenses of sand scattered through a mass of clay; note thickness
- Homogeneous or Massive – same color and appearance throughout

- **Inorganic Fine-Grained Soil Characteristics** (ASTM D2488; Table 12)

  Several field tests can be performed to determine the characteristics of fine-grained soils (material passing the No. 40 sieve), such as dry strength, dilatency, and toughness. These field testing methods are described below.

  - **Dry Strength** (ASTM D2488; Table 8)

    FTM (Dry Strength): Select enough material and moisten with water until it can be molded or shaped without sticking to your fingers (slightly below the sticky limit) into a ball about 1 inch in diameter. From this ball, form three balls about ½ inch in diameter and allow to dry in air, or sun, or by artificial means (temperature not to exceed 60° C (140° F). Soil containing natural dry lumps about ½ inch in diameter may be used in place of molded balls, however the dry strengths are usually lower. Test the strength by crushing the dry balls or lumps between your fingers using the descriptions below.

    - None – the dry specimen crumbles with the slightest pressure of handling
    - Low – the dry specimen crumbles with some finger pressure
    - Medium – the dry specimen breaks into pieces or crumbles with considerable finger pressure
    - High – the dry specimen cannot be broken with finger pressure. The specimen will break into pieces between the thumb and a hard surface.
    - Very High – the dry specimen cannot be broken between the thumb and a hard surface

  - **Dilatency** (ASTM D2488; Table 9)

    FTM (Dilatency): Place enough material in your hand to form a ball approximately ½ inch in diameter and moisten with water until it can be

molded or shaped without sticking to your fingers (slightly below the sticky limit). Smooth the ball in the palm of one hand with the blade of a knife or small spatula. Shake horizontally, striking the side of the hand vigorously against the other several times. Note the reaction of water appearing on the surface of the soil. The soil is said to have given a reaction to this test if, when it is shaken, water comes to the surface of the sample producing a smooth, shiny appearance. Squeeze the sample between the thumb and forefinger and note the reaction as follows:

- None – no visible change in the specimen
- Slow – water slowly appears on the surface of the specimen during shaking and does not disappear or disappears slowly upon squeezing
- Rapid – water quickly appears on the surface of the specimen during shaking and disappears upon squeezing

- **Toughness** (ASTM D2488; Table 10)

FTM (Toughness): Following the dilatency test above, shape the test specimen into an elongated pat and roll by hand on a smooth surface or between palms into a thread about 1/8 inch in diameter. Fold the sample threads and re-roll repeatedly until the thread crumbles at a diameter of about 1/8 inch (e.g., near the plastic limit). Note the pressure required to roll the thread near the plastic limit as well as the strength of the thread. After the thread crumbles, lump the pieces together and knead the lump until it crumbles. Describe the toughness as follows:

- Low – only slight pressure is required to roll the thread near the plastic limit. The thread and the lump are weak and very soft.
- Medium – medium pressure is required to roll the thread to near the plastic limit. The thread and the lump are soft.
- High – considerable pressure is required to roll the thread to near the plastic limit. The thread and the lump are firm.

Using the results of the dry strength, dilatency, and toughness test described above, classify the soil according to the following:

Soil Symbol	Dry Strength	Dilatency	Toughness
Silt (ML)	None to low	Slow to rapid	Low or thread cannot be formed
Lean clay (CL)	Medium to high	None to slow	Medium
Elastic Silt (MH)	Low to medium	None to slow	Low to medium
Fat Clay (CH)	High to very high	None	Low to medium high

- **Plasticity** (ASTM D2488; Table 11)

  Two field test methods can be used to determine plasticity of fine-grained soils (material passing the No. 40 sieve): the roll or thread test and the ribbon test. Each test is described below.

  FTM (Roll or Thread Test): As with the toughness test above, mix a representative portion of the soil sample with water until it can be molded or shaped without sticking to your fingers (slightly below the sticky limit). Place an elongated cylindrical sample on a nonabsorbent rolling surface (e.g., glass or was paper on a flat surface) and attempt to roll it into a thread approximately 1/8 inch in diameter. The results of this test are defined below (non-plastic to high plasticity).

  FTM (Ribbon Test): Form a roll from a handful of moist soil (slightly below the sticky limit) about ½ to ¾ inches in diameter and about 3 to 5 inches long. Place the material in the palm of your hand and, starting at one end, flatten the roll between your thumb and forefinger to form the longest and thinnest ribbon possible that can be supported by the cohesive properties of the material before breaking. If the soil sample holds together for a length of 6 to 10 inches without breaking, the material is considered to be both highly plastic and highly compressive (Fat Clay, CH). If the soil cannot be ribboned, it is non-plastic (Silt, ML or MH). If it can be ribboned only with difficulty into short lengths, it has low plasticity (Lean Clay, CL). Use the following terms to describe the plasticity of soil:

- Nonplastic (ML or MH) – a 3 mm (0.12 inches) thread cannot be rolled at any water content
- Low Plasticity (CL, ML, or MH) – the thread can barely be rolled, and crumbles easily
- Medium Plasticity (CL) – the thread is easy to roll and not much time is required to reach the plastic limit before crumbling
- High Plasticity (CH) – it takes considerable time rolling and kneading to reach the plastic limit; the thread can be rolled several times before crumbling

Note: A soil with as little as 20% clay will behave as a clayey soil. A soil needs 45% to over 60% medium to coarse sand to behave as a sandy soil. In a soil with 20% clay and 80% sand, the soil will behave as a clayey soil.

- **Relative Density of Cohesionless (Granular) Soils**
  - Very loose – easily penetrated 30 cm (1.2 inches) with 13 mm (0.5 inch) rebar pushed by hand (SPT = 0 to 4)
  - Loose – easily penetrated several cm with 13 mm (0.5 inch) rebar pushed by hand (SPT = 4 to 10)
  - Medium dense – easily to moderately penetrated with 13 mm (0.5 inch) rebar driven by 2.3 kg (6 pound) hammer (SPT = 10 to 30)
  - Dense – penetrated 0.3 m (1 foot) with difficulty using 13 mm (0.5 inch) rebar driven by 2.3 kg (6 pound) hammer (SPT = 30 to 50)
  - Very dense – penetrated only a few cm with 13 mm (0.5 inch) rebar driven by 2.3 kg (6 pound) hammer (SPT = >50)
- **Color** (use Munsel® Color System, as necessary)
- **Particle Size** (see Figure 3)
  - Boulder – larger than a basketball
  - Cobble – grapefruit, orange, volleyball
  - Coarse Gravel – tennis ball, grape

- Fine Gravel – pea
- Coarse Sand – rock salt
- Medium Sand – opening in window screen
- Fine Sand – sugar, table salt
- Fines (silt and clay) – cannot visually determine size (unaided)

- **Gradation**
  - Well Graded (GW, SW) – full range and even distribution of grain sizes present
  - Poorly-graded (GP, SP) – narrow range of grain sizes present
  - Uniformly-graded (GP, SP) – consists predominantly of one grain size
  - Gap-graded (GP-SP) – within the range of grain sizes present, one or more sizes are missing

- **Organic Material** – Organic soils usually have a dark brown to black color and may have an organic odor. Often, organic soils will change color, for example, black to brown, when exposed to the air. Some organic soils will lighten in color significantly when air-dried. Organic soils normally will not have a high toughness or plasticity. The thread of the toughness test will be spongy.
  - PEAT – 50 to 100 percent organics by volume, primary constituent
  - Organic (soil name) – 15 to 50 percent organics by volume, secondary organic constituent
  - (Soil name) with some organics – 5 to 15 percent organics by volume, additional organic constituents

- **Fill Materials** – All soils should be examined to see if they contain materials indicative of man-made fills. Man-made fill items should be listed in each of the soil descriptions. Common fill indicators include glass, brick, dimensioned lumber, concrete, pavement sections, asphalt, metal, plastics, plaster etc. Other items that could suggest fill include buried vegetation mats, tree limbs, stumps etc. The soil description for a fill material should be followed by the term "FILL", i.e., for a sandy silt with some brick fragments the description would be "SANDY

SILT (ML), with brick fragments (Fill)". The size and distribution of fill indicators should be noted. The limits (depth range) of fill material should be determined and identified at each exploration location.

- **Other Constituents/Characteristics**
  - Additional constituents and/or pertinent soil characteristics not included in the previous categories should be described depending on the scope and objectives of the project. Observations that may be discussed include:
    - Oxide staining
    - Odor
    - Origin
    - Presence of root cast
    - Presence of mica
    - Presence of gypsum
    - Presence of calcium carbonate
    - Percent by volume of cobbles & boulders with size description and appropriate rock classification
  - Other pertinent information from the exploratory program should be recorded, if it would be useful from a biddability/constructability perspective. The conditions that should be listed include caving or sloughing, difficulty in drilling and groundwater infiltration.

SOIL DESCRIPTIONS

Generally, soil descriptions collected during most investigations are not intended for civil engineering (construction) purposes, but rather for hydrogeologic and contaminant transport purposes. As such, the ASTM visual-manual assessments are somewhat limited in that they are only performed in order to indicate important information about potential hydraulic properties of a soil. Soil descriptions should be concise, stressing major constituents and

characteristics, and should be given in a consistent order and format. The following order is recommended:

- Soil name. The basic name of the predominant grain size and a single-word modifier indicating the major subordinate grain size (i.e., mostly clay with some silt). The feel test can be used to determine the texture of the soil by rubbing some moist soil between your fingers; sand feels gritty, silt feels smooth, and clays feel sticky. The terms representing percentages of grain size to be used include:
    - Trace – particles are present, but estimated to be less than 5%
    - Few – 5 to 10%
    - Little – 15 to 25%
    - Some – 30 to 45%
    - Mostly – 50 to 100%
- Color (using Munsell® charts, as necessary). Color is an important property in identifying organic soils, and within a given locality it may also be useful in identifying materials of similar geologic origin. It the sample contains layers or patches of varying colors (e.g., mottled), this shall be noted and all representative colors shall be described. The color shall be described for moist samples, however if the color represents a dry condition, it must be stated as such in the log. Generally, colors become darker as the moisture content increases and lighter as the soil dries. Examples include:
    - Some fine-grained soils (OL, OH) with dark drab shades of brown or gray, including almost black, contain organic colloidal matter.
    - In contrast, clean, bright looking shades of gray, olive green, brown, red, yellow, and white are associated with inorganic soils.
    - Gray-blue or gray- and yellow-mottled colors frequently result from poor drainage.
    - Red, yellow, and yellowish brown result from the presence of iron oxides.

  - White to pink may indicate considerable silica, calcium carbonate, or aluminum compounds.

- Field moisture condition as dry, moist, or wet;
- Gradation or Plasticity. Granular soils (i.e., sands or gravels) should be described as well-graded, poorly graded, uniform, or gap-graded, depending on the gradation of the minus 3-inch fraction. Cohesive soils (i.e., silts and clays) should be described as non-plastic, low, medium, or high, depending on the results of the manual evaluation for dry strength, dilatency, toughness, and plasticity discussed previously.
- Consistency/Density. An estimate of consistency of a cohesive soil or density of a granular soil, usually based on the SPT results (see Descriptive Terms section of this FOP);
- Soil Structure or Mineralogy. Description of discontinuities, inclusions, and structures, including joints, fissures, and slickensides.
- Odor. Describe the odor if organic or unusual. Soils containing a significant amount of organic material usually have a distinctive odor of decaying vegetation. This is especially apparent in fresh samples, but if the samples are dried, the odor may often be revived by heating a moistened sample. If the odor is unusual (petroleum, chemical, etc.), it should be noted in the log.
- Other important geologic information such as consolidation, gravel size and shape, visible internal structure, root holes, mica, odors, etc.

The first step when describing soil is to determine if the sample is predominantly fine-grained or coarse-grained (see Figures 3 and 4). Coarse-grained soils are relatively easy to identify, however descriptions of fine-grained soils can be more difficult, requiring additional field tests to assist the field geologist arrive at the proper soils classification (see **FTMs** under Descriptive Terms above). These tests are explained in detail in the ASTM Standard D2488 and briefly herein. Generally, the differentiation between silt and clay is based on plasticity and "texture". However, tests for dry strength and dilatency, along with plasticity,

can be very helpful and are recommended in the ASTM Standard. If additional tests are performed, in addition to plasticity, to classify the fines, record them with the soil description on the logs. Doing this will assist the reader (i.e., Project Manager) to follow the logic used to describe a soil (e.g., medium plasticity, low dry strength = elastic silt [MH]; not a lean clay [CL]).

Fines described in the classification should be modified by their plasticity (e.g., non-plastic fines, low plasticity fines, etc.) reserving the words "silt" and "clay" for the soil name.

In summary, adhering to the ASTM Standard and the guidelines outlined in this FOP will provide uniformity in soil descriptions provided by all field personnel. Prior to mobilization to the field, field staff should make sure to have laminated copies of the ASTM Standard flow charts and tables as well as this FOP (as necessary). Some examples of complete soil descriptions are as follows:

Coarse-grained Soil

POORLY GRADED FINE SAND w/ SILT: Dark grey, wet, mostly fine sand with some non-plastic fines, some iron-stained mottling, laminated, medium dense

Fine-grained Soil

LEAN CLAY: Dark reddish/brown, moist, mostly fines, medium plasticity, firm, no dilatency, medium dry strength, root holes.

Soil/Fill (option 1) – visual evidence of fill

FILL: Black, moist, mostly fines with some fine sand, slag, cinders, metal, brick, non-plastic, loose when disturbed, strong odor

Soil/Fill (option 2) – no visual evidence of fill, suspected reworked material

FILL (reworked): Black, moist, mostly fines with some fine sand and few coarse angular gravel, non-plastic, hard, loose when disturbed, mild odor

BORING AND MONITORING WELL INSTALLATION LOGS

Currently, TurnKey utilizes WinLoG software to construct subsurface logs and a template of the log is included in this FOP as an example. One of the most important functions of a boring/monitoring well installation log, besides transmitting the soil description, is to indicate where the "data" (soil samples) were collected, giving the reader an idea of how reliable or representative the description is. On each sample log, depths of attempted and recovered or non-recovered interval are shown. Odor, if noted, should be considered subjective and not necessarily indicative of specific compounds or concentrations.

Remember: all field logs should be NEAT, ACCURATE, and LEGIBLE. Don't forget that the well completion diagram completed for each well requires details of the surface completion (i.e., flush-mount, stick-up etc.). It is the responsibility of the field staff to double-check each log (i.e., soil names, classifications, well construction details etc.) prior to implementing into a final report. A registered professional (i.e., professional engineer, PE or professional geologist, PG) must review each log and will be ultimately responsible for its content and accuracy.

REQUIRED EQUIPMENT

- Knife
- Engineer's rule/measuring tape

- Permanent marker
- Pre-cleaned wide-mouth sample jars (typically provided by the driller)
- Pre-cleaned wide-mouth laboratory sample jars (provided by the laboratory)
- Stainless steel sampling equipment (i.e., spoons, spatulas, bowls etc.)
- 10x hand lens
- Hydrochloric acid
- ASTM D2488 flow charts (preferably laminated)
- ASTM D2488 test procedures (Tables 1 through 12) (preferably laminated)
- Camera (disposable, 35 mm or digital)
- Munsell soil color chart (as necessary)
- Project Field Book/field forms

ATTACHMENTS

Figure 1; Field Guide for Soil and Stratigraphic Analysis
Figure 2; USCS Soil Classification Flow Chart (modified from ASTM D2488)
Figure 3; Illustration of Particle Sizes
Figure 4; Grain-Size Scale (Modified Wentworth Scale)

Field Borehole Log (sample)

REFERENCES

American Society for Testing and Materials, 2008a. *ASTM D1586: Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils.*

American Society for Testing and Materials, 2010. *ASTM D2487: Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).*

American Society for Testing and Materials, 2009a. *ASTM D2488: Standard Practice for Description and Identification of Soils (Visual-Manual Procedure).*

State of California, Department of Transportation, Engineering Service Center, Office of Structural Foundations, August 1996. *Soil & Rock Logging Classification Manual (Field Guide), by Joseph C. de Larios.*

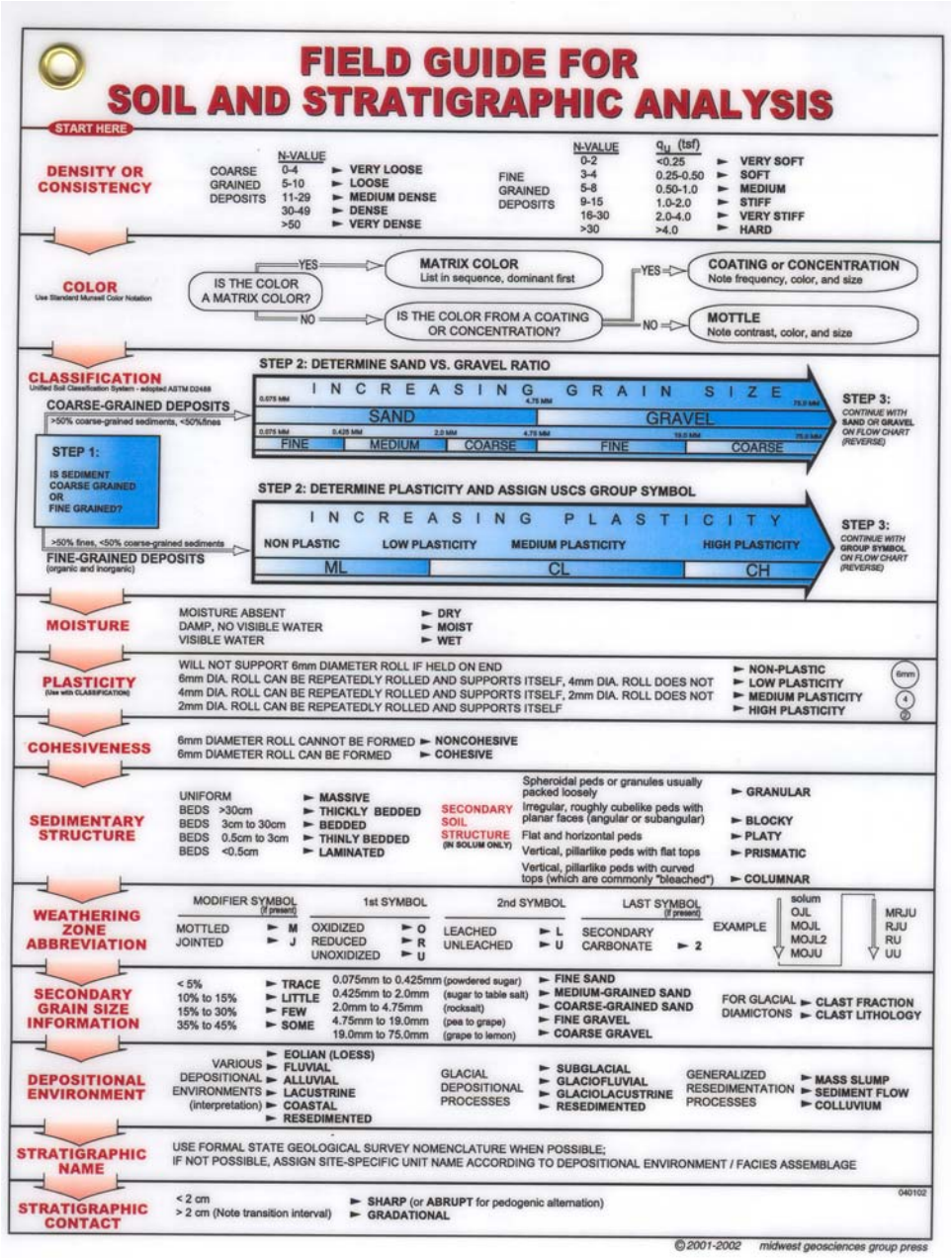
TurnKey FOPs:

010 Calibration and Maintenance of Portable Flame Ionization Detector
011 Calibration and Maintenance of Portable Photoionization Detector
015 Documentation Requirements for Drilling and Well Installation
025 Hand Augering Procedures
032 Management of Investigation-Derived Waste
046 Sample Labeling, Storage and Shipment Procedures
047 Screening of Soil Samples for Organic Vapors During Drilling Activities
058 Split-Spoon Sampling Procedures
065 Test Pit Excavation and Logging Procedures

SOIL DESCRIPTION PROCEDURES USING THE VISUAL-MANUAL METHOD

FIGURE 1

FIELD GUIDE FOR SOIL AND STRATIGRAPHIC ANALYSIS



SOIL DESCRIPTION PROCEDURES USING THE VISUAL-MANUAL METHOD

FIGURE 2

USCS SOIL CLASSIFICATION FLOW CHART (MODIFIED FROM ASTM D2488)

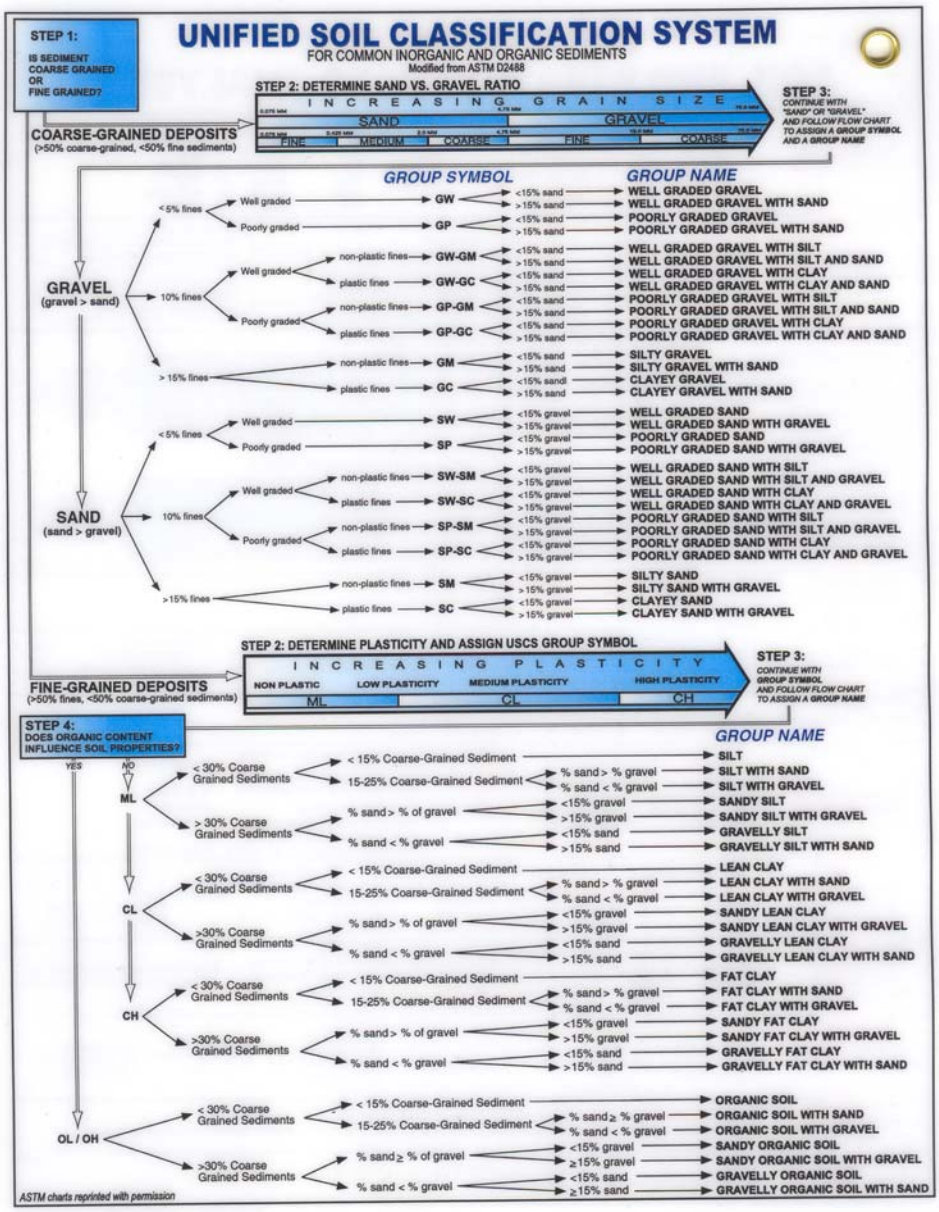


FIGURE 3

ILLUSTRATION OF PARTICLE SIZES

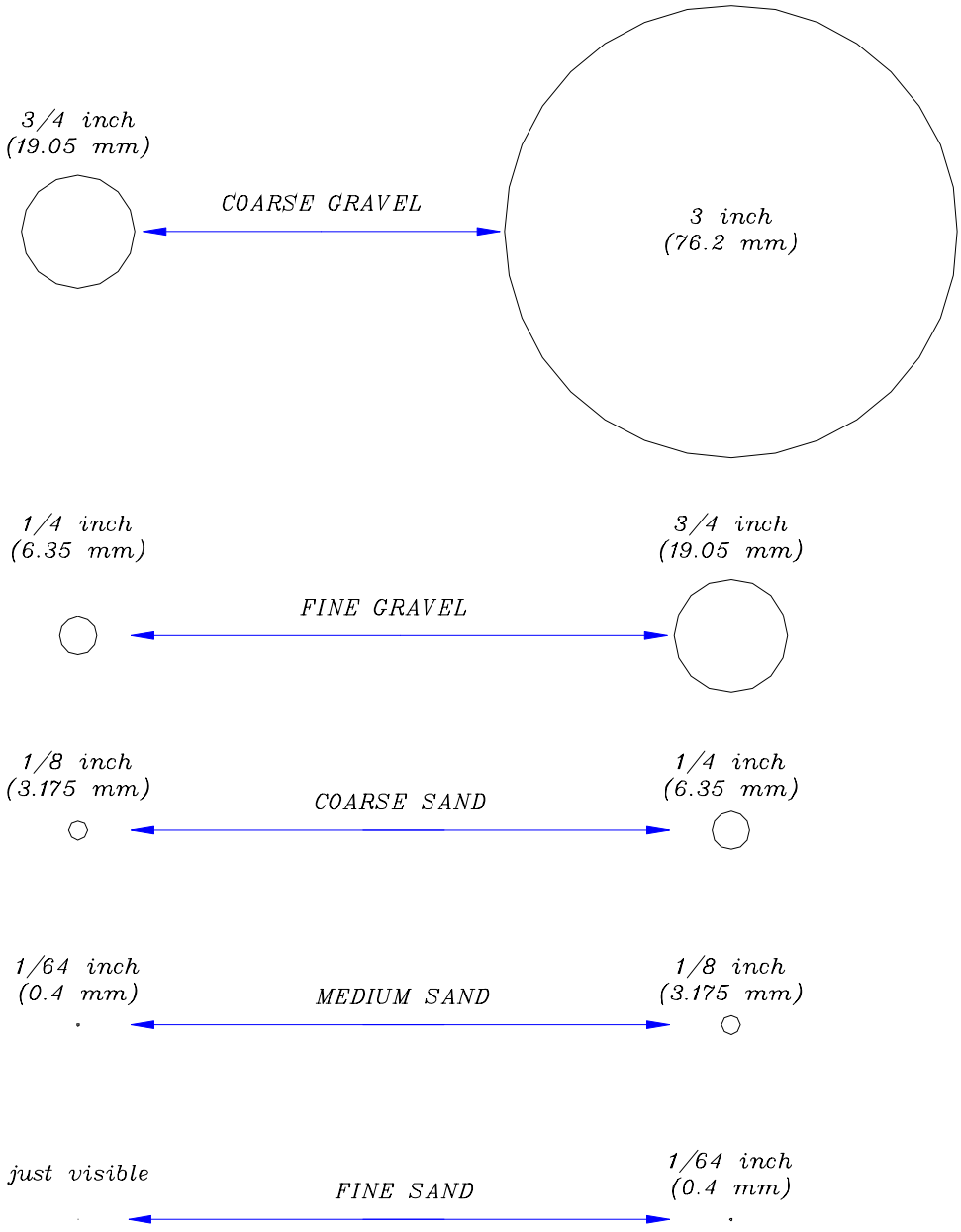


FIGURE 4

GRAIN-SIZE SCALE (MODIFIED WENTWORTH SCALE)

Grain size refers to the physical dimensions of particles of rock or other solid. This is different from the crystallite size, which is the size of a single crystal inside the solid (a grain can be made of several single crystals). Grain sizes can range from very small colloidal particles, through clay, silt, sand, and gravel, to boulders. Size ranges define limits of classes that are given names in the Wentworth scale used in the United States. The Krumbein *phi* (φ) scale, a modification of the Wentworth scale created by W. C. Krumbein, is a logarithmic scale computed by the equation: $\varphi = -\log_2(\text{grain size in mm})$.

φ scale	Size range (metric)	Size range (approx. inches)	Aggregate name (Wentworth Class)
< −8	> 256 mm	> 10.1 in	Boulder
−6 to −8	64–256 mm	2.5–10.1 in	Cobble
−5 to −6	32–64 mm	1.26–2.5 in	Very coarse gravel
−4 to −5	16–32 mm	0.63–1.26 in	Coarse gravel
−3 to −4	8–16 mm	0.31–0.63 in	Medium gravel
−2 to −3	4–8 mm	0.157–0.31 in	Fine gravel
−1 to −2	2–4 mm	0.079–0.157 in	Very fine gravel
0 to −1	1–2 mm	0.039–0.079 in	Very coarse sand
1 to 0	½–1 mm	0.020–0.039 in	Coarse sand
2 to 1	¼–½ mm	0.010–0.020 in	Medium sand
3 to 2	125–250 µm	0.0049–0.010 in	Fine sand
4 to 3	62.5–125 µm	0.0025–0.0049 in	Very fine sand
8 to 4	3.90625–62.5 µm	0.00015–0.0025 in	Silt
> 8	< 3.90625 µm	< 0.00015 in	Clay
<10	< 1 µm	< 0.000039 in	Colloid

In some schemes "gravel" is anything larger than sand (>2.0 mm), and includes "granule", "pebble", "cobble", and "boulder" in the above table. In this scheme, "pebble" covers the size range 4 to 64 mm (−2 to −6 φ).

FOP 054.2

SOIL DESCRIPTION PROCEDURES
USING THE VISUAL-MANUAL METHOD

Project No: **Borehole Number:**

Project:

Client: *Logged By:*

Site Location: *Checked By:*

TurnKey Environmental Restoration, LLC
726 Exchange Street, Suite 624
Buffalo, NY
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Elev. /Depth	Symbol	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm 0 25 50	Lab Sample	Well Completion Details or Remarks
0.0 / 0.0		Ground Surface							

SAMPLE

Drilled By: *Hole Size:*
Drill Rig Type: *Stick-up:*
Drill Method: *Datum:*

Drill Date(s): *Sheet: 1 of 1*

TurnKey Environmental Restoration, LLC

FIELD OPERATING PROCEDURES

Soil Sample Collection for VOC Analysis - EnCore Sampling

FOP 057.0

SOIL SAMPLE COLLECTION FOR VOC ANALYSIS – ENCORE SAMPLING

BACKGROUND AND PURPOSE

This procedure describes the methods for collecting soil samples for VOC analysis to ensure that the sample adequately represents the VOC concentrations in the soil in accordance with SW-846 Method 5035A (effective July 1, 2002). These compounds tend to volatilize from the soil after disturbance or introduction to the atmosphere. Therefore, care must be exercised to ensure that the sample collected is not altered during the collection and storage procedures. A variety of sampling options are allowed and Appendix A of Method 5035A provides details regarding the many options available for sample collection. The collection and preservation procedures are intended to prevent loss of VOCs during sample transport, handling and analysis.

Method 5035A is a method designed for volatile sample collection and analysis of soils and solid wastes for volatile organic compounds. This method is described in Update III to the Third Edition of SW-846, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, and is required for all analytical methods using purge and trap techniques (8021, 8015B, and 8260B). Alternative protocols may be used in some states (including New York), however this method is strongly recommended.

The volatile analysis is performed over two ranges:

	GC/MS (µg/kg)	GC (µg/kg)
Low Level	5 – 300	Not Available
High Level	>250	>20

The different levels require different sampling techniques. The low level method can only handle samples within a specific concentration range (these samples CANNOT be diluted), therefore a high level sample MUST be collected to ensure that all the target analytes can be quantified.

Naturally occurring carbonates in some soils may cause effervescence (foaming) on contact with the sodium bisulfate (NaHSO4) solution used as preservative for the low-level preparation. This interference makes it necessary for the laboratory to use the high-level prep or an alternative technique for low level. Check with the NYSDEC to discuss acceptable options.

Typically, analytical laboratories will support the following options for the two levels:

Option	No. of Containers	Sample Size (g)	Holding Time (days)
A – Low Level EnCore™ Samplers	3*	5	14**
B – High Level EnCore™ Sampler	1*	5	14**
C – High Level Methanol vial w/syringe	1	10	14

* Additional EnCore™ Samplers are required for MS/MSD.

** The sample MUST be extracted and preserved in sodium bisulfate or methanol within 48 hours of collection.

NOTE: The EnCore™ Sampler is disposable – it can only be used ONCE. It CANNOT be cleaned and/or reused. The samplers MUST be used in conjunction with an EnCore™ T-handle.

SOIL SAMPLE COLLECTION FOR VOC ANALYSIS – ENCORE SAMPLING

PROCEDURE

The preferred method for collecting and storing a soil sample for VOC analysis is using the EnCore™ method. This field procedure is described in this FOP.

1. The sampling team should reference the manufacturers' directions prior to sample collection (attached).

    a. Ensure that the EnCore™ Sampler is present at the sampling location before collecting the sample from the borehole or surface sample location. The necessary parts of the EnCore™ Sampler will consist of three disposable coring bodies, three disposable caps, and a reusable stainless steel T-handle.

    b. Retrieve the sampling tool from the borehole or sample location.

    c. Expose a surface of the soil sample. For Shelby tube samples, this would require the extrusion of the sample. For split spoon samples, this would require the spoon be disassembled and opened. If liners are being used in conjunction with a split spoon or solid barrel sampler, this would require the removal of the liners from the sampler, so that the soil at the liner's end is exposed.

    d. Following the manufacturer's directions for the use of the EnCore™ Sampler (attached), collect three aliquots of soil from the exposed soil surface, using the three coring bodies. After the collection of each aliquot, cap and label each aliquot. The manufacturer's direction for use of the EnCore™ Sampler are attached

2. If the use of the EnCore™ Sampler is not possible due to soil texture (e.g. gravels) the sample must be field preserved with acid and methanol in accordance with SW-846 Method 5035A.

3. If the soil material is too coarse for sampling with the EnCore™ Sampler and contains excessive calcium carbonate material that reacts with the acid preservative, the sample will be retained in the brass or stainless steel liner of the split-spoon sampler or similar device. The ends of these liners will be covered with Teflon™ rounds, capped and sealed with tape.

4. Record all information associated with sample collection in the Project Field Book.

5. The samples will be labeled, stored and shipped in accordance with the TurnKey's Field Operating Procedure for Sample Labeling, Storage and Shipment Procedures.

ATTACHMENTS

EnCore™ Sampling Procedure (manufacturers instructions)

REFERENCES

TurnKey FOPs:
046 Sample Labeling, Storage and Shipment Procedures

ATTACHMENT

EnCore™ Sampling Procedure (manufacturers instructions)

Disposable En Core® Sampler

Sampling Procedures

Using The En Core® T-Handle

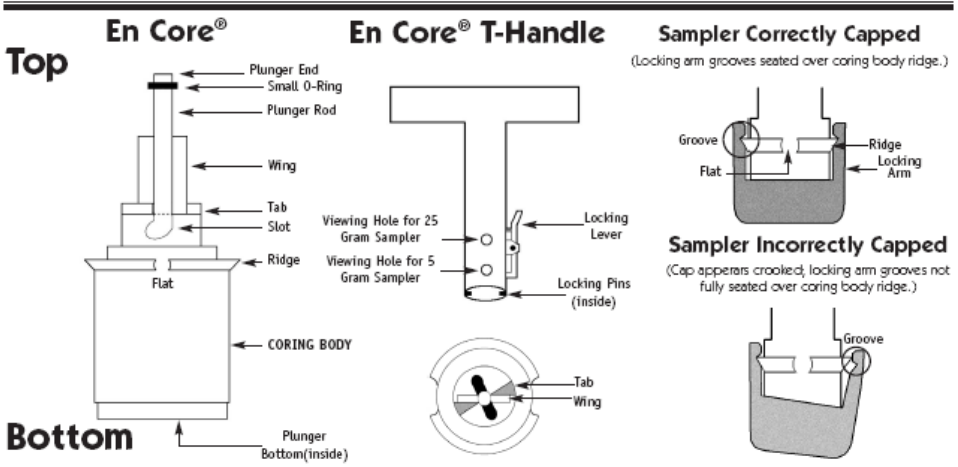
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Green Bay, WI 54302
Phone: 920-465-3960 • Fax: 920-465-3963
Toll Free: 888-411-0757
www.ennovativetech.com

NOTE:

1. En Core® Sampler is a SINGLE USE device. It cannot be cleaned and/or reused.

2. En Core® Sampler is designed to store soil. Do not use En Core Sampler to store solvent or free product!

3. En Core® Sampler must be used with En Core® T-Handle and/or En Core® Extrusion Tool exclusively. (These items are sold separately.)



BEFORE TAKING SAMPLE:

1. Hold **coring body** and push **plunger rod** down until **small o-ring** rests against **tabs**. This will assure that plunger moves freely.

2. Depress **locking lever** on En Core T-Handle. Place coring body, **plunger end first**, into open end of T-Handle, *aligning the (2) **slots** on the coring body with the (2) **locking pins** in the T-Handle*. Twist coring body clockwise to lock pins in slots. Check to ensure Sampler is locked in place. Sampler is ready for use.

TAKING SAMPLE:

3. Turn T-Handle with T-up and coring body down. This positions plunger bottom flush with bottom of coring body (ensure that plunger bottom is in position). Using T-Handle, push Sampler into soil until coring body is completely full. When full, small o-ring will be centered in T-Handle **viewing hole**. Remove Sampler from soil. Wipe excess soil from coring body exterior.

4. Cap coring body while it is still on T-handle. *Push* **cap** over **flat** area of **ridge** *and twist* to lock **cap** in place. **CAP MUST BE SEATED TO SEAL SAMPLER (see diagram).**

PREPARING SAMPLER FOR SHIPMENT:

5. Remove the capped Sampler by depressing locking lever on T-Handle while twisting and pulling Sampler from T-Handle.

6. Lock plunger by rotating extended plunger rod fully counter-clockwise until **wings** rest firmly against tabs (see plunger diagram).

7. Attach completed tear-off label (from En Core Sampler bag) to cap on coring body.

8. Return full En Core Sampler to zipper bag. Seal bag and put on ice.

Disposable En Core® Sampler

EXTRUSION PROCEDURES

USING THE En Core® EXTRUSION TOOL

CAUTION! Always use the Extrusion Tool to extrude soil from the En Core Sampler. If the Extrusion Tool is not used, the Sampler may fragment, causing injury.

1. Use a pliers to break locking arms on cap of En Core Sampler. Do not remove cap at this time. **(CAUTION: Broken edges will be sharp.)**

2. To attach En Core Sampler to En Core Extrusion Tool: Depress locking lever on Extrusion Tool and place Sampler, plunger end first, into open end of Extrusion Tool, aligning slots on coring body with pins in Extrusion Tool. Turn coring body clockwise until it locks into place. Release locking lever.

3. Rotate and gently push Extrusion Tool plunger knob clockwise until plunger slides over wings of coring body. (When properly positioned plunger will not rotate further.)

4. Hold Extrusion Tool with capped Sampler pointed upward so soil does not fall out when cap is removed. To release soil core, remove cap from Sampler and push down on plunger knob of En Core Extrusion Tool. Remove and properly dispose of En Core Sampler.

Warranty and Disclaimers

IMPORTANT: FAILURE TO USE THE EN CORE® SAMPLER IN COMPLIANCE WITH THE WRITTEN INSTRUCTIONS PROVIDED HEREIN VOIDS ALL EXPRESS AND IMPLIED WARRANTIES, INCLUDING WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

PRINCIPLE OF USE. The En Core Sampler Cartridge System is a volumetric sampling system designed to collect, store and deliver a soil sample. The En Core Sampler comes in two sizes for sample volumes of approximately 25 or 5 grams. There are four components: the cartridge with a movable plunger; a cap with two locking arms; a T-handle (purchased separately); and an extrusion handle (purchased separately). NOTE: The En Core Sampler is designed to store soil. It is not designed to store solvent or free product.

The soil is stored in a sealed headspace-free state. The seals are achieved by three special Viton® * o-rings, two located on the plunger and one on the cap of the Sampler. At no time and under no condition should these o-rings be removed or disturbed.

QUALITY CONTROL. The cartridge is sealed in an airtight package to prevent contamination prior to use. Due to the stringent quality control requirements associated with the use of this system, the disposable cartridge is designed to be used only once.

WARRANTY. En Novative Technologies, Inc. ("En Novative Technologies") warrants that the En Core Sampler shall perform consistent with the research conducted under En Novative Technologies' approval, within thirty (30) days from the date of delivery, provided that the Customer gives En Novative Technologies prompt notice of any defect or failure to perform and satisfactory proof thereof. THIS WARRANTY DOES NOT APPLY TO THE FOLLOWING, AS SOLELY DETERMINED BY EN NOVATIVE TECHNOLOGIES: (a) Damage caused by accident, abuse, mishandling or dropping; (b)Samplers that have been opened, taken apart or mishandled; (c)Samplers not used in accordance with the directions; and (d)Damages exceeding the cost of the sampler. Seller warrants that all En Core Samplers shall be free from defects in title. THE FOREGOING WARRANTIES ARE IN LIEU OF ALL OTHER WARRANTIES, WHETHER ORAL, WRITTEN, EXPRESSED, IMPLIED OR STATUTORY, INCLUDING ANY INFORMATION PROVIDED BY SALES REPRESENTATIVES OR IN MARKETING LITERATURE. IMPLIED WARRANTIES OF FITNESS AND MERCHANTABILITY SHALL NOT APPLY. En Novative Technologies' warranty obligations and Customer's remedies, except as to title, are solely and exclusively as stated herein.

LIMITATION OF LIABILITY. IN NO EVENT SHALL EN NOVATIVE TECHNOLOGIES BE LIABLE FOR ANTICIPATED PROFITS, INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES, INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF REVENUE, DOWN TIME, REMEDIATION ACTIVITIES, REMOBILIZATION OR RESAMPLING, COST OF CAPITAL, SERVICE INTERRUPTION OR FAILURE OF SUPPLY, LIABILITY OF CUSTOMER TO A THIRD PARTY, OR FOR LABOR, OVERHEAD, TRANSPORTATION, SUBSTITUTE SUPPLY SOURCES OR ANY OTHER EXPENSE, DAMAGE OR LOSS, INCLUDING PERSONAL INJURY OR PROPERTY DAMAGE. En Novative Technologies' liability on any claim of any kind shall be replacement of the En Core Sampler or refund of the purchase price. En Novative Technologies shall not be liable for penalties of any description whatsoever. In the event the En Core Sampler will be utilized by Customer on behalf of a third party, such third party shall not occupy the position of a third-party beneficiary of the obligation or warranty provided by En Novative Technologies, and no such third party shall have the right to enforce same. All claims must be brought within one (1) year of shipment, regardless of their nature.

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The En Core™ Sampler is covered by One or More of the Following U.S. Patents: 5,343,771; 5,505,098; 5,517,868; 5,522,271. Other U.S. and Foreign Patents Pending.

* Viton® is a registered trademark of DuPont Dow Elastomers.

TurnKey Environmental Restoration, LLC

FIELD OPERATING PROCEDURES

Split-Spoon Sampling Procedures

FOP 058.0

SPLIT-SPOON SAMPLING PROCEDURES

PURPOSE

This guideline presents the methods for using a split-spoon sampler (see Figure 1) for collecting soil samples from a boring and for estimating the relative in-situ compressive strength of subsurface materials (ASTM D 1586). Representative samples for lithologic description, geochemical analysis, and geotechnical testing will be collected from the subsurface materials using the split-spoon sampler.

PROCEDURE

1. Place plastic sheeting on a sturdy surface to prevent the split-spoon and its contents from coming in contact with the surface (several layers of sheeting may be placed on the surface so that they may be removed between each sample or as needed).

2. Lower the sampling string to the base of the borehole. Measure the portion of the sampling string that extends above surrounding grade (i.e. the stickup). The depth of sampling will equal the total length of the string (sampler plus rods) minus the stickup length.

3. Measure sampling depths to an accuracy of 0.1 feet. If field measurements indicate the presence of more than 0.3 feet of disturbed materials in the base of the borehole (i.e. slough), the sampler will be used to remove this material, after which a second sampling trip will be made.

4. Select additional sampler components as required (i.e., leaf spring core retainer for clays or a sand trap for non-cohesive sands). If a retainer or trap is not used, a spacer ring will be used to hold the liners in position inside the sampler.

5. For driving samples, attach the drive head sub and hammer to the drill rods without the weight resting on the rods. For pushing samples using the rig hydraulics, skip to Step 9.

6. Mark four 6-inch intervals on the drill rods relative to a reference point on the drill rig. With the sampler resting on the bottom of the hole, drive the sampler with the 140 lb. hammer falling freely over a 30-inch fall until 24 inches have been penetrated or 50 blows applied.

7. Record the number of blows per 6 inches. Determine the "N" value by adding the blows for the 6 to 12-inch and 12 to 18-inch intervals of each sample drive.

8. After penetration is complete, remove the sampling string. Avoid removing sampling string by hitting up on the string with the hammer as this can cause the sample to fall from the bottom of the split-spoon sampler. The sampling string should be removed via cable lifting or rig hydraulics. If sample retention has been poor, let the sampling string rest in place for at least 3 minutes, then rotate clockwise at least 3 times before removing from the borehole.

9. For pushed samples (i.e., using rig hydraulics), mark four 6-inch intervals on the drill rods relative to a reference point on the rig. Use the rig pull-down to press the sampler downward until 24 inches have been penetrated or no further progress can be made with the full weight of the rig on the sampler.

10. Remove the split-spoon sampler from the sampling string and place on the plastic-covered surface.

11. Open the split-spoon sampler only when the TurnKey field geologist is prepared to describe and manage the sample.

12. Describe the sample in accordance with the Unified Soil Classification System in accordance with the TurnKey's FOP: Soil Description Procedures Using the Unified Soil Classification System (USCS).

13. Record all information in accordance with TurnKey's FOP: Documentation Requirements for Drilling and Well Installation.

14. Collect a portion of the sample for field screening as described in the TurnKey's FOP: Screening of Soil Samples for Organic Vapors During Drilling Activities.

15. If applicable, collect soil samples for volatile organic constituents (VOCs). If applicable, collect sample for semi-volatile, metals, geotechnical, or other off-site analysis.

16. The samples will be labeled, stored and shipped in accordance with the TurnKey's FOP: Sample Labeling, Storage and Shipment Procedures.

ATTACHMENTS

Figure 1; Split Spoon Sampler Schematic

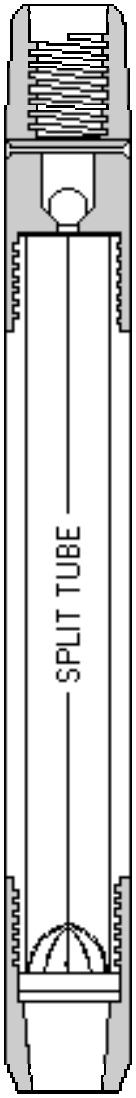
REFERENCES

TurnKey FOPs:

015 Documentation Requirements for Drilling and Well Installation
046 Sample Labeling, Storage and Shipment Procedures
047 Screening of Soil Samples for Organic Vapors During Drilling Activities
054 Soil Description Procedures Using the Unified Soil Classification System (USCS)

FIGURE 1

SPLIT SPOON SAMPLER SCHEMATIC



TurnKey Environmental Restoration, LLC

FIELD OPERATING PROCEDURES

Surface and Subsurface Soil Sampling Procedures

FOP 063.2

SURFACE AND SUBSURFACE SOIL SAMPLING PROCEDURES

PURPOSE

This procedure describes the methods for sampling surface soil and subsurface soil samples for physical and chemical laboratory analysis during intrusive activities such as test pitting, hand augering, drilling, surface soil sampling etc. Typical health and safety related issues should be addressed in the Project Health and Safety Plan.

PRE-SAMPLING PROCEDURES

1. Review project objectives and the Project Health and Safety Plan (HASP).

2. Conduct tailgate health and safety meeting with project team and/or subcontractor(s) by completing the Tailgate Safety Meeting Form (sample attached).

3. Calibrate air-monitoring equipment in accordance with the appropriate TurnKey's Field Operating Procedures or manufacturers recommendations for calibration of field meters.

4. Commence intrusive activities in accordance with specific TurnKey's FOPs (test pitting, hand augering, drilling etc.) or as directed by the Project Work Plan.

5. Conduct air monitoring as required by the HASP, Project Work Plan or TurnKey's FOP Real-Time Air Monitoring During Intrusive Activities. Record all results on the Real Time Air Monitoring Log (sample attached).

6. Decontaminate all non-dedicated stainless steel (or Pyrex glass) equipment in accordance with TurnKey's Non-disposable and Non-dedicated Sampling Equipment Decontamination procedures.

7. Collect soil samples in accordance with the following sections.

SURFACE AND SUBSURFACE SOIL SAMPLING PROCEDURES

SURFACE SOIL/FILL SAMPLING PROCEDURES

Collection of surface soil/fill samples facilitates the evaluation of potential health risks to current site receptors that may be exposed to soil/fill via direct contact, incidental ingestion, or inhalation of airborne particulates. The following procedure is in accordance with NYSDEC sampling protocol of surface soil/fill material.

1. Collect all soil samples using dedicated (or decontaminated non-dedicated) sampling tools (i.e., spoons, trowels, bowls etc.), preferably constructed of stainless steel.

2. If the sample area is vegetated, then collect the surface soil sample from 0 to 2 inches below ground surface (bgs) following removal of the sod.

3. If there is no soil present within the sample area (i.e., only slag, concrete, mixed with fines), excavate an area 12 inches by 12 inches by 6 inches deep, screen the material to less than 1/8 inch (No. 4 sieve), and submit the screened material for analysis. If there is not enough material to completely fill the sample jar, then expand the excavation 3 inches in all four directions screening the additional material. Expand the excavation in this manner until sufficient sample volume is obtained. Volatile organic analysis of surface soil/fill utilizing this method will yield negatively biased results and should not be performed.

SURFACE/SUBSURFACE SOIL SAMPLING PROCEDURES

1. Collect all soil samples using dedicated (or decontaminated non-dedicated) sampling tools (i.e., spoons, trowels, bowls etc.), preferably constructed of stainless steel.

   Surface soil samples are typically collected from 0 to 6 inches below ground surface (bgs). Subsurface soils are typically sampled from varying depths greater than 6-inches bgs based on field observations and as directed by the Project Work Plan.

2. Transfer samples for chemical (VOC, SVOC, Metals etc.) and physical (i.e., Atterberg Limits, Grain Size, Permeability etc.) analytical testing by direct grab (i.e., directly from the bucket of the excavation equipment, split-spoon sampler, hand auger etc.) using the dedicated (or decontaminated non-dedicated) sampling tools into appropriate laboratory-supplied containers and seal. The chemical or physical laboratory selected to perform the analysis should determine minimum sample volume for analysis.

3. Prepare collected samples in accordance with TurnKey's FOP: Sample Labeling, Storage and Shipment Procedures. Do not allow the chemical soil samples to freeze during storage and shipping. It should be noted, ice is not required for physical soil samples and all physical soil samples should be kept at the collected soil moisture by securing with a tight sealing lid. Do not allow physical soil samples to gain or lose moisture from the collected soil moisture prior to analysis.

4. Record all sampling details (i.e., depth and location) in the Project Field Book; appropriate TurnKey log sheets depending on method of intrusion (i.e., drilling, test pitting, hand augering etc.); and on the Soil/Sediment Sample Collection Summary Log (sample attached).

PARAMETER-SPECIFIC PROCEDURES

1. Volatile Organic Compound (VOCs): Transfer sufficient soil volume to fill the laboratory-supplied container (typically 4 ounces) by packing the soil sample with the sampling tool to the top of the container leaving no headspace. At no time should a gloved hand (i.e., latex, nitrile etc.) be used to pack the sample into the sample container as the sample may be compromised via cross-contamination.

2. All Other Parameters: All other parameters include, but are not limited to, Semi-VOCs (SVOCs), polychlorinated biphenyls (PCBs), herbicides, pesticides, total metals etc. Transfer sufficient soil volume to fill the laboratory-supplied container by packing the soil sample with the sampling

tool to the top of the container. Unless otherwise indicated by the laboratory or the Project Work Plan, the sample jar for all other parameters does not have to be packed completely leaving no headspace as with the VOC containers.

ATTACHMENTS

Tailgate Safety Meeting Form (sample)
Soil/Sediment Sample Collection Summary Log (sample)
Real Time Air Monitoring Log (sample)

REFERENCES

TurnKey FOPs:

006 *Calibration and Maintenance of Combustible Gas/Oxygen Meter*
010 *Calibration and Maintenance of Portable Flame Ionization Detector*
011 *Calibration and Maintenance of Portable Photoionization Detector*
040 *Non-disposable and Non-dedicated Sampling Equipment Decontamination*
046 *Sample Labeling, Storage and Shipment Procedures*
073 *Real-Time Air Monitoring During Intrusive Activities*

TAILGATE SAFETY MEETING FORM

Project Name: Date: Time:
Project Number: Client:
Work Activities:

HOSPITAL INFORMATION:

Name:
Address: *City:* *State:* *Zip:*
Phone No.: *Ambulance Phone No.*

SAFETY TOPICS PRESENTED:

Chemical Hazards:

Physical Hazards: Slips, Trips, Falls

PERSONAL PROTECTIVE EQUIPMENT:

Activity:	*PPE Level:*	A	B	C	D
Activity:	*PPE Level:*	A	B	C	D
Activity:	*PPE Level:*	A	B	C	D
Activity:	*PPE Level:*	A	B	C	D
Activity:	*PPE Level:*	A	B	C	D

New Equipment:

Other Safety Topic (s): Environmental Hazards (aggressive fauna)
Eating, drinking, use of tobacco products is prohibited in the Exclusion Zone (EZ)

ATTENDEES

Name Printed	Signatures

Meeting conducted by:

SAMPLE

SOIL/SEDIMENT
SAMPLE COLLECTION SUMMARY LOG

Field ID	Location	QC Type	Depth (feet)		Analytical Parameters	Containers	Date	Time	Sampler Initials	Comments (e.g. problems encountered, ref. to variance, location changes, depth changes, important matrix observations or description, gravel thickness, etc.)
			from	to						

Equipment Rinsate Blanks *- Pour clean deionized water over or through decontaminated sampling equipment into sample containers. Collect at a frequency of 1 per sampling method per day. Analyze for all those parameters analyzed for in the samples collected the same day. HSL Metals can be substituted by only the Metals analyzed for that day (except Hexavalent Chromium which needs its separate container). Match equipment used for constituents of concern to rinsate analyte. Note deionzied water lot # or distilled water can be substit info & date.*

MS/MSD/MSB *- Collect at a frequency of 1 per 20 samples of each matrix per day. Analyze for all those parameters analyzed for in the samples collected the same day.*

Field Blank *- Pour clean deionized water (used as final decon rinse water) into sample containers while at the sampling site. Collect field blanks at a frequency of 1 per lot of deionized water. Note water lot number and dates in use for decon in 'Comments' section.*

Investigation Derived Waste (IDW) Characterization samples *- One composited sample from all drums of decon fluids and soil. Please note number of drums and labels on collection log.*

Notes:

1. See QAPP for sampling frequency and actual number of QC samples.
2. CWM - clear, wide-mouth glass jar with Teflon-lined cap.
3. HDPE - high density polyethylene bottle.
4. MS/MSD/MSB - Matrix Spike, Matrix Spike Duplicate, Matrix Spike Blank.
5. BD - Blind Duplicate - indicate location of duplicate.

SAMPLE

SURFACE AND SUBSURFACE SOIL SAMPLING PROCEDURES

REAL TIME AII

Date:	
Project Name:	
Project Number:	
Project Location:	
Client:	
Purpose of Air Monitoring:	

WEATHER CONDITIONS:

Time of Day:	A.M.
Ambient Air Temp.:	
Wind Direction:	
Wind Speed:	
Precipitation:	

Date	Personnel	Time	Air Monitoring Meter Measurement (Units)							Location
			PID (ppm)	LEL (%)	H2S (ppm)	O2 (%)	CO (ppm)	Particulates (mg/m^3)	Other	

SAMPLE

NOTE: SEE EQUIPMENT CALIBRATION LOG FOR DESCRIPTION OF EQUIPMENT TYPE.

Prepared By:

TurnKey Environmental Restoration, LLC

Field Operating Procedures

Test Pit Excavation and Logging Procedures

FOP 065.1

TEST PIT EXCAVATION & LOGGING PROCEDURES

PURPOSE

This procedure describes the methods for completing test pits, trenches, and other excavations that may be performed to expose subsurface soils or materials. In most cases, these pits will be mechanically excavated, using a backhoe, trackhoe, or other equipment. Because pits and other excavations can represent a substantial physical hazard, it requires a particular focus on safety procedures. The Project Health and Safety Plan identifies practices related to excavation permits, entry, and control that must be incorporated into excavation activities.

EXCAVATION PROCEDURE

1. Review project objectives and the Project Health and Safety Plan (HASP).

2. Perform excavation equipment safety checks with the operator. Specific concerns should include, but not limited to, no leaking hydraulic lines, fire extinguisher on board of the excavation equipment, operator experience etc.

3. Conduct tailgate health and safety meeting with project team and excavation operator(s) by completing the Tailgate Safety Meeting Form (sample attached).

4. Calibrate air-monitoring equipment in accordance with the appropriate TurnKey's Field Operating Procedures or manufacturers recommendations for calibration of field meters.

5. Conduct air monitoring as required by the HASP and/or Project Work Plan. Record all results on the Real Time Air Monitoring Log (sample attached).

6. Mobilize the excavation equipment to the site and position over the required location.

7. Select excavation locations, which provide necessary information for achieving objectives. Check locations with owner/operator to ensure excavation

operations will not interfere with site operations, and select appropriate access routes.

8. Stake locations in the field and measure distance from locations to nearest landmarks. Survey location, if required.

9. Obtain clearances from appropriate utilities and, if buried waste/metallic objects are suspected, screen location with appropriate geophysical methods, as necessary.

10. Decontaminate excavation equipment in accordance with TurnKey's Drilling and Excavation Equipment Decontamination procedures.

11. Excavate pits. In uncontrolled areas, excavate only as many test pits as can be backfilled during the same day. Generally, allow equal time for excavation and backfilling. To the extent practicable, no pits should be left open overnight in an uncontrolled area. If sudden weather changes or other unforeseen events necessitate this, pits will be covered and/or barricaded and flagged with caution/hazard tape. These pits should be backfilled as soon as possible.

12. The TurnKey field geologist or experienced professional should determine the depth of excavation. The depth is generally limited by the safe reach of the selected equipment, but may also be limited by the stability of the excavated materials (i.e. wall stability).

13. Excavate the test pits in compliance with applicable safety regulations. In no case should a pit deeper than 4 feet be entered without first stabilizing the sidewalls by using forms, or by terracing or sloping (2:1 slope maximum) the sidewalls.

14. Excavated spoils must be placed no closer than 2 feet from the open excavation.

15. Collect soil samples from pit sidewalls in accordance with TurnKey's Surface and Subsurface Soil Sampling Procedures. If the test pit is greater than 4 feet in depth, it will not be entered for sampling. In this event, collect samples

using the backhoe bucket, then fill sample containers from the center of the bucket using the stainless steel sampling equipment (i.e., spoon, spade, trowel etc.) or drive a Shelby tube or EnCore™ sampler for VOCs.

16. Record excavation observations in the Project Field Book or Test Pit Excavation Log form (sample attached). Information recorded should include:

    - Physical dimension of the pit;
    - A scaled sketch of one side of the pit showing any lithologic contacts, zones of groundwater seepage, other special features (jointing, boulders, cobbles, zones of contamination, color abnormalities, etc.)
    - General information such as project number, pit designation number, depth, date, name of responsible professional (i.e., geologist), type of excavating equipment utilized, time of excavation and backfilling, method of collecting samples and amount of sample collected (if applicable);
    - Rate of groundwater inflow, depth to groundwater and time of measurement; and
    - Unified Soil Classification System (USCS) designation of each distinctive unit.

17. Photograph each excavation, highlighting unique or important features. Use a ruler or other suitable item for scale. Include a label with the pit designation so the developed picture will be labeled.

18. Backfill pit to match the existing grade compacting in 2 to 3 foot lifts. Since the excavated material should be cover soil, the excess soil will be placed back into the hole. The TurnKey Field Team Leader will provide direction on whether excavated soils may be used as fill, or these materials are to be containerized as investigation derived waste.

ATTACHMENTS

Tailgate Safety Meeting Form (sample)
Real Time Air Monitoring Log (sample)
Test Pit Excavation Log (sample)

REFERENCES

TurnKey FOPs:

006 *Calibration and Maintenance of Combustible Gas/Oxygen Meter*
010 *Calibration and Maintenance of Portable Flame Ionization Detector*
011 *Calibration and Maintenance of Portable Photoionization Detector*
018 *Drilling and Excavation Equipment Decontamination*
063 *Surface and Subsurface Soil Sampling Procedures*

TAILGATE SAFETY MEETING FORM

Project Name: Date: Time:

Project Number: Client:

Work Activities:

HOSPITAL INFORMATION:

Name:

Address: *City:* *State:* *Zip:*

Phone No.: *Ambulance Phone No.*

SAFETY TOPICS PRESENTED:

Chemical Hazards:

Physical Hazards: Slips, Trips, Falls

PERSONAL PROTECTIVE EQUIPMENT:

Activity:	*PPE Level:*	A	B	C	D
Activity:	*PPE Level:*	A	B	C	D
Activity:	*PPE Level:*	A	B	C	D
Activity:	*PPE Level:*	A	B	C	D
Activity:	*PPE Level:*	A	B	C	D

New Equipment:

Other Safety Topic (s): Environmental Hazards (aggressive fauna)

Eating, drinking, use of tobacco products is prohibited in the Exclusion Zone (EZ)

ATTENDEES

Name Printed	Signatures

Meeting conducted by:

SAMPLE

TEST PIT EXCAVATION & LOGGING PROCEDURES

REAL TIME AII

Date:	
Project Name:	
Project Number:	
Project Location:	
Client:	
Purpose of Air Monitoring:	

WEATHER CONDITIONS:

Time of Day:	A.M.
Ambient Air Temp.:	
Wind Direction:	
Wind Speed:	
Precipitation:	

Date	Personnel	Time	Air Monitoring Meter Measurement (Units)							Location
			PID (ppm)	LEL (%)	H2S (ppm)	O2 (%)	CO (ppm)	Particulates (mg/m^3)	Other	

SAMPLE

NOTE: SEE EQUIPMENT CALIBRATION LOG FOR DESCRIPTION OF EQUIPMENT TYPE.

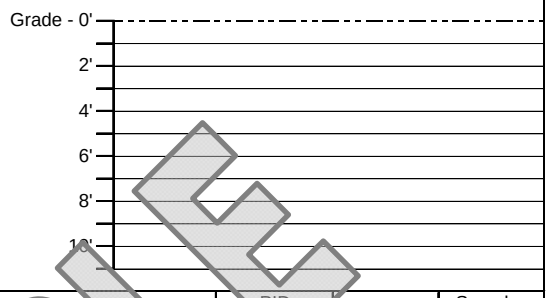
Prepared By:

TEST PIT EXCAVATION LOG

Project:	TEST PIT I.D.:
Project No.:	Excavation Date:
Client:	Excavation Method:
Location:	Logged / Checked By:

Test Pit Location: *NOT TO SCALE*

Test Pit Cross Section:



TIME		
Start:	Length:	(approx.)
End:	Width:	(approx.)
	Depth:	(approx.)

Depth (fbgs)	USCS Symbol & Soil Description	PID Scan (ppm)	Photos Y / N	Samples Collected (fbgs)

SAMPLE

COMMENTS:			
GROUNDWATER ENCOUNTERED:	yes	no	If yes, depth to GW:
VISUAL IMPACTS:	yes	no	Describe:
OLFACTORY OBSERVATIONS:	yes	no	Describe:
NON-NATIVE FILL ENCOUNTERED:	yes	no	
OTHER OBSERVATIONS:	yes	no	Describe:
SAMPLES COLLECTED:	yes	no	Sample I.D.:
			Sample I.D.:
			Sample I.D.:

TurnKey Environmental Restoration, LLC

Field Operating Procedures

Well/Piezometer Construction Materials and Design

FOP 070.0

WELL/PIEZOMETER CONSTRUCTION MATERIALS AND DESIGN

PURPOSE

This guideline presents construction materials and design requirements for monitoring well/piezometer installations in accordance with NYSDEC recommended specifications (6NYCRR Part 360).

CONSTRUCTION MATERIALS

1. Well Screen and Riser – Only new flush threaded screen and riser materials will be used. Screen and riser materials, well dimensions, screen slot opening size and length to be determined based on formation characteristics and suspect water quality or as specified by the project geologist/hydrogeologist. A vented cap or J-plug should be placed over the riser. A V-slot cut in the riser or permanent marking, both placed on the north side of the riser, will act as a monitoring reference point.

2. Bentonite Well Seal – The bentonite should be from a commercial source free of chemical additives (granular or powdered for grout and pelletized for seal).

3. Concrete – Low heat of hydration concrete should be used for grout and cementing protective casing if well construction materials are composed of PVC (ASTM Type II or Type IV Portland Cement).

4. Water – Water should be from a potable source of known chemistry and free of chemical constituents which may compromise integrity of installation.

5. Grout – Mixture of bentonite, cement and water in accordance with the following specifications. Premix bentonite and water prior to adding cement.

   Grout Slurry Composition (% Weight)

1.5 to 3.0%	-	Bentonite (Quick Gel)
40 to 60 %	-	Cement (Portland Type I)
40 to 60 %	-	Potable Water

6. Filter Pack – The filter pack should consist of clean, inert, siliceous, rounded to subrounded particles. Filter pack particle size is dependent on the formation and the slot size of the screen.

   A secondary filter about 6-inches thick may be placed between filter pack and the bentonite seal and potentially between the bentonite seal and the grout backfill, to minimize grout penetration of the seal. A uniformly graded fine sand (100% passing No. 30 sieve) should be used as a secondary filter.

7. Protective Casing, Locking Cap and Lock – Protective casing with a lockable cap should be cemented in place around the riser. The inside diameter of the protective casing should be a minimum of 2-inches larger than the outside diameter of the well riser. The annular space between the casing and the riser should be filled with pea gravel or coarse sand. A weep hole should be drilled near the base of the casing to facilitate drainage of standing water. If more than one well is installed, all locks should be keyed alike.

8. A sample of all cement, bentonite and sand used in well construction should be saved in a labeled, Teflon-sealed, precleaned glass jar.

REFERENCES

New York State Department of Environmental Conservation, July 1988, *Drilling and Monitoring Well Installation Guidance Manual.*

Driscoll, F.G., 1987, *Groundwater and Wells*, Johnson Division, St. Paul, Minnesota, p. 1089.

Sara, M. N., *Proposed Recommended Practice for Design and Installation of Ground Water Monitoring Wells in Aquifers: ASTM Subcommittee D18.21.*

TurnKey Environmental Restoration, LLC

FIELD OPERATING PROCEDURES

Real-Time Air Monitoring During Intrusive Activities

FOP 073.2

REAL-TIME AIR MONITORING DURING INTRUSIVE ACTIVITIES PROCEDURE

PURPOSE

This guideline presents requirements for real-time community air monitoring and required responses during all project required intrusive activities, such as drilling, test pitting, earthwork construction etc. This procedure is consistent with the requirements for community air monitoring for all intrusive projects, including projects conducted at remediation sites, as established by the New York State Department of Health (NYSDOH) and the New York State Department of Environmental Conservation (NYSDEC). Accordingly, it follows procedures and practices outlined under NYSDEC's DER-10 (May 2010) Appendix 1A (NYSDOH's Generic Community Air Monitoring Plan) and Appendix 1B (Fugitive Dust and Particulate Monitoring).

This FOP requires real-time monitoring for constituents of concern (COC) (i.e., volatile organic compounds (VOCs), lower explosive limit (% LEL), particulates (i.e., dust) etc.) at the upwind and downwind perimeter as well as the exclusion zone of a project site during all intrusive activities. This FOP is not intended for use in establishing action levels for worker respiratory protection (see Project Health and Safety Plan (HASP) for worker protection action levels). Rather, its intent is to provide a measure of protection for the surrounding community from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The community, as referenced in this document, includes any off-site residences, public buildings/grounds and commercial or industrial establishments adjacent to the project site. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, this FOP helps to confirm that work activities did not spread contamination off-site through via air transport mechanisms. Community air monitoring shall be integrated with the construction

worker personal exposure-monitoring program contained in the project and site-specific HASP.

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for volatile organic compounds (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 NYSDEC/NYSDOH staff.

MONITORING & MITIGATION PROCEDURE

Real-time air monitoring perimeter locations for monitoring stations will be established based on the location of the exclusion zone (i.e., immediate work area) and wind direction. Where wind direction is shifting or winds are calm, the downwind monitoring location will default to the perimeter location nearest the most sensitive receptor (i.e., residential property). All downwind receptors being equal, the downwind monitoring location will default to the perimeter location downwind of the prevailing winds at the site. Although additional site specific COCs may be monitored during real-time air monitoring activities, the most common COCs are discussed in this FOP, including organic vapors (i.e., VOCs), airborne particulates (i.e., fugitive dust) and combustible gases (i.e., methane) and oxygen.

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

ORGANIC VAPORS

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. 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.

- 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.

- 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.

- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

- All 15-minute readings must be recorded and be available for State (DEC and DOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

o **Special Requirements for Work Within 20 Feet of Potentially Exposed Individuals or Structures**

  - When work areas are within 20 feet of potentially exposed populations or occupied structures, the continuous monitoring locations for VOCs and

particulates must reflect the nearest potentially exposed individuals and the location of ventilation system intakes for nearby structures. The use of engineering controls such as vapor/dust barriers, temporary negative-pressure enclosures, or special ventilation devices should be considered to prevent exposures related to the work activities and to control dust and odors. Consideration should be given to implementing the planned activities when potentially exposed populations are at a minimum, such as during weekends or evening hours in non-residential settings.

- If total VOC concentrations opposite the walls of occupied structures or next to intake vents exceed 1 ppm, monitoring should occur within the occupied structure (s). Background readings in the occupied spaces must be taken prior to commencement of the planned work. Any unusual background readings should be discussed with NYSDOH prior to commencement of the work.

- If total particulate concentrations opposite the walls of occupied structures or next to intake vents exceed 150 mcg/m3, work activities should be suspended until controls are implemented and are successful in reducing the total particulate concentration to 150 mcg/m3 or less at the monitoring point.

- Depending upon the nature of contamination and remedial activities, other parameters (e.g., explosivity, oxygen, hydrogen SUlfide, carbon monoxide) may also need to be monitored Response levels and actions should be pre-determined, as necessary, for each site.

Additionally, if following the cessation of work and efforts to abate the emission source are unsuccessful, and if sustained organic vapor levels exceed 25 ppm above background within the 20-foot zone for more than 30 minutes, then the **Major Vapor Emission Response Plan** (see below) will automatically be placed into effect.

Major Vapor Emission Response Plan

Upon activation of Major Vapor Emission Response Plan, the following activities will be undertaken:

1. All Emergency Response Contacts as listed below and in the Site-Specific Health and Safety Plan will be contacted.

2. The local police authorities will immediately be contacted by the Site Safety and Health Officer and advised of the situation.

3. The Site Safety and Health Officer will determine if site workers can safely undertake source abatement measures. Abatement measures may include covering the source area with clean fill or plastic sheeting, or consolidating contaminated materials to minimize surface area. The Site Safety and Health Officer will adjust worker personal protective equipment as necessary to protect workers from over-exposure to organic vapors.

The following personnel are to be notified by the Site Safety and Health Officer in the listed sequence if the Major Vapor Emission Response Plan is activated:

Contact	Phone
Police/Fire Department	911
New York State DOH	(518) 402-7860
New York State DEC Region 8	(585) 226-2466, switchboard

New York State DEC Region 9	(716) 851-7220
State Emergency Response Hotline	(800) 457-7362

In addition, the Site Safety and Health Officer will provide these authorities with a description of the apparent source of the contamination and abatement measures being taken by the contractor, if any.

AIRBORNE PARTICULATES

Fugitive dust suppression and airborne particulate monitoring shall be performed during any intrusive activities involving disturbance or handling of site soil/fill materials. Fugitive dust suppression techniques will include the following minimum measures:

- Spraying potable water on all excessively dry work areas and roads.
- All fill materials leaving the site will be hauled in properly covered containers or haul trailers.
- Additional dust suppression efforts may be required as discussed below.

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.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (μg/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 μg/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 μg/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 μg/m^3 of the upwind level and in preventing visible dust migration.

- All readings must be recorded and be available for State (DEC and DOH) personnel to review.

Visual Assessment

In conjunction with the real-time monitoring program, TurnKey personnel and any subcontractors thereof will be responsible for visually assessing fugitive dust migration from the site. If airborne dust is observed leaving the site, the work will be stopped until supplemental dust suppression techniques are employed in those areas.

Supplemental Dust Suppression

Supplemental dust suppression techniques may include but are not necessarily limited to the

following measures:

- Reducing the excavation size, number of excavations or volume of material handled.
- Restricting vehicle speeds.
- Applying water on buckets during excavation and dumping.
- Wetting equipment and excavation faces.
- Wetting haul roads.
- Restricting work during extreme wind conditions.
- Use of a street sweeper on paved haul roads, where feasible.

Work can resume using supplemental dust suppression techniques provided that the measures are successful in reducing the sustained downwind particulate concentration to below 150 ug/m^3 of the upwind level, and in preventing visible dust migration off-site.

COMBUSTIBLE GASES & OXYGEN

Ambient combustible gas and oxygen concentrations should be measured prior to commencing intrusive activities each workday and a minimum of every 30-minutes thereafter. Air monitoring activities should be performed using equipment appropriate to measure combustible gases in percent lower explosive limit (LEL) and percent oxygen and calibrated daily. All combustible gas and oxygen readings must be recorded in the Project Field Book and/or Real-Time Air Monitoring Logs (sample attached) and, if applicable, be made available for State (DEC and DOH) personnel to review.

Mitigation upon the detection of various action levels of organic vapors are presented below:

Combustible Gas:

- If the sustained ambient air concentration of combustible gas at the downwind perimeter of the site exceeds a reading of 10 to 25% LEL, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 10% LEL, work activities can resume with continued monitoring.

- If sustained combustible gas levels at the downwind perimeter of the site persist at levels in excess of 25% LEL, work activities must be halted, the source of explosion hazards identified, corrective actions taken to abate emissions and monitoring continued. Following combustible gas mitigation, work activities can resume provided that the sustained total organic vapor level 200 feet downwind of the exclusions 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 a sustained value of 10% LEL.

Oxygen:

- If the sustained ambient oxygen concentration at the downwind perimeter of the site measures a reading between 19.5% - 21% oxygen, work activities can continue with extreme caution, however attempts to determine the potential source of oxygen displacement must be conducted.

- If the sustained oxygen level readily decreases below 19.5% LEL, work activities should be discontinued and all personnel must leave the area immediately.

- If the sustained oxygen level at the downwind perimeter of the site persists at levels between 21-25%, work activities can resume with caution.

- If the sustained oxygen level at the downwind perimeter of the site persists at levels exceeding 25% (fire hazard potential), work activities should be discontinued and all personnel must leave the area immediately.

ATTACHMENTS

Real-Time Air Monitoring Log (sample)

REFERENCES

TurnKey FOPs:

006 Calibration and Maintenance of Combustible Gas/Oxygen Meter
010 Calibration and Maintenance of Flame Ionization Detector
011 Calibration and Maintenance of Portable Photoionization Detector
084 Calibration and Maintenance of Portable Particulate Meter

FOP 073.2

REAL-TIME AIR MONITORING DURING INTRUSIVE ACTIVITIES PROCEDURE

REAL TIME AII

Date:	
Project Name:	
Project Number:	
Project Location:	
Client:	
Purpose of Air Monitoring:	

WEATHER CONDITIONS:

Time of Day:	A.M.
Ambient Air Temp.:	
Wind Direction:	
Wind Speed:	
Precipitation:	

Date	Personnel	Time	Air Monitoring Meter Measurement (Units)							Location
			PID (ppm)	LEL (%)	H2S (ppm)	O2 (%)	CO (ppm)	Particulates (mg/m^3)	Other	

SAMPLE

NOTE: SEE EQUIPMENT CALIBRATION LOG FOR DESCRIPTION OF EQUIPMENT TYPE.

Prepared By:

TurnKey Environmental Restoration, LLC

FIELD OPERATING PROCEDURES

"Before Going Into the Field" Procedure

FOP 076.0

"BEFORE & AFTER" PROJECT PROCEDURES FOR FIELD PERSONNEL

PURPOSE

This procedure describes the required field and office activities to be preformed "before and after" project assignments by field personnel. Field activities may include, but are not limited to, drilling oversight, excavation contractor oversight, matrix sample collection (e.g., soil, sediment, groundwater, surface water, wipe, and/or air), third party oversight, and site reconnaissance to name a few. Office activities may include, but are not limited to, photocopying field book entries, completing all field forms, tabulating collected field and laboratory data, and preparation of report text.

The primary goal of this procedure is to eliminate delays and unnecessary budgetary "strain" due to a lack of preparedness and knowledge of the site by the field team members. This procedure also seeks to streamline the preparation and transfer of field information/data from field personnel to the Project Manager upon field work completion.

PROJECT ASSIGNMENT

During the initial meeting with the Project Manager, several questions should be raised by the field team member and answered by the Project Manager. A pad of paper and pen should be in hand to record all pertinent job information. At a minimum, the following questions should be answered:

1. *What is the job number?*
2. *Who is the client and the on-site representative (if applicable)?*
3. *What is the name of the project?*
4. *What are the job responsibilities and how should they be accomplished?*
5. *How much time do I have to complete the assigned tasks?*
6. *Are there any project required documents? What are they?*

Any deviation from the above questions should be approved by the Project Manager prior to contravention, not at the end of the day or following the project completion.

"BEFORE" CHECKLISTS

Checklists should be developed and used so that all of the required steps prior to going into the field are undertaken. A good checklist will include:

- Adequate review of the documents listed in this FOP
- Any documents, equipment, and supplies presented in this FOP
- Providing adequate notification to the laboratory (so that holding times are not exceeded) and to the owner of the site and the primary regulatory agency (usually in writing) that a round of sampling is to commence in order to facilitate sampling and allow for a sampling audit or split sampling.
- Specifying and documenting the equipment maintenance and calibration undertaken prior to going into the field relative to the sampling event.
- Checking and calibrating the equipment.
- Listing the documents, equipment, and supplies required to collect samples at the site as presented in this FOP.

Prior to going into the field, sampling personnel should reacquaint themselves with the sampling plan. The review is undertaken so that the required specific protocol such as sampling from the least to the most contaminated wells, knowing where quality control samples are to be taken, knowing the disposition of purge water, etc., is understood and followed.

The amount of equipment maintenance and calibration required prior to going into the field should be clearly specified in the presampling equipment maintenance and calibration checklists, which are based on the manufacturer's recommendations, sampling objectives, and prior experience. Maintenance and calibration performed before sampling must be

documented to provide evidence that the equipment was adequately maintained and calibrated and to keep a permanent record of equipment servicing and performance.

A list of all the documents, equipment, and supplies required for the sampling event should be prepared and used. It can be frustrating and time consuming to forget equipment and supplies, so some up-front preparation is warranted. The following sections provide a list of the documentation, equipment, and supplies, which should assist in preparing a site-specific equipment and supply checklist. Once prepared, the checklist and project requirements should be reviewed with the Project Manager.

"BEFORE" DOCUMENTATION SUMMARY

Prior to going into the field, the field team should review and understand all of the project documents including, but not limited to:

- The Health and Safety Plan (HASP)
- The Site Analytical Plan (SAP), Sampling Plan, or similar document
- The Quality Assurance Project Plan (QAPP)
- The Work Plan
- Project specific Field Operating Procedures and field forms
- Site Maps
- Equipment operation manuals
- Chain-of-Custody forms
- Shipping labels and custody seals
- Any reference materials (i.e., conversion tables, volume calculation, etc.). The Pocket Ref, Third Edition by Thomas Glover is a great source for the field.

If at any time, the field team does not understand the project required protocol, procedures, sample locations, etc.; the Project Manager should be consulted for clarification.

"BEFORE" EQUIPMENT SUMMARY

Prior to going into the field, the field team should review the following equipment checklist, noting that project specific equipment may not be included in this list:

- Water level indicator
- Pumps, sample tubing, flow controllers, power cord(s), batteries, compressors, generators, etc.
- Bailers (disposable, PVC, stainless steel, glass), rope
- Flow-through cell
- Field meters with adequate calibration solutions (pH/Eh meter, conductivity meter, dissolved oxygen meter, turbidity meter, batteries, etc.)
- Garden hose
- Explosive gas meter and/or photoionization detector (PID) with calibration supplies
- Complete set of hand tools including a sharp knife, screw drivers, pliers, hacksaw, flashlight, large pipe wrench, hammer, bolt cutters, and replacement locks
- Fish hook with weight and string
- Field filtering equipment and supplies
- Decontamination supplies, such as scrub brushes, Alconox®, distilled water, potable water, 5-gallon bucket, paper towels, aluminum foil
- 5-gallon bucket(s)
- Measuring cup
- Sample bottles/containers (with extras) and preservatives
- Stainless steel spoons, trowels, shovels
- Shipping containers (i.e., coolers)
- Clipboard
- Calculator
- Water resistant clock or watch with second hand
- First aid kit

"BEFORE" SUPPLIES SUMMARY

Prior to going into the field, the field team should review the following supplies checklist, noting that project specific supplies may not be included in this list:

- Laboratory grade non-phosphate detergent (Alconox®)
- Appropriate personal protective equipment appropriate to the contaminants of concern, such as nitrile gloves, Tyvek, boots, hardhat, safety glasses, hearing protection, etc.
- Bags of ice
- Plastic garbage bags
- Plastic sheeting
- Sufficient quantities of potable and laboratory grade deionized water for cleaning and equipment blanks
- Methanol
- Isopropyl alcohol
- Clean rags and paper towels
- Electrical tape, duct tape, and wide transparent tape
- Hand soap
- Regular, ballpoint, and indelible pens
- Hollow braid polyethylene rope

After providing adequate notification (lab, state and/or federal agencies), performing the presampling maintenance and calibration, obtaining the site and well keys, and packing the supplies and equipment, the field activities are ready to be performed.

"AFTER" – PROJECT FILE REVIEW & CREATION

It is the responsibility of each field crew member to review his/her own field notes and time sheet for accuracy and completeness. All errors to the field notes should be corrected, dated, and initialed for Project Manager review. Once reviewed by the field team member, the Project Field Book, all field forms, photographs, chain-of-custodies etc. must be

photocopied, scanned (if required), downloaded, etc. and then given to the Project Manager in an organized file folder in a timely manner. Avoiding delay during this step is critical, especially when there are severe time constraints for the project.

REFERENCES

1. Wilson, Neal. *Soil Water and Ground Water Sampling*, 1995

TurnKey Environmental Restoration, LLC

Field Operating Procedures

Temporary Well (Piezometer) Construction Procedures

FOP 077.0

TEMPORARY WELL (PIEZOMETER) CONSTRUCTION PROCEDURES

PURPOSE

Temporary wells (or piezometers) will be installed within selected geoprobe boreholes or test pits for the purpose of evaluating groundwater characteristics, such as flow direction and generally quality. This procedure describes temporary well construction and installation for boreholes drilled using direct push and test pit methodologies. Refer to TurnKey's Geoprobe Drilling Procedure FOP and Test Pit Excavation and Logging Procedures FOP prior to installing a temporary well. Nominal dimensions and materials for the temporary well are shown in the attached temporary well construction diagram.

GEOPROBE PROCEDURE

1. Advance borehole in accordance with TurnKey's Geoprobe Drilling Procedure FOP to the required depth. The nominal inside diameter (ID) of the direct-push stem used should be at least 1 inch larger than the outside diameter (OD) of the riser and screen selected for the temporary well installation.

2. Remove the direct-push rods from the borehole and verify the depth using weighted measuring tape confirming the depth to groundwater observed during sample evaluation. If the borehole annulus collapses due to non-cohesive soils (i.e., sand and gravel), additional attempts should be made by the direct push rig to clear the sloughed material. If sloughing continues and the borehole cannot remain open, discontinue temporary well installation and consult the Project Manager and/or Work Plan.

3. In the event of an over drill (i.e. borehole depth is more than one foot greater than desired base of screen depth), use bentonite chips poured through the direct-push stem to seal the over drilled portion of the borehole. Be sure to note bentonite chip thickness on Field Borehole/Monitoring Well Installation Log.

4. Due to the transient nature of the temporary well(s), a sand filter pack and well development is not required.

5. Measure the length of the 1-inch PVC temporary well string (i.e. riser and screen), and lower the temporary well string into the borehole annulus to the desired depth. All measurements during the temporary well installation process will be accurate to 0.1 foot.

6. Following well string installation, place cement bentonite chips or pellets around the surface to create a watertight seal and hydrate with potable water. A typical temporary well completion detail is attached as Figure 1.

7. Leave the uncapped temporary well undisturbed for at least 1 hour to allow the bentonite chips/pellets surface seal to adequately hydrate as well as to allow shallow groundwater within the screened formation to stabilize within the well.

8. Permanently label the temporary well with the appropriate alphanumeric identifier as determined by the Project Manager or specified in the Work Plan.

9. Permanently mark a survey location on the north side at the top of the PVC riser with a saw cut. Survey all temporary wells for horizontal location and elevation, using a surveyor licensed by the State of New York. Coordinates and elevations will be provided in a coordinate system consistent with previous surveys at the Site. Information obtained will include location (x and y) of the temporary well, and elevation (z) of the ground surface and the top of riser.

10. Place a lockable J-plug and dedicated lock on the temporary well, and keep the temporary well locked when not actively attended.

11. Manage all waste materials generated during temporary well installation as described in the TurnKey's Field Operating Procedure for Management of Investigation Derived Waste.

12. Record the temporary well construction details on a Field Geoprobe Borehole/Temporary Well Installation Log (sample attached) and Temporary Well Completion Detail (sample attached).

13. Refer to TurnKey's Documentation Requirements for Drilling and Well Installation FOP.

TEST PITTING PROCEDURE

1. Advance test pit a minimum of five feet into the shallow groundwater bearing zone in accordance with TurnKey's Test Pit Excavation and Logging Procedures FOP to the required depth.

2. At one end of the test pit, excavate an additional small pilot hole to place the 1-inch PVC temporary well string in a vertical position.

3. Verify the depth using weighted measuring tape confirming the depth to groundwater observed during test pit evaluation.

4. Construct the temporary well with a 1-inch diameter (minimum) PVC well screen and riser according to the observed/measured depth to groundwater. Measure the length of the temporary well string (i.e. riser and screen) and lower the string into the open test pit to the desired depth. All measurements during the temporary well installation process will be accurate to 0.1 foot.

5. Slowly backfill around the temporary well with test pit spoils, making sure to keep the well as close to vertical as possible.

6. Due to the transient nature of the temporary well(s), a sand filter pack and well development is not required.

7. Following well string installation, place cement bentonite chips or pellets around the surface to create a watertight seal and hydrate with potable water. A typical temporary well completion detail is attached as Figure 1.

8. Leave the uncapped temporary well undisturbed for at least 1 hour to allow the bentonite chips/pellets surface seal to adequately hydrate as well as to allow shallow groundwater within the screened formation to stabilize within the well.

9. Permanently label the temporary well with the appropriate alphanumeric identifier as determined by the Project Manager or specified in the Work Plan.

10. Permanently mark a survey location on the north side at the top of the PVC riser with a saw cut. Survey all temporary wells for horizontal location and elevation, using a surveyor licensed by the State of New York. Coordinates and elevations will be provided in a coordinate system consistent with previous surveys at the Site. Information obtained will include location (*x* and *y*) of the temporary well, and elevation (*z*) of the ground surface and the top of riser.

11. Place a lockable J-plug and dedicated lock on the temporary well, and keep the temporary well locked when not actively attended.

12. Manage all waste materials generated during temporary well installation as described in the TurnKey's Field Operating Procedure for Management of Investigation Derived Waste.

13. Record the temporary well construction details on a Temporary Well Completion Detail (sample attached).

14. Refer to TurnKey's Documentation Requirements for Drilling and Well Installation FOP.

ATTACHMENTS

Figure 1 Typical Temporary Well Construction Detail (Figure 1)

Field Geoprobe Borehole/Temporary Well Installation Log (sample)
Temporary Well Completion Detail (sample)

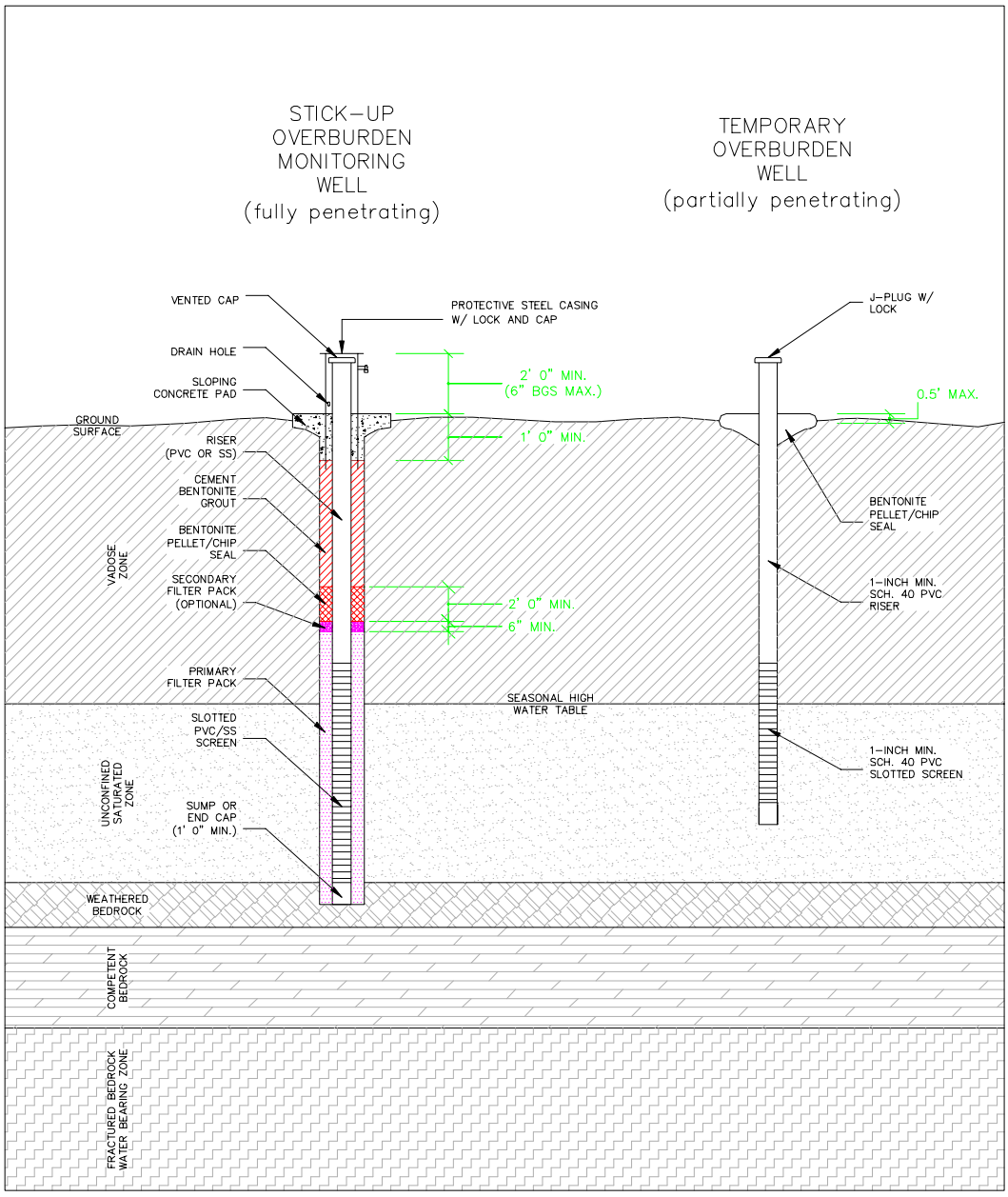
REFERENCES

TurnKey FOPs:

015 Documentation Requirements for Drilling and Well Installation
032 Management of Investigation Derived Waste
065 Test Pit Excavation and Logging Procedures
078 Geoprobe Drilling Procedures

FIGURE 1

TYPICAL TEMPORARY WELL CONSTRUCTION DETAIL



TEMPORARY WELL (PIEZOMETER) CONSTRUCTION PROCEDURES

FIELD BOREHOLE/MONITORING WELL INSTALLATION LOG

PROJECT:			**Log of Well No.:**	
BORING LOCATION:			ELEVATION AND DATUM:	
DRILLING CONTRACTOR:			DATE STARTED:	DATE FINISHED:
DRILLING METHOD:			TOTAL DEPTH:	SCREEN INTERVAL:
DRILLING EQUIPMENT:			DEPTH TO WATER: FIRST: / COMPL.:	CASING:
SAMPLING METHOD:			LOGGED BY:	
HAMMER WEIGHT:	DROP:		RESPONSIBLE PROFESSIONAL:	REG. NO.

Depth (fbgs)	SAMPLES: Sample No.	Sample	Blows (per 6")	SPT N-Value	Recovery	PID Scan (ppm)	SAMPLE DESCRIPTION USCS Classification: Color, Moisture Condition, % of Soil Type, ... Fabric, Bedding, Weathering/Fracturing, Odor, Other SURFACE ELEVATION (FMSL):	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS

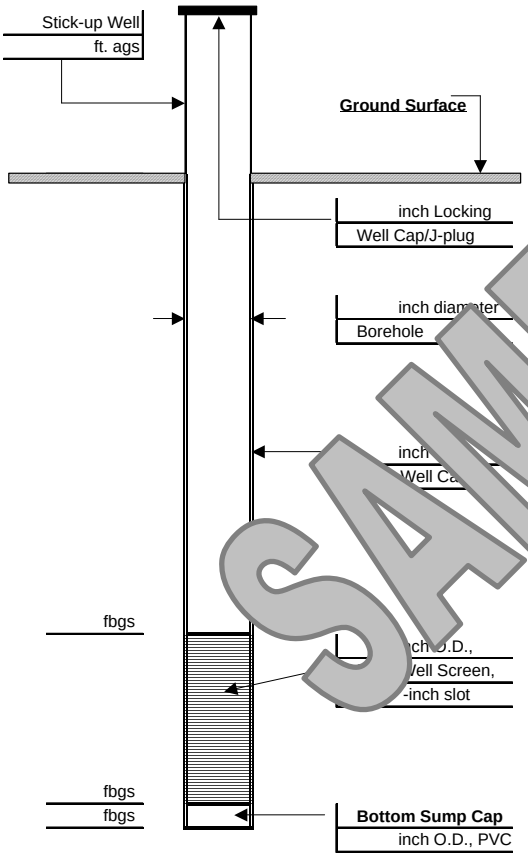
SAMPLE

Project No:	**TurnKey Environmental Restoration, LLC**	Figure

TEMPORARY WELL (PIEZOMETER) CONSTRUCTION PROCEDURES

TEMPORARY WELL COMPLETION DETAIL

Project Name:	WELL NUMBER:
Client:	Date Installed:
Boring Location:	Project Number:



Driller Information

Company:	
Driller:	
Helper:	
Permit Number:	
Drill Rig Typ	

Well Informa

Land Surface Ele	fmsl (approximate)
Method:	
Soil Collection	
os D	gallons (approximate)

of We struction

g:	
Sur	
nd	
r Seal:	

ll Development

Well Purpose:	
Techneque(s):	
Date Completed:	
BM/TK Personnel:	
Total Volume Purged:	gallons
Static Water Level:	fbTOR
Pump Depth:	
Pumping Dur	minutes
Yeild:	gpm
Specific Capacity:	gpm/ft

SAMPLE
NOT APPLICABLE

Comments:

PREPARED BY: DATE:

TurnKey Environmental Restoration, LLC

Field Operating Procedures

Geoprobe Drilling Procedures

FOP 078.0

GEOPROBE DRILLING PROCEDURES

PURPOSE

This guideline presents a method for direct-push drilling a borehole through unconsolidated materials, including soils or overburden.

PROCEDURE

The following procedure will be used to drill a borehole for sampling and/or well installation, using direct-push methods and equipment.

1. Follow TurnKey's Field Operating Procedure (FOP) for Drill Site Selection Procedure prior to implementing any drilling activity.

2. Perform drill rig safety checks with the driller by completing the Drilling Safety Checklist form (sample attached).

3. Conduct tailgate health and safety meeting with project team and drillers by completing the Tailgate Safety Meeting Form (sample attached).

4. Calibrate air-monitoring equipment in accordance with the appropriate TurnKey's FOPs or manufacturers recommendations.

5. Ensure all drilling equipment (i.e., rods, 4-foot sampler, dedicated PVC sleeves) appear clean and free of soil prior to initiating any subsurface intrusion. Decontamination of drilling equipment should be in accordance with TurnKey's Drilling and Excavation Equipment Decontamination Procedures FOP.

6. Mobilize the Geoprobe™ rig to the site and position over the borehole.

7. Level and stabilize the rig and recheck the rig location against the planned drilling location.

8. Fully advance the sampler into the subsurface using an ATV-mounted direct-push Geoprobe™ drill rig and 1.5-inch diameter sampler, typically 4-feet in length and fitted with a dedicated PVC sleeve, for each four-foot core of soil.

9. Retrieve the 4-foot sample core from the driller, place on a piece of polyethylene tarp, and cut open using a sharp utility knife.

10. Visually characterize each 4-foot soil core using the Unified Soil Classification System (USCS) in accordance with TurnKey's Soil Description Procedures Using the USCS FOP.

11. Scan each 4-foot core for total volatile organic vapors with a calibrated Photovac 2020 PID equipped with a 10.6 eV lamp, and report any visual and/or olfactory observations. Record PID scan measurements in the Project Field Book and appropriate field forms.

12. If required, collect a representative soil sample for headspace determinations. In general, soil samples representative of each 4-foot core interval are collected, placed in a sealable plastic bag, and kept at or near room temperature (approximately 65-70° F) for a minimum of 15 minutes prior to measurement. Record PID headspace determination measurements in the Project Field Book and appropriate field forms.

13. Check sampler and rods periodically during drilling to ensure the boring is plumb. Adjust rig position as necessary to maintain plumb.

14. Continue drilling until reaching the assigned total depth, or until sampler refusal occurs. Sampler refusal is when the drilling penetration drops below 0.1 feet per 2 minutes, with the full weight of the rig on the sampler.

15. Plug and abandon boreholes not used for temporary well installation in accordance with TurnKey's Field Operating Procedure for Abandonment of Borehole. Boreholes to be used as temporary wells should be completed in accordance with TurnKey's Temporary Well (Piezometer) Construction Procedures FOP.

16. Decontaminate all non-dedicated drilling tools between boring locations using potable tap water and a phosphate-free detergent (i.e., Alconox™) in accordance with TurnKey's Drilling and Excavation Equipment Decontamination Procedures FOP.

OTHER PROCEDURAL ISSUES

- Borings will not be over drilled (rat holed) without the express permission of the TurnKey field supervisor. All depth measurements should be accurate to the nearest 0.1 foot, to the extent practicable.

- Potable water may be placed in the sampler stem if critically necessary for borehole control or to accomplish sampling objectives. This will be performed only with the express permission of the TurnKey field supervisor.

ATTACHMENTS

Drilling Safety Checklist (sample)
Tailgate Safety Meeting Form (sample)

REFERENCES

TurnKey FOPs:

001 Abandonment of Borehole Procedures
017 Drill Site Selection Procedure
018 Drilling and Excavation Equipment Decontamination Procedures
054 Soil Description Procedures Using the USCS
077 Temporary Well (Piezometer) Construction Procedures

DRILLING SAFETY CHECKLIST

Project:	Date:
Project No.:	Drilling Company:
Client:	Drill Rig Type:

ITEMS TO CHECK	OK	ACTION NEEDED
"Kill switches" installed by the manufacturer are in operable condition and all workers at the drill site are familiar with their location and how to activate them?		
"Kill switches" are accessible to workers on both sides of the rotating stem? NOTE: Optional based on location and number of switches provided by the manufacturer.		
Cables on drill rig are free of kinks, frayed wires, "bird cages" a[illegible] or missing sections?		
Cables are terminated at the working end with a proper eye splice[illegible] swaged Coupling or using cable clamps?		
Cable clamps are installed with the saddle on the live or [illegible]de? Clamp[illegible] should not be alternated and should be of the corre[illegible]an[illegible]ber for the cable size to which it is installed. Clamps are co[illegible] parts		
Hooks installed on hoist cables are the safe[illegible]y ty[illegible]h a[illegible]tiona[illegible] prevent accidental separation?		
Safety latches are functional and complete[illegible] e[illegible]roat of the hook and have positive action to close th[illegible]at [illegible]hen [illegible]ally displaced for connecting or disconnecting a loa[illegible]		
Drive shafts, belts, chain d[illegible]es and [illegible]ts [illegible]l be guarded to prevent accidental insertion[illegible]ls and [illegible]		
Outriggers shall be extended [illegible] whe[illegible]r th[illegible]oom is raised off its cradle. Hydraulic o[illegible]iggers m[illegible]ma[illegible]res[illegible]to continuously support and stabilize the[illegible]n whi[illegible]		
Outriggers shall [illegible]pro[illegible]upp[illegible]n the ground surface to prevent settling into the so[illegible]		
Controls are properly labeled [illegible]ha[illegible] freedom of movement? Controls should not be blocked or lo[illegible]d i[illegible]action position.		
Safeties on any device shall n[illegible] bypassed or neutralized.		
Controls shall be operated smoothly and cables and lifting devices shall not be jerked or operated erratically to overcome resistance.		
Slings, chokers and lifting devices are inspected before using and are in proper working order? Damaged units are removed from service and are properly tagged?		
Shackles and clevises are in proper working order and pins and screws are fully inserted before placing under a load?		
High-pressure hoses have a safety (chain, cable or strap) at each end of the hose section to prevent whipping in the event of a failure?		
Rotating parts of the drill string shall be free of sharp projections or hooks, which could entrap clothing or foreign objects?		

SAMPLE

DRILLING SAFETY CHECKLIST

Project: Date:

ITEMS TO CHECK	OK	ACTION NEEDED
Wire ropes should not be allowed to bend around sharp edges without cushion material.		
The exclusion zone is centered over the borehole and the radius is equal or greater than the boom height?		
The work area around the borehole shall be kept clear of trip hazards and walking surfaces should be free of slippery material.		
Workers shall not proceed higher than the drilling deck with[out] [a] restraining device and must attach the device in a manner to restric[t] [to] less than 6 feet.		
A fire extinguisher of appropriate size shall be immediately [a]vailable to the crew. The drill crew shall have received annual training o[n] [p]roper use of the fire extinguisher.		
29 CFR 1910.333 © (3) Except where electric[al] [e]quipment lines have been de-energized and visibly g[r]ounded at [t]he point of work, all ri[g]ht shall be proximate to, under, by, or near power [li]nes only [in] accordance wi[th] the following: .333 © (3) (ii) 50 kV or less[,] [t]he minimum [a]pproach distance is 10 feet For 50 kV or over - 10ft. Plus [an] [a]dditional [1] foot **TurnKey Policy: M[a]intain 20 fe[et]**		
29 CFR 1910.333 © (3) (iii) W[h]ere [a] crane is in [a] position where it [c]an boom in the down position, clearance from energ[i]zed [p]arts and lines will be maintained as follows: Less tha[n] [1]0 feet 50 to 36[5] - 10 f[eet] 365 to 72[0]		

SAMPLE

Name: (printed)

Signed: Date:

TAILGATE SAFETY MEETING FORM

Project Name: Date: Time:

Project Number: Client:

Work Activities:

HOSPITAL INFORMATION:

Name:

Address: *City:* *State:* *Zip:*

Phone No.: *Ambulance Phone No.*

SAFETY TOPICS PRESENTED:

Chemical Hazards:

Physical Hazards: Slips, Trips, Falls

PERSONAL PROTECTIVE EQUIPMENT:

Activity:			B	C	D
Activity:			B	C	D
Activity:		A	B	C	D
Activity:		A	B	C	D
Activity:		A	B	C	D

New Equipment:

Other Safety Topic (s) ve fauna)

Eating, drink co products is prohibited in the Exclusion Zone (EZ)

ATTENDEES

Name Printed	Signatures

Meeting conducted by:

SAMPLE

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FIELD OPERATING PROCEDURES

Stockpile Sampling Procedures for Chemical Analysis

FOP 079.0

STOCKPILE SAMPLING PROCEDURES FOR CHEMICAL ANALYSIS

PURPOSE

This guideline presents a method for collecting representative soil samples from stockpiled borrow source material for chemical analysis.

GENERAL

In general, off-site soil that is brought to a Site for use as supplemental fill is subject to Quality Assurance sampling and analysis. If QA is required, all off-site soil proposed for use as Site backfill shall be documented by the subcontractor in writing to have originated from locations having no evidence of disposal or release of hazardous, toxic or radioactive substances, wastes or petroleum products. If the subcontractor designates a source as "virgin" soil, it shall be further documented in writing to be native soil material having not supported any known past industrial or commercial development or agricultural use. Borrow soils can be used as backfill once concentrations are confirmed to meet project designated criteria for the Constituents of Primary Concern (COPCs) and NYSDEC TAGM HWR-94-4046 recommended soil cleanup objectives (SCOs) or NYSDEC 6NYCRR Part 375 SCOs.

Sample collection equipment will include stainless steel mixing bowls, stainless steel mixing spoons, and a stainless steel hand auger with extension rods or a stainless steel spade or equivalent. It may be necessary to use a backhoe or drilling rig to facilitate sample collection.

FOP 079.0

STOCKPILE SAMPLING PROCEDURES FOR CHEMICAL ANALYSIS

SAMPLING PLAN

1. Virgin Sources – Virgin borrow sources will be confirmed acceptable for use as site backfill through collection of a single composite soil sample representative of the borrow pit or stockpile.

2. Non-Virgin Sources – Prior to sampling, determine the amount of soil that will be sampled. The soil will be tested via collection of one composite sample per 250 cubic yards of material from each source area. If more than 1,000 cubic yards of soils are excavated from a given off-site source area and all samples of the first 1,000 cubic yards meet project designated criteria, the sample collection frequency may be reduced to one composite for each additional 1,000 cubic yards of soils from the same source area, up to 5,000 cubic yards. For borrow sources greater than 5,000 cubic yards, sampling frequency may be reduced to one sample per 5,000 cubic yards, providing all earlier samples meet project designated criteria. Sampling procedure for non-virgin sources is described in the next section.

SAMPLE COLLECTION AND HANDLING

The following procedure will be used to collect representative soil samples from a non-virgin soil stockpile.

1. Using a stainless steel spade (or hand auger), a backhoe, or drilling rig, penetrate the pile to a depth of approximately 2 to 3 feet and collect four (4) representative grab samples of approximate equal volume from the top, middle, and bottom.

2. Transfer each grab into a small stainless steel mixing bowl.

3. **VOC Analysis:** Using a clean stainless steel spoon, transfer equal amounts from each small mixing bowl into a laboratory-supplied, 4 oz. VOC sample jar. This should be performed by randomly transferring several small aliquots from each bowl, taking care to minimize disturbance of the soil.

4. **Other COPCs:** Transfer equal aliquots from each small bowl into a large mixing bowl and homogenize the sample. Fill the remaining laboratory-supplied jars with the homogenized soil for all other project required COPCs (i.e., SVOCs, PCBs, Pesticides, Herbicides, inorganics, etc.).

5. Label each set of jars with the following information:
   - Project and site name
   - Sample Code
   - Project Number
   - Date/Time
   - Sample type (soil composite or grab)
   - Sampler's initials
   - Sample Preservation
   - Required analysis

   The sample code will consist of a unique, alphanumeric identification code keyed to the sampling location. Identify the sampling location on a field sketch.

6. Record all information associated with sample collection in the Project Field Book.

7. Label, store, and ship the samples in accordance with the Benchmark Field Operating Procedure for Sample Labeling, Storage and Shipment Procedures.

8. Clean the sampling and mixing equipment with Alconox and deionized water and repeat steps 1 through 7 for the remaining samples.

REFERENCES

Benchmark FOPs:
046 Sample Labeling, Storage and Shipment Procedures

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FIELD OPERATING PROCEDURES

Stockpile & Borrow Source Sampling Procedures for Physical Analysis

FOP 080.0

STOCKPILE & BORROW SOURCE SAMPLING PROCEDURES FOR PHYSICAL ANALYSIS

PURPOSE

This guideline presents a method for collecting representative soil samples from stockpiled borrow source material for physical analysis.

GENERAL

Generally, one of two methods will be utilized to collect soil samples for analysis. One method is to collect the samples by digging a series of representative test pits at the borrow source area and obtaining samples from those test pits. The other method involves collecting samples from representative stockpiles (normally after the material has been mechanically screened). Both procedures are discussed within this method.

Sample collection equipment will include stainless steel mixing bowls, stainless steel mixing spoons, and a stainless steel hand auger with extension rods or a stainless steel spade or equivalent. It may be necessary to use a backhoe or drilling rig to facilitate sample collection.

STOCKPILED SOIL SAMPLING METHOD

As shown in the attached Figure 1, twelve (12) samples of approximate equal volume should be collected from the top, middle and bottom of each 1000 CY stockpile by CQA personnel and composited in the field to give one representative aliquot per 1000 CY.

Stockpile Sampling Procedure

1. Using a shovel or backhoe, penetrate the pile to a depth of about two to three feet.
2. Collect a sample using the shovel.

3. Transfer the sample to a specially prepared mixing area.
4. Repeat Steps 1 through 3 at each 1,000 CY stockpile.
5. Mix subsamples using shovel into one homogenous mass and place in a properly labeled 5-gallon bucket. Fill each bucket completely and cover.
6. Attach a label to each container and record location referencing the stockpile identification number. The label may be made with permanent marker on the side (not top) of the container or using adhesive-back paper labels affixed to the side of the container. At a minimum, the labels should be identified with the following information:
    - Project Name
    - Sample number.
    - Initials of CQA inspector or sample collection personnel.
    - Date of collection.
    - Location of collection (i.e. stockpile I.D.)
7. Return remaining contents of composite sample to stockpile.
8. Deliver the samples to the laboratory for analysis as soon as possible.
9. All information pertinent to each sampling event should be recorded by sampling personnel in the field at the time of sample collection. Each report should correspond to each stockpile and will contain the following information:
    - Project Name
    - Sample number or numbers collected
    - Field observations.
    - Climatologic conditions.
    - Date and time of collection.
    - Approximate location of test pit.
    - Name of person who collected sample.

BORROW AREA TEST PIT SAMPLING METHOD

Prior to obtaining representative soil samples, test holes should be excavated at the borrow area to determine the actual depth and lateral extent of the borrow source soil material. A base line should then be established and a grid system staked in the field. Five samples

should be collected at equidistant locations for each 5000 cubic yards (CY) of soil designated for use in the borrow areas (at approximately mid-depth).

Borrow Area Sampling Procedure

1. Using a shovel, collect a representative sample at approximately mid-depth at each of the sampling locations representing 1000 CY of the proposed excavation area.
2. Transfer each sample into a labeled separate 5-gallon bucket. Fill each bucket completely and cover.
3. Attach a label to each container and record location referencing the established grid system in the borrow area. The label may be made with permanent marker on the side (not top) of the container or using adhesive-back paper labels affixed to the side of the container. At a minimum, the labels should be identified with the following information:
    - Project Name
    - Sample number.
    - Initials of CQA inspector or sample collection personnel.
    - Date of collection.
    - Location of collection (i.e. location of borrow area grid system location)
4. Deliver the samples to the laboratory for analysis as soon as possible.
5. All information pertinent to each sampling event should be recorded by sampling personnel in the field at the time of sample collection. Each report should correspond to each test pit and will contain the following information:
    - Project Name
    - Sample number or numbers collected
    - Field observations.
    - Climatologic conditions.
    - Date and time of collection.
    - Approximate location of test pit.
    - Name of person who collected sample.

ATTACHMENTS

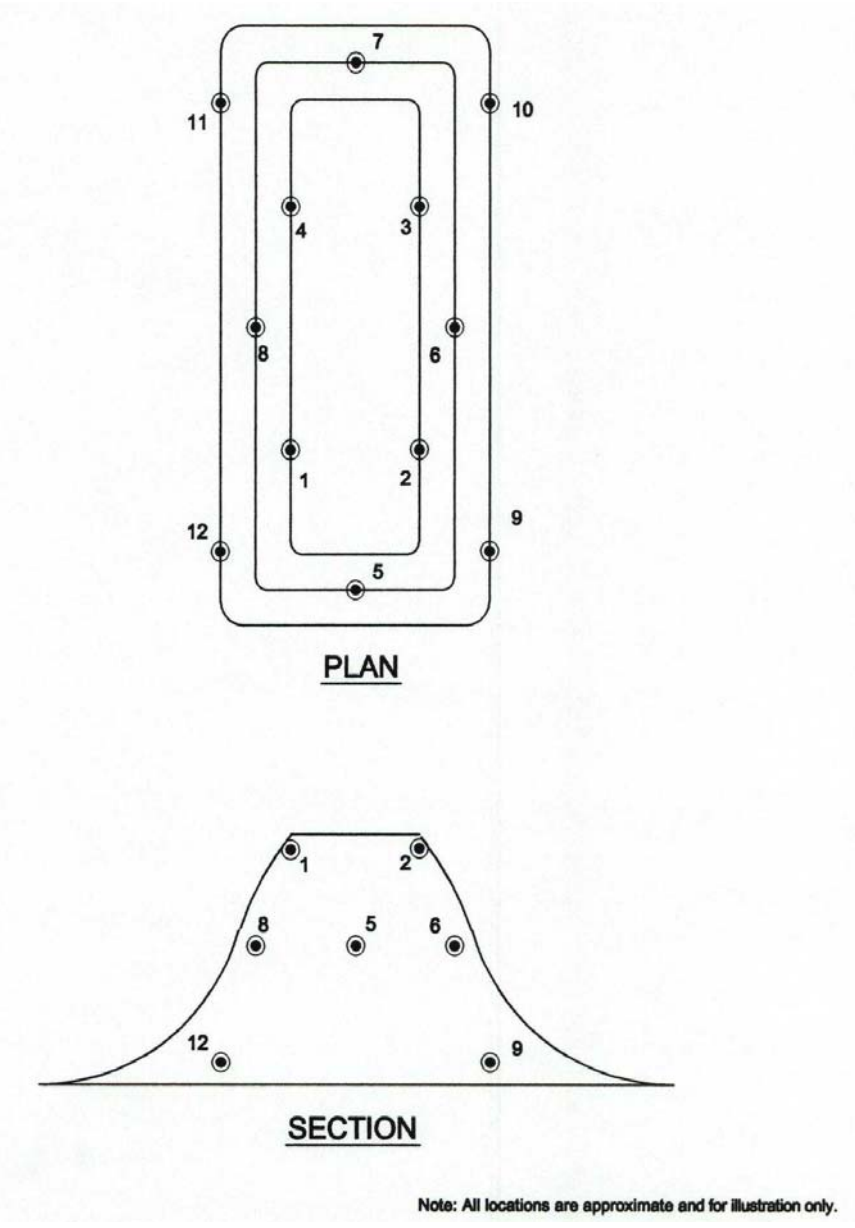
Figure 1; Stockpile Sampling Methodology

REFERENCES

None

FIGURE 4

1,000 CY STOCKPILE SAMPLING METHODOLOGY



FIELD OPERATING PROCEDURES

Waste Sampling Procedures

FOP 082.0

WASTE SAMPLING PROCEDURES

PURPOSE

This guideline describes the equipment and procedures that can safely be used to collect waste samples from open and closed units.

INTRODUCTION

Hazardous wastes are regulated by the USEPA under 40 CFR Parts 260-265. Therefore, many of the methods that are used to manage, store, treat, and dispose hazardous wastes and potential hazardous wastes are of concern to both the regulators and the regulated community. Samples are often required of regulated or potentially regulated materials. While it is understood that each facility and waste stream may present its own unique sampling and analytical challenges, this procedure will list equipment and enumerate procedures that have been used by the USEPA to safely and successfully sample specific waste units.

SAFETY

Sampling of waste units should be assessed for potential hazards by both the Project Manager (PM) and the site safety officer (SSO). It is the SSOs responsibility to enforce the site Health and Safety Plan (HASP), and to ensure that procedures used during waste sampling are in accordance with current company protocol. Sampling equipment contaminated during waste sampling investigations should be cleaned with laboratory detergent and rinsed with tap water prior to returning the equipment from the field. Contaminated sampling equipment that is to be discarded must be disposed of properly in accordance with the site-specific Work Plan.

It should be noted that although Benchmark does not readily perform field activities with highly hazardous materials, we do occasionally oversee contractors who do. Therefore, it is prudent on our part to recognize those situations and be prepared to ensure the activities of

our subcontractors comply with the site-specific HASP as well as those procedures discussed herein. Any reference within this procedure to personal protective equipment (PPE) upgrades above a modified level C (i.e., Tyvek, nitrile gloves, and full-face respirator) relates solely to our subcontractors.

QUALITY CONTROL PROCEDURES

In some instances, special decontamination procedures will be necessary and should be developed on a case-by-case basis according to the specific material encountered. Any cleaning procedures and equipment repairs conducted in the field deviating from those specified in the associated FOPs or the site-specific Work Plan, should be discussed with the Project Manager, and thoroughly documented in the Project Field Book.

All air monitoring and field analytical/screening equipment (i.e., photoionization detectors) should be checked and calibrated per manufacturer's specifications before being used to collect any waste stream unit sample (open or closed). The Field Team Leader should record all calibration results on appropriate field forms.

WASTE UNIT TYPES

Waste management units can be generally categorized into two types: open and closed. In general, open units are larger than closed units and include waste piles and surface impoundments whereas closed units include containers and tanks as well as ancillary tank equipment. Besides containers and tanks, sumps may also be considered closed units because they are designed to collect the spillage of liquid wastes and are sometimes configured as a confined space.

Although both may pose hazards, units that are open to the environment are generally less hazardous than closed units. Sampling of closed units is considered a higher hazard risk

because of the potential of exposure to toxic gases and flammable/explosive atmospheres. Because closed units prevent the dilution of the wastes by environmental influences, they are more likely to contain materials that have concentrated levels of hazardous constituents. While opening closed units for sampling purposes, investigators/contractor's shall use Level B PPE, air monitoring instruments to ensure that the working environment does not contain hazardous levels of flammable/explosive gasses or toxic vapors, and follow the appropriate safety requirements stipulated in the site-specific HASP.

Buried waste materials should be located and excavated with extreme caution. Once the buried waste is uncovered, the appropriate safety and sampling procedures utilized will depend on the type of waste unit.

Open Units

While open units may contain many types of wastes and come in a variety of shapes and sizes, they can be generally regarded as either waste piles or surface impoundments.

Definitions of these two types of open units from 40 CFR Part 260.10 are:

- Waste pile -- any non-containerized accumulation of solid, non-flowing hazardous waste that is used for treatment or storage and that is not a containment building.

- Surface impoundment -- "...a facility or part of a facility which is a natural topographic depression, man-made excavation, or diked area formed primarily of earthen materials (although it may be lined with man-made materials), which is designed to hold the accumulation of liquid wastes or wastes containing free liquids, and which is not an injection well. Examples of surface impoundments are holding, storage, settling and aeration pits, ponds, and lagoons."

One of the distinguishing features between waste piles and surface impoundments is the state of the waste. Waste piles typically contain solid or non-flowing materials whereas liquid wastes are usually contained in surface impoundments. The nature of the waste will also determine the mode of delivering the waste to the unit. Wastes are commonly pumped

or gravity fed into impoundments while heavy equipment or trucks may be used to dump wastes in piles. Once the waste has been placed in an open unit, the state of the waste may be altered by environmental factors (e.g., temperature, precipitation, etc.).

Surface impoundments may contain several phases such as floating solids, liquid phase(s), and sludges. Waste piles are usually restricted to solids and semi-solids. All of the potential phases contained in a waste unit should be considered in developing the sample design to meet the study's objective.

Closed Units

There are a variety of designs, shapes, sizes, and functions of closed units. In addition to the challenges of the various designs and the safety requirements for sampling them, closed units are difficult to sample because they may contain liquid, solid, semi-solid/sludge, or any combination of phases. Based on the study's design, it may be necessary to obtain a cross sectional profile of the closed unit in an attempt to characterize the unit. The following are definitions of types of closed waste units described in 40 CFR Part 260.10:

- Container -- any portable device in which a material is stored, transported, treated, disposed, or otherwise handled. Examples of containers are drums, overpacks, pails, totes, and roll-offs.

- Tank -- a stationary device, designed to contain an accumulation of hazardous waste constructed primarily of non-earthen materials, which provide structural support.

Portable tanks, tank trucks, and tank cars vary in size and may range from simple to extremely complex designs. Depending on the unit's design, it may be convenient to consider some of these storage units as tanks for sampling purposes even though they meet the definition of a container.

- Ancillary equipment (tank) -- any device including, but not limited to, such devices as piping, fittings, flanges, valves, and pumps that is used to distribute, meter, or control the flow of hazardous waste from its point of generation to a storage or treatment tank(s), between hazardous waste storage and treatment tanks to a point of disposal on-site, or to a point of shipment for disposal off-site.

- Sump -- any pit or reservoir that meets the definition of a tank and those troughs/trenches connected to it that serve to collect hazardous wastes.

Note: some outdoor sumps may be considered open units/surface impoundments.

Although any of the closed units may not be completely sealed and may be partially open to the environment, the unit needs to be treated as a closed unit for sampling purposes until a determination can be made. Once a closed unit is opened, a review of the proposed sampling procedures and level of protection can be performed to determined if the (PPE) is suitable for the site conditions.

Samples collected from different waste units should not be composited into one sample container without additional analytical and/or field screening data to determine if the materials are compatible and will not cause an inadvertent chemical reaction.

EQUIPMENT

Selecting appropriate equipment to sample wastes is a challenging task due to the uncertainty of the physical characteristics and nature of the wastes. It may be difficult to separate, homogenize and/or containerize a waste due to its physical characteristics (viscosity, particle size, etc.). In addition, the physical characteristics of a waste may change with temperature, humidity, or pressure. Waste streams may vary depending on how and when a waste was generated, how and where it was stored/disposed, and the conditions under which it was

stored/disposed. Also, the physical location of the wastes or the unit configuration may prevent the use of conventional sampling equipment.

Given the uncertainties that a waste may present, it is desirable to select sampling equipment that will facilitate the collection of samples that will meet the study's objective, and that will not unintentionally bias the sample by excluding some of the sample population that is under consideration. However, due to the nature of some waste matrices or the physical constraints of some waste units, it may be necessary to collect samples knowing that a portion of the desired population was omitted due to limitations of the equipment. Any deviations from the study plan or difficulties encountered in the field concerning sample collection that may have an effect on the study's objective should be documented in a log book, reviewed with the analytical data, and presented in the report.

WASTE SAMPLING EQUIPMENT

Waste sampling equipment should be made of non-reactive materials that will neither add to nor alter the chemical or physical properties of the material that is being sampled. The attached Table 1 lists some conventional equipment for sampling waste units/phases and some potential limitations of the equipment. Another reference for selecting sampling equipment is the ASTM, Standard Guide for Selection of Sampling Equipment for Wastes and Contaminated Media Data Collection Activities, D6232-98.

WASTE SAMPLING PROCEDURES

Waste Piles

Waste piles vary in size, shape, composition, and compactness, and may vary in distribution of hazardous constituents and characteristics (strata). These variables will affect safety and access considerations. The number of samples, the type of sample(s), and the sample location(s) should be based on the study's objectives. Commonly used equipment to collect

samples from waste piles are listed in Table 1. All equipment should be compatible with the waste and should have been cleaned to prevent any cross contamination of the sample.

Surface Impoundments

Surface impoundments vary in size, shape, and waste content, and may vary in distribution of hazardous constituents and characteristics (strata). The number of samples, the type of sample(s), and the sample location(s) should be based on the study's objectives. Commonly used equipment to collect samples from surface impoundments are listed in Table 1. All equipment should be compatible with the waste and should have been cleaned to prevent any cross contamination of the sample.

Because of the potential danger of sampling waste units suspected of containing elevated levels of hazardous constituents, personnel should never attempt to sample surface impoundments used to manage potentially hazardous wastes from a boat. All sampling should be conducted from the banks or piers of surface impoundments. Any exception must be approved by the appropriate site safety officer and/or the Occupational Health and Safety Designee (OHSD).

Drums

Drums are the most frequent type of containers sampled by field investigators for chemical analyses and/or physical testing. Caution should be exercised by the field investigators when sampling drums because of the potential presence of explosive/flammable gases and/or toxic vapors. Therefore, the following procedures should be used when collecting samples from drums of unknown material:

1. Visually inspect all drums that are being considered for sampling for the following:
    - pressurization (bulging/dimples);
    - crystals formed around the drum opening;
    - leaks, holes, stains;

- labels, markings;
- composition and type (steel/poly and open/bung);
- condition, age, rust
- sampling accessibility

Drums showing evidence of pressurization and crystals should be furthered assessed to determine if remote drum opening is needed. If drums cannot be accessed for sampling, heavy equipment is usually necessary to stage drums for the sampling activities. Adequate time should be allowed for the drum contents to stabilize after a drum is handled.

2. Identify each drum that will be opened (e.g., paint sticks, spray paint, cones, etc).

LEVEL "B" PROTECTION IS REQUIRED FOR THE FOLLOWING PROCEDURES.

3. Before opening, ground each metal drum that is not in direct contact with the earth using grounding wires, alligator clips, and a grounding rod or metal structure. If a metal drum is in an overpack drum, the metal drum should be grounded.

4. Touch the drum opening equipment to the bung or lid and allow an electrical conductive path to form. Slowly remove the bung or drum ring and/or lid with spark resistant tools (brass/beryllium).

5. Screen drums for explosive gases and toxic vapor with air monitoring instruments as bung or drum lid is removed. Depending on site conditions screen for one or more of the following:
   - radioactivity
   - cyanide fumes
   - halogen vapors
   - pH
   - flash point (requires sample for testing)

   Note the state, quantity, phases, and color of the drum contents. Record all relevant results, observations, and information in a logbook.

6. Select the appropriate sampling equipment based on the state of the material and the type of container. Sampling equipment should be made of non-reactive materials that will meet the study's objective(s).

7. Place oil wipe (as necessary), sampling equipment, and sample containers near drum(s) to be sampled.

AIR MONITORING FOR TOXIC VAPORS AND EXPLOSIVE GASES AND OXYGEN DEFICIENT ATMOSPHERES SHOULD BE CONDUCTED DURING DRUM SAMPLING.

Liquids -- Slowly lower the COLIWASA or drum thief to the bottom of the container. Close the COLIWASA with the inner rod or create a vacuum with the sampler's gloved thumb on the end of the thief and slowly remove the sampling device from the drum. Release the sample from the device into the sample container. Repeat the procedure until a sufficient sample volume is obtained.

Solids/Semi-Solids -- Use a push tube, bucket auger, or screw auger or if conditions permit a pneumatic hammer/drill to obtain the sample. Carefully use a clean stainless steel spoon to place the sample into container(s) for analyses.

8. Close the drums when sampling is complete. Segregate contaminated sampling equipment and investigative derived wastes (IDW) containing incompatible materials as determined by the drum screening procedure (Step #5). At a minimum, contaminated equipment should be cleaned with laboratory detergent and rinsed with tap water prior to returning it from the field.

Tanks

Sampling tanks is considered hazardous due to the potential for them to contain large volumes of hazardous materials and therefore, appropriate safety protocols must be

followed. Unlike drums, tanks may be compartmentalized or have complex designs. Preliminary information about the tank's contents and configuration should be reviewed prior to the sampling operation to ensure the safety of sampling personnel and that the study's objectives can be achieved.

In addition to having discharge valves near the bottom of tanks and bulk storage units, most tanks have hatches at the top. It is desirable to collect samples from the top hatch because of the potential for the tank's contents to be stratified. Additionally, when sampling from the discharge valve, there is a possibility of a stuck or broken valve which could cause an uncontrolled release. Investigators should not utilize valves on tanks or bulk storage devices unless they are operated by the owner or operator of the facility, or a containment plan is in place should the valve stick or break. If the investigator must sample from a tank discharge valve, the valving arrangement of the particular tank must be clearly understood to insure that the compartment(s) of interest is sampled.

Because of the many different types of designs and materials that may be encountered, only general sampling procedures that outline sampling a tank from the top hatch are listed below:

1. All relevant information concerning the tank such as the type of tank, the tank capacity, markings, condition, and suspected contents should be documented in a logbook.

2. The samplers should inspect the ladder, stairs, and catwalk that will be used to access the top hatch to ensure that they will support the samplers and their equipment.

LEVEL "B" PROTECTION IS REQUIRED FOR THE FOLLOWING PROCEDURES.

3. Before opening, ground each metal tank using grounding wires, alligator clips, and a grounding rod or metal structure.

4. Any vents or pressure release valves should be slowly opened to allow the unit to vent to atmospheric pressure. Air monitoring for explosive/flammable gases and toxic vapors should be conducted during the venting with the results recorded in a log book. If dangerous concentrations of gases evolve from the vent or the pressure is too great, leave the area immediately.

5. Touch tank opening equipment to the bolts in the hatch lid and allow electrical conductive path to form. Slowly remove bolts and/or hatch with spark resistant tools (brass/beryllium). If a pressure build up is encountered or detected, cease opening activities and leave the area.

6. Screen tanks for explosive/flammable gases and toxic vapors with air monitoring instruments. Depending on the study objectives and site conditions, conduct characteristic screening (e.g., pH, halogen, etc.) as desired. Collect a small volume of sample for flash point testing, if warranted. Note the state, quantity, number of phases, and color of the tank contents. Record all relevant results, observations, and information in a logbook. Compare the screening results with any pre-existing data to determine if the tank should be sampled.

7. Select the appropriate sampling equipment based on the state of the material and the type of tank. Sampling equipment should be constructed of non-reactive materials that will meet the study's objective(s).

8. Place oil wipe (as necessary), sampling equipment, and sample containers near tanks(s) to be sampled.

AIR MONITORING FOR TOXIC VAPORS, EXPLOSIVE GASES AND OXYGEN DEFICIENT ATMOSPHERES SHOULD BE CONTINUOUS DURING TANK SAMPLING.

Liquids -- Slowly lower the bailer, bacon bomb, DipstickTM, COLIWASA, or Teflon® tubing to the desired sampling depth. (NOTE: In work areas where explosive/flammable

atmospheres could occur, peristaltic pumps powered by 12 V. batteries should not be used.) Close the sampling device or create a vacuum and slowly remove the sampling device from the tank. Release the sample from the device into the sample container. Repeat the procedure until a sufficient sample volume is obtained.

Solids/Semi-Solids - Use a push tube, bucket auger, screw auger, MucksuckerTM, or if conditions permit a pneumatic hammer/drill to obtain the sample. Carefully extrude the sample from the sampling device or use a clean stainless steel spoon to place the sample into containers for analyses.

9. Close the tank when sampling is complete. Segregate contaminated sampling equipment and investigative derived wastes (IDW) containing incompatible materials as determined by the screening procedure (Step #6). At a minimum, contaminated equipment should be cleaned with laboratory detergent and rinsed with tap water prior to returning it from the field. IDW should be managed according to Section 5.15, and Region 4's Contaminated Media Policy.

Miscellaneous Contaminated Materials

Sampling may be required of materials or equipment (e.g., documents, building materials, equipment, etc.) to determine whether or not various surfaces are contaminated by hazardous constituents, or to evaluate the effectiveness of decontamination procedures.

Wipe or swab samples may be taken on non-absorbent, smooth surfaces such as metal, glass, plastic, etc. The wipe materials must be compatible with the solvent used and the analyses to be performed, and should not come apart during use. The wipes are saturated with a solvent; methylene chloride, hexane, isopropanol or analyte free water depending on the parameters to be analyzed. The laboratory performing the analyses can provide the appropriate solvent. Wipe samples should not be collected for volatile organic compounds analysis. Sampling personnel should be aware of hazards associated with the selected solvent

and should take appropriate precautions to prevent any skin contact or inhalation of these solvents. All surfaces and areas selected for sampling should be based on the study's objectives. Typically, 10 cm by 10 cm templates are prepared from aluminum foil which are secured to the surface of interest. The prepared (saturated with solvent) wipe(s) is removed from its container with tongs or gloves, and used to wipe the entire area with firm strokes using only one side of the wipe. The goal is to systematically wipe the whole area. The wipe is then folded with the sample side inward and placed into the sample container. This procedure is repeated until the area is free of visible contamination or no more wipes remain. Care should be taken to keep the sample container tightly sealed to prevent evaporation of the solvent. Samplers must also take care to not touch the used side of the wipe.

For items with porous surfaces such as documents (usually business records), insulation, wood, etc., actual samples of the materials are required. It is therefore important, that during the collection and/or analyses of the sample that evidentiary material is not destroyed.

All secondary containing pails will be secured in the vehicles while transporting the samples from the field to the laboratory for analyses. In addition, each pail should indicate when protective equipment is recommended to handle the actual waste/sample material

REFERENCES

United States Environmental Protection Agency. November 2001. *Environmental Investigations Standard Operating Procedures and Quality Assurance Manual.*

Benchmark FOPs:

011 *Calibration and Maintenance of Portable Photoionization Detector*
046 *Sample Labeling, Storage and Shipment Procedures*

TABLE 1

SAMPLING EQUIPMENT for VARIOUS WASTE UNITS

Equipment	Waste Units/Phases	Limitations
scoop with bracket/conduit	impoundments, piles, containers, tanks/liquids, solids, sludges	Can be difficult to collect deeper phases in multiphase wastes. Depth constraints.
spoon	impoundments, piles, containers/solids, sludges	Similar limitations as the scoop. Generally not effective in sampling liquids.
push tube	piles, containers/cohesive solids, sludges	Should not be used to sample solids with dimensions >'/2 the diameter of the tube. Depth constraints
auger	impoundments, piles, containers / solids	Can be difficult to use in an impoundment or a container, or for solidified wastes.
sediment sampler	impoundments, piles/solids, sludges	Should not be used to sample solids with dimensions >'/2 the diameter of the tube.
ponar dredge	impoundments/solids, sludges	Must have means to position equipment to desired sampling location. Difficult to decon.
COLIWASA or drum	impoundments, containers,	Not good with viscous wastes. Devices >_ 7'
thief	tanks/liquids	Require 2 samplers to use effectively.
DipstickTM /	impoundments, containers,	Not recommended for tanks >11 feet deep.
MucksuckerTM	tanks/liquids, sludges	Devices _> 7' require 2 samplers to use effectively
bacon bomb	impoundments, tanks/ liquids	Not good with viscous wastes.
bailer	impoundments, tanks/ liquids	Only if waste is homogeneous. Not good with viscous wastes
peristaltic pump with vacuum jug assembly	impoundments, tanks/liquids	Cannot be used in flammable atmospheres. Not good with viscous wastes
back-hoe bucket	piles/solids, sludges	May be difficult to access desired sampling location. Difficult to decon. Can lose volatiles.
split-spoon	piles/solids	Requires drill rig or direct push equipment.
roto-hammer	piles, containers/solids	Physically breaks up sample. May release volatiles. Not for flammable atmospheres.

TurnKey Environmental Restoration, LLC

Field Operating Procedures

Calibration & Maintenance of Portable Particulate Meter

FOP 084.0

CALIBRATION AND MAINTENANCE OF PORTABLE PARTICULATE METER

PURPOSE

This guideline describes a method for calibration of a portable particulate meter, specifically the Thermo Electron Corporation MIE DataRAM 4 (Model DR-4000). The DataRAM 4 measures the concentration of airborne particulate matter (liquid or solid), as well as mean particle size, air temperature, and humidity, providing direct and continuous readout as well as electronic recording of the information. This parameter is of interest both as a general indicator of air quality, and because of its pertinence to community air monitoring typically required at most construction/remediation/investigation sites. The DataRAM covers a wide measurement range from 0.0001 mg/m^3 to 400 mg/m^3. With its large capacity internal data logging capabilities with data retrieval on screen or downloaded, the DataRAM can store up to 50,000 data points, including individual point averages, particle size, temperature, and humidity with time stamp as well as overall average and maximum concentration.

Because the DataRAM meter must be factory calibrated once a year, this guideline presents a method for start-up, operation, and maintenance, which is performed to verify instrument function. All field instruments will be calibrated, verified and recalibrated at frequencies required by their respective operating manuals or manufacturer's specifications, but not less than once each year. Field personnel should have access to all operating manuals for the instruments used for the field measurements. This procedure also documents critical maintenance activities for this meter. The user should reference the manufacturer's instruction manual prior to operating this unit.

ACCURACY & PRECISION

The calibrated accuracy of the DataRAM 4 particulate meter is within ± 2% of reading ± precision over the temperature range of -4° to 158° F (-10° to 50° C) and 10 to 95% relative humidity (non-condensing). The precision is ± 1% of reading or ± 0.001 mg/m^3, whichever

is greater (1-second averaging) and ± 0.3% of reading or ± 0.0003 mg/m^3, whichever is greater (10-second averaging).

INSTRUMENT PANEL VIEW

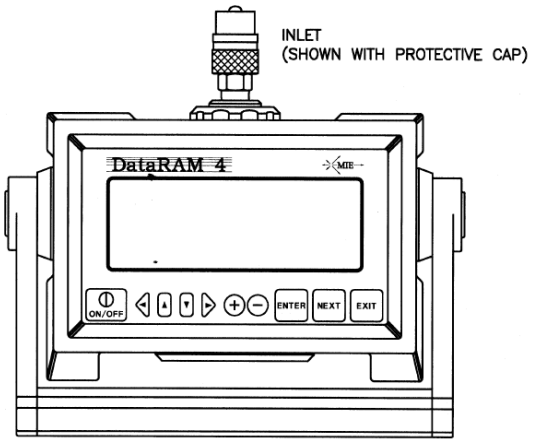


FIGURE 1. FRONT–PANEL VIEW OF DataRAM

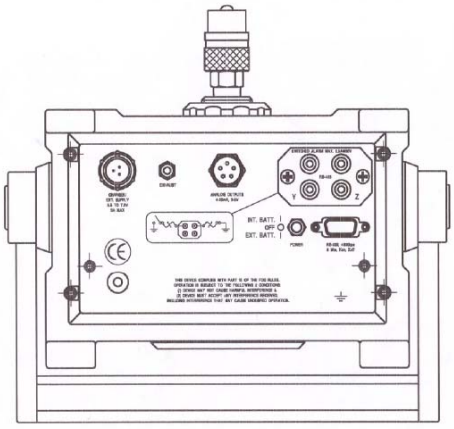


FIGURE 2. BACK–PANEL VIEW OF DataRAM

MAINTENANCE

General Guidelines

The DataRAM 4 is designed to be repaired at the factory. No user serviceable components are inside the metal enclosure of the DataRAM 4 with exception of the filter cartridge or the analytic filter holder. Access to the internal components of the unit by others than authorized MIE personnel voids warranty.

Unless a MALFUNCTION message is displayed, or other operational problems occur, the DataRAM 4 should be returned to the factory once every two years for routine check out, test, cleaning and calibration check.

Battery Charging and Cycling

If the DataRAM 4 is to be operated without its charger/power supply, i.e., deriving power from its internal battery, this battery should be fully charged before initiating a run. The

DataRAM 4 charger/power supply can be connected continuously to the instrument whether the DataRAM 4 is on or off. If the charger/power supply is not connected, the internal battery will discharge very slowly depending on storage temperature. Low storage temperature reduces battery capacity. High storage temperatures, however, reduce battery life which is of the order of 8 years at 20°C (68°F), and only 2 years at 40°C (104°F).

In general, the user should maintain the battery charge as high as possible in order to extend its charge/discharge cycling capacity (this characteristic differs from that of nickel-cadmium batteries).

Instrument Storage

If the DataRAM 4 is to be stored for an extended period of time (i.e., 3 months or more), place the 3-position switch on the back panel in its OFF position (mid-position), in order to minimize gradual battery discharge. This will have no effect on data retention or internal clock function. It is recommended, however, that the battery be recharged every 3 months in order to prolong battery life.

During storage always snap on quick-connect cap over the instrument inlet to protect the sensing optics from gradual dust contamination. Store DataRAM 4 in a dry environment.

Filter Replacement

To replace either of two types of filters used with DataRAM 4, place the instrument on its back rubber feet (front panel facing upward). On the bottom surface of the DataRAM, locate the large threaded plastic filter cover and holding the cross bar, rotate this cover counterclockwise. Remove cover and the filter holder within the open cavity.

HEPA Filter Cartridge Replacement

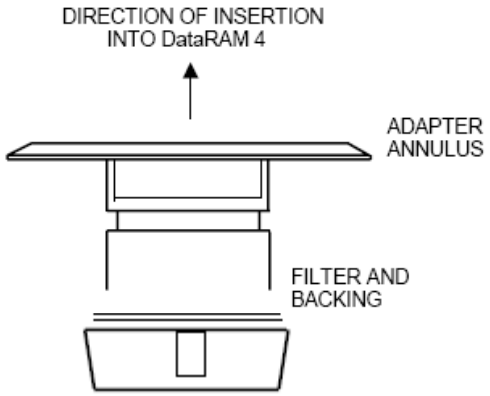
The DataRAM 4 is shipped from the factory with the HEPA filter cartridge installed. This cartridge can be identified by its metallic cover. Remove this cartridge. Clean the internal black rubber gasket against which the cartridge is normally compressed. Install new HEPA-type cartridge (MIE part no. MSA-95302) by inserting its wider ridged end first. Reposition threaded plastic cover engaging threads carefully; rotate cover clockwise, hand tightening firmly. Properly dispose of used cartridge to prevent inadvertent re-use.

Analytic Filter Installation/Replacement

In order to install or replace the analytical filter holder, proceed as follows. Remove the HEPA cartridge normally in place. Remove (separate) the inlet cover (with the blue plug) of the Millipore plastic filter holder from the rest of that holder assembly containing the white membrane filter. Insert firmly the gray plastic adapter annulus into the open face of the filter holder assembly. Remove the red plastic plug from the exhaust nipple of the filter holder assembly. Ensure that all three components of the holder assembly are fully compressed to preclude any leafage. Insert the assembly into the filter cavity of the DataRAM 4 with the gray plastic adapter annulus bearing against the internal black gasket (adapter annulus inserted first). Reposition threaded plastic cover and hand-tighten carefully and firmly. Set aside HEPA cartridge for future use.

In order to remove and/or to replace the membrane filter within its holder, remove the gray plastic adapter annulus and separate (pry apart) the two transparent plastic rings that compress the membrane filter. Make sure to remove and replace only the membrane filter (using tweezers), leaving the white backing disc in the holder. A new membrane filter should then be placed over that backing and the sealing ring should then be inserted to trap and compress the filter and backing discs. For storage, the inlet cap with the blue plug should be inserted as well as the red plug on the back of the filter holder.

Analytical filter holder with adapter annulus inserted



Cleaning of Optical Sensing Chamber

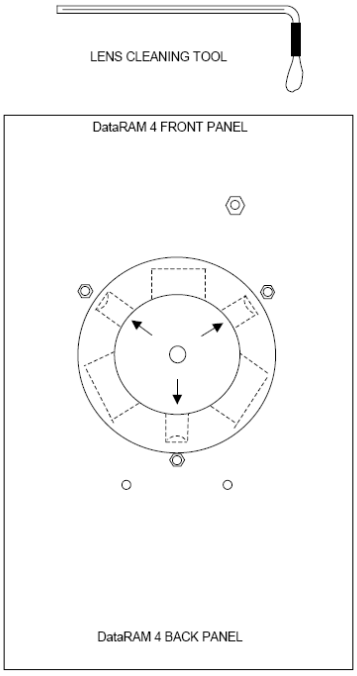
Although the DataRAM 4 incorporates filtered air shielding of the critical optical sensing surfaces, continued sampling of airborne particles at high concentrations may result in gradual build-up of contamination on those interior surfaces of the sensing chamber components. This may cause an excessively high optical background level. If this background level does becomes excessive, the DataRAM 4 will alert the user at the completion of the zeroing sequence by the display of a BACKGROUND HIGH message. If this message is presented, the DataRAM 4 can continue to be operated providing accurate measurements. However, it is then advisable to clean the front surfaces of the optical lenses within the sensing chamber at the first convenient opportunity, as described below. The tools required for this cleaning are: an intense concentrated light source (e.g., flash light) to view the inside of the sensing chamber, denatured alcohol, a soft lint-free cloth, and the special cleaning tool provided with the DataRAM 4 consisting of a cut-off cotton swab inserted in a plastic sleeve and held by a right-angle Allen wrench.

Proceed as follows to clean the lens surfaces within the sensing chamber:

- **Make sure to shut off power completely before proceeding with cleaning**
- Install the stainless steel cover on the inlet of the DataRAM 4 to protect this fitting.
- Place the DataRAM 4 upside down on a table, resting the instrument on the inlet cover and the rear protective bumper.
- Unscrew the gray plastic cover of the filter cavity on the bottom surface of the DataRAM 4.
- Remove the filter cartridge from its cavity.
- Carefully clean the black soft filter-sealing gasket within the filter cavity by wiping it with the lint-free soft cloth. Use alcohol if necessary.
- Shine the concentrated light source into the sensing chamber located about 3 cm (1¼ in.) beyond the soft-sealing gasket in the filter cavity.
- Locate the three smaller side cavities inside the sensing chamber, identified by the arrows on that figure (see page 6). These three cavities contain the lenses of the two sources and the common detector of the DataRAM 4. The frontal surfaces of these lenses are likely to require cleaning if the instrument indicates BACKGROUND HIGH.
- Wet the cotton swab of the lens-cleaning tool with alcohol (e.g., methanol, ethanol, or rubbing alcohol).

- Holding the cleaning tool by its long handle, insert this tool into the sensing chamber without touching the walls of this chamber.
- Direct the cotton swab tip towards the opening of one of the three smaller cavities as indicated by the arrows of the figure below, and insert the cotton tip into this cavity as far as it will go. Gently wipe that internal surface touched by the swab tip by a rotating motion. Carefully withdraw the swab tip from the cavity.
- Repeat previous cleaning step for the other two small cavities.
- Carefully remove the cleaning tool from the sensing chamber. Allow the alcohol to dry leaving the filter cavity open for about 15 minutes.
- Re-insert the filter cartridge into its cavity and close it with its gray plastic cover, hand-tightening it firmly. Remove the inlet cap and store on its pod on the back panel.
- Place the DataRAM 4 right side up and key ON. Proceed to check its optical background by running the ZERO/INITIALIZE check as. The message READY! should appear at the end of this check indicating that the lens contamination has been eliminated. Should the message BACKGROUND HIGH persist after completion of the above-described lens cleaning procedure, please contact the factory.

Lens cleaning tool and bottom view of open filter cavity showing location of sensor chamber lens cavities (arrows).



FACTORY CALIBRATION

For mass concentration measurements, each DataRAM 4 is factory calibrated against a set of reference monitors that, in turn, are periodically calibrated against a gravimetric standard traceable to the National Institute of Standards and Testing (NIST).

The primary factory reference method consists of generating a dust aerosol by means of a fluidized bed generator, and injecting continuously the dust into a mixing chamber from which samples are extracted concurrently by two reference filter collectors and by two master real-time monitors that are used for the routine calibration of every DataRAM 4.

The primary dust concentration reference value is obtained from the weight increase of the two filters due to the dust collected over a measured period of time, at a constant and known flow rate. The two master real-time monitors are then adjusted to agree with the reference mass concentration value (obtained from averaging the measurements of the two gravimetric filters) to within ±1%.

Three primary, NIST traceable, measurements are involved in the determination of the reference mass concentration: the weight increment from the dust collected on the filter, the sampling flow rate, and the sampling time. Additional conditions that must be met are: a) suspended dust concentration uniformity at all sampling inlets of the mixing chamber; b) identical sample transport configurations leading to reference and instrument under calibration; and c) essentially 100% collection efficiency of filters used for gravimetric reference for the particle size range of the test dust.

The test dust used for the MIE factory calibration of the DataRAM 4 is SAE Fine (ISO Fine) supplied by Powder Technology, Inc. It has the following physical characteristics (as dispersed into the mixing chamber):

- Mass median aerodynamic particle diameter: 2 to 3 μm
- Geometric standard deviation of lognormal size distribution: 2.5
- Bulk density: 2.60 to 2.65 g/cm3
- Refractive index: 1.54

In addition to the mass calibration described above, the DataRAM 4 is factory calibrated using a gas with known scattering coefficient in order to adjust the relative scattering irradiance at the two source wavelengths.

ATTACHMENTS

None

TurnKey Environmental Restoration, LLC

FIELD OPERATING PROCEDURES

Field Quality Control Procedures

FOP 085.0

FIELD QUALITY CONTROL PROCEDURES

PURPOSE

In addition to traditional environmental samples (e.g., soil, groundwater, wipe, vapor etc.) described in each project work plan, site-specific field quality assurance/quality control (QA/QC) samples are typically collected and analyzed to support the required third-party data usability assessment effort of a project. Site-specific QA/QC samples generally include matrix spikes, matrix spike duplicates, blind duplicates (where appropriate), and trip blanks which accompany aqueous volatile organic compound (VOC) samples only.

The number of QA/QC field samples (blind duplicate, matrix spike/matrix spike duplicate, trip blank, field blank, or equipment blank) will be designated prior to field mobilization, but final QC sample locations will be contingent upon field conditions. This procedure outlines and discusses each QA/QC sample that may be required during a project.

PROCEDURE

A brief summary of each QA/QC sample identified above is presented below. Where appropriate, the procedure to be used to collect these samples is also presented.

- **Trip Blanks** – A sufficient number of trip blanks for VOC analysis must be prepared by the laboratory and delivered to the sampling team prior to a sampling event, typically two or three 40-ml VOA vials with organic free reagent water. One sealed blank will be carried into the field per day along with the sample containers for each day that water matrix volatile organic samples are collected. Trip blanks will be transported and handled in the same manner as the actual samples. The results of the trip blank analysis will be reviewed to evaluate if the potential for sample contamination during transportation and handling exists. The trip blanks will be analyzed for the same VOCs (and method) as the project groundwater samples.

- **Blind Duplicate** – One blind duplicate must be collected and analyzed per 20 samples collected per matrix (i.e., soil, groundwater, soil vapor, etc.). The location

of the sample collection point will not be disclosed to the analytical laboratory, therefore the field sample containers will be returned to the laboratory identified only as the "blind duplicate." The well or sample location will be recorded in the Project Field Book or handheld RuggedReader® Pocket PC and on the field data sheets, and the results will be compared to review analytical precision. Sample analysis will be identical to the original sample per the project work plan. The Blind Duplicate sample must be collected simultaneously from the same source under identical conditions as the original sample.

- **Matrix Spike/Matrix Spike Duplicate (MS/MSD)** – A sufficient volume of sample will be collected at one sampling location per sampling event for MS/MSD analysis per matrix (i.e., soil and groundwater only). The laboratory will report the results of the MS/MSD analysis, which will be reviewed for sampling and analysis precision and accuracy. Sample analysis will be identical to the original sample per the project work plan. The MS/MSD sample must be collected simultaneously from the same source under identical conditions as the original sample.

- **Equipment (Rinsate) Blank** – In general, dedicated sampling equipment is used to minimize field decontamination time and avoid the need for equipment blanks; however there may be instances where the use of non-dedicated equipment cannot be avoided. An equipment blank will be collected for each day of sampling activity when non-dedicated sampling equipment is used. These equipment blank samples will be used as a QC check of the decontamination procedures for sampling equipment. Sample analysis for the equipment blank will consist of the most comprehensive parameter list used for risk assessment in which the non-dedicated equipment was used for environmental sample collection. During most projects, every effort to use dedicated sampling equipment should be made in order to minimize field decontamination time and avoid the need for equipment blanks. Equipment Blank sampling procedure is as follows:
    - Non-dedicated equipment are to be decontaminated in accordance with TurnKey's Non-disposable and Non-dedicated Sampling Equipment Decontamination procedures prior to use in the field. If organic-free

deionized water (generally provided by the laboratory) is not available for decontamination, equipment will be allowed to thoroughly air dry.
  - Once properly rinsed or allowed to air dry, analyte-free water (provided by the laboratory) is poured appropriately over or through the decontaminated sample collection device, collected in a sample container, and returned to the laboratory as a sample.

- **Field Blank** – A field blank is a sample of the unused final decontamination rinse water that is collected at the sampling site and returned to the laboratory as a sample. Sample analysis for the field blank will consist of the most comprehensive parameter list used during the investigation.

- **Split Sample** – A split sample is a sample that has been portioned into two or more containers from a single sample container or sample mixing container. Samples for VOC analysis should never be mixed prior to splitting.

- **Blank Wipe Samples** – There are two types of blank wipe samples, an equipment blank and a field blank that may be required per the project work plan, both are described below:
  - Equipment Blank – Required only if reusable templates are used for wipe sample collection. The decontaminated template is wiped with a hexane saturated swab. The swab is placed in the appropriate sample container and returned to the laboratory as a sample.
  - Field Blank – Clean disposable gloves are wiped with a hexane saturated swab. The swab is placed in the appropriate sample container and returned to the laboratory as a sample.

REFERENCES

TurnKey FOPs:
040 Non-disposable and Non-dedicated Sampling Equipment Decontamination

FIELD OPERATING PROCEDURES

Outdoor Ambient Air VOC Sample Collection Procedure

FOP 090.0

OUTDOOR AMBIENT AIR VOC SAMPLE COLLECTION PROCEDURE

PURPOSE

This procedure describes the methods for collecting outdoor ambient air samples for volatile organic compound (VOC) analysis via USEPA Method TO-15 using Summa® canisters (or approved other). Typically, outdoor air samples are collected to characterize and document site-specific VOCs that may be present in outdoor ambient air. For sample collection associated with intrusive activities that may potentially release VOCs to the ambient air, sample location(s) typically are collected downwind of the intrusive activity at the perimeter of the work area and/or exclusion zone for the Site. Upwind sample location(s) may be utilized if regional facilities (e.g. gasoline service station, factories) are located proximate to the Site to assess off-site ambient VOC contributions (background).

SAMPLE COLLECTION PROCEDURES

The following actions should be taken to document conditions during outdoor air sampling and ultimately to aid in the interpretation of the analytical results:

- A site map should be prepared to indicate the outdoor ambient air sample locations including all site improvements (e.g., buildings, access roads, etc.), public roads/streets (if applicable), the location of potential VOC contributors (e.g., gasoline stations, factories, lawn movers, etc.), compass orientation (north), and scale.

- Weather conditions (e.g., precipitation, wind speed, outdoor temperature, and barometric pressure) should be reported on the Air Canister Field Record (sample attached); and

- Any pertinent observations, such as odors, readings from field instrumentation, and significant activities in the vicinity (e.g., operation of heavy equipment or dry cleaners) should be recorded.

OUTDOOR AMBIENT AIR VOC SAMPLE COLLECTION PROCEDURE

The following describes the outdoor air sampling procedure:

1. Typically, a 6-liter, passivated (inert), stainless steel, evacuated sampling sphere (e.g., Summa canister) (or approved other) will be supplied by the laboratory that will be conducting the analysis. The canister should be received from the laboratory, certified clean, evacuated, and prepared for sampling.

2. Sampling will take place in accordance with the project work plan. Selected sample locations will be sufficiently spaced to allow location(s) to be field modified, if necessary.

3. The number of Summa canisters required as well as the flow rate of the constant differential low volume flow controllers will be supplied by the laboratory in accordance with the project work plan.

4. Prior to placement, complete an Air Canister Field Record (sample attached) of each canister, which includes: project information, field staff, weather conditions, canister serial number, flow controller number, sample date(s)/time(s), shipping date(s), canister lab vacuum, field vacuum check, initial field vacuum, final field vacuum, and duration of sample collection.

5. The pressure in the canisters must be monitored with the laboratory provided pressure gauge at the beginning and the end of the sampling period as well as before and after shipment of the canisters at the laboratory. The **target final field vacuum must be approximately 5 inches of mercury. Samples with a final field vacuum of greater than 10 inches of mercury, or equal to zero, will be flagged** and usability of the data will depend on the sample volume and reporting limits that can be achieved.

6. Canisters may be placed on the ground provided there is a clear plastic sheet beneath it to prevent cross contamination. The intake tubing, however, must be positioned at a height of approximately 3 to 5-feet above grade to collect air at an elevation representative of ambient air within the breathing zone. Typically, the canister is chained and locked to a secure step ladder with the intake tubing tethered to the ladder.

7. Ship the canisters to the laboratory under chain-of-custody command within three days of sample collection so that no sample will exceed the 30-day holding time (since receipt from the lab) per USEPA TO-15.

8. Air samples will be analyzed by Gas Chromatography/Mass Spectroscopy (GC/MS) in accordance with EPA Method TO-15, or as specified. Analytical results will be reported as concentrations of each VOC at each location during each sampling event, typically in parts per billion by volume (ppbv).

9. Sample collection should take place on warm, dry days. If rain or high humidity conditions develop during sampling, the sampling event should be suspended. Temperature, barometric pressure, and wind speed should be monitored during the sampling event, for use in analysis of the results. The combination of sampling location, height, and meteorological conditions will assure that sampling will measure VOCs at their highest concentrations.

QUALITY ASSURANCE / QUALITY CONTROL (QA/QC)

Extreme care should be taken during all aspects of sample collection to ensure that sampling error is minimized and high quality data are obtained. The sampling team members should avoid actions (e.g., fueling vehicles, using permanent marking pens, and wearing freshly dry-cleaned clothing or personal fragrances), which can cause sample interference in the field. Appropriate QA/QC protocols must be followed for sample collection and laboratory analysis, such as use of certified clean sample devices, meeting sample holding times and temperatures, sample accession, chain of custody, etc. Samples should be delivered to the analytical laboratory as soon as possible after collection. In addition, laboratory accession procedures must be followed including field documentation (sample collection information and locations), chain of custody, field blanks, field sample duplicates, and laboratory duplicates, as appropriate.

Some methods require collecting samples in duplicate to assess errors. Duplicate and/or split samples should be collected in accordance with the requirements of the sampling and analytical methods being implemented.

For certain regulatory programs, a Data Usability Summary Report (DUSR) may be required to determine whether or not the data, as presented, meets the site or project specific criteria for data quality and data use. This requirement may dictate the level of QC and the category of data deliverable to request from the laboratory. Guidance on preparing a DUSR is available by contacting the NYSDEC's Division of Environmental Remediation.

New York State Public Health Law requires laboratories analyzing environmental samples collected from within New York State to have current Environmental Laboratory Approval Program (ELAP) certification for the appropriate analyte and environmental matrix combinations. If ELAP certification is not currently required for an analyte (e.g., trichloroethene); then the analysis should be performed by a laboratory that has ELAP certification for similar compounds in air and uses analytical methods with detection limits similar to background (e.g., tetrachloroethene via EPA Method TO-15).

ATTACHMENTS

Air Canister Field Record (sample)

REFERENCES

United States Environmental Protection Agency. *Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air*. Second Addition (EPA/625/R-96/010b). January 1999.

AIR CANISTER FIELD RECORD

PROJECT INFORMATION:

Project:
Job No:
Location:
Field Staff:
Client:

SAMPLE I.D.:

Size of Canister:
Canister Serial No.:
Flow Controller No.:
Sample Date(s):
Shipping Date:
Sample Type: ☐ Indoor Air ☐ Outdoor Air
☐ Subslab, complete section below ☐ Soil Gas
Soil Gas Probe Depth:

WEATHER CONDITIONS:

Ambient Air Temp. - A.M.:
Ambient Air Temp. - P.M.:
Wind Direction:
Wind Speed:
Precipitation:

FIELD SAMPLING INFORMATION:

READING	TIME	VACUUM (inches Hg) or PRESSURE (psig)	DATE	INITIALS
Lab Vacuum (on tag)				
Field Vacuum Check [1]				
Initial Field Vacuum [2]				
Final Field Vacuum [3]				
Duration of Sample Collection				

LABORATORY CANISTER PRESSURIZATION:

Initial Vacuum (inches Hg and psia)		
Final Pressure (psia)		
Pressurization Gas		

SUBSLAB SHROUD:

Shroud Helium Concentration:
Calculated tubing volume: x 3 =
Purged Tubing Volume Concentration:
Is the purged volume concentration less than or equal to 10% in shroud?
☐ YES, continue sampling
☐ NO, improve surface seal and retest

COMPOSITE TIME (hours)	FLOW RATE RANGE (ml/min)
15 Min.	316 - 333
0.5 Hours	158 - 166.7
1	79.2 - 83.3
2	39.6 - 41.7
4	19.8 - 20.8
6	13.2 - 13.9
8	9.9 - 10.4
10	7.92 - 8.3
12	6.6 - 6.9
24	3.5 - 4.0

NOTES:

1 Vacuum measured using portable vacuum gauge (provided by Lab)
2 Vacuum measured by canister gauge upon opening valve
3 Vacuum measured by canister gauge prior to closing valve

Signed:

APPENDIX D

PROJECT DOCUMENTATION FORMS

INSPECTOR'S DAILY REPORT

CONTRACTOR			
CLIENT		DATE:	

LOCATION				DAY		JOB NO.	
WEATHER		TEMP	° F	START		END	

WORK PERFORMED:

CONTRACTOR ACTIVITIES:

[PUT CONTRACTOR ACTIVITIES HERE, BE SPECIFIC. TYPE OF EQUIPMENT, ACTIVITIES PERFORMED, BY WHOM, LOCATION OF LANDFILL ETC.]

TURNKEY ACTIVITIES:

[PUT ENGINEER ACTIVITIES HERE, BE SPECIFIC. TYPE OF EQUIPMENT, ACTIVITIES AND TESTING PERFORMED, SAMPLES COLLECTED, BY WHOM, LOCATION OF LANDFILL ETC.]

TEST PERFORMED		*QA PERSONNEL* SIGNATURE			
PICTURES TAKEN	none	REPORT NO.			
VISITORS	none	SHEET	1	OF	

INSPECTOR'S DAILY REPORT

MEETINGS HELD & RESULTS:

CONTRACTOR'S WORK FORCE AND EQUIPMENT

DESCRIPTION	*H*	#	*DESCRIPTION*	*H*	#	*DESCRIPTION*	*H*	#	*DESCRIPTION*	*H*	#
Field Engineer						Equipment			Front Loader Ton		
Superintendent			Ironworker			Generators			Bulldozer		
						Welding Equip.			DJ Dump truck		
Laborer-Foreman			Carpenter						Water Truck		
Laborer									Backhoe		
Operating Engineer			Concrete Finisher						Excavator		
						Roller			Pad foot roller		
Carpenter						Paving Equipment					
						Air Compressor					

REMARKS:

REFERENCES TO OTHER FORMS:

SAMPLES COLLECTED:					
SAMPLE NUMBER					
APPROX. LOCATION OF STOCKPILE					
NO. OF STOCKPILE					
DATE OF COLLECTION					
CLIMATOLOGIC CONDITIONS					
FIELD OBSERVATION		SHEET		OF	

DAILY LOG	DATE			
	REPORT NO.			
	PAGE		OF	

PROBLEM IDENTIFICATION REPORT

Date:

Project:

Job No:

Location:

CQA Monitor(s):

Client:

Contractor:

Contractor's Supervisor:

WEATHER CONDITIONS:

Ambient Air Temp. - A.M.:

Ambient Air Temp. - P.M.:

Wind Direction:

Wind Speed:

Precipitation:

Problem Description:

Problem Location (reference test location, sketch on back of form as appropriate):

Problem Causes:

Suggested Corrective Measures or Variances:

Linked to Corrective Measures Report No. *or Variance Log No.*

Approvals (initial):

CQA Engineer:

Project Manager:

Signed:

CQA Representative

DAILY LOG	DATE			
	REPORT NO.			
	PAGE		OF	

CORRECTIVE MEASURES REPORT

Date:

Project:

Job No:

Location:

CQA Monitor(s):

Client:

Contractor:

Contractor's Supervisor:

WEATHER CONDITIONS:

Ambient Air Temp. - A.M.:

Ambient Air Temp. - P.M.:

Wind Direction:

Wind Speed:

Precipitation:

Corrective Measures Undertaken (reference Problem Identification Report No.)

Retesing Location:

Suggested Method of Minimizing Re-Occurrence:

Approvals (initial):

CQA Engineer:

Project Manager:

Signed:

CQA Representative

APPENDIX E

HEALTH AND SAFETY PLAN (HASP)
INCLUDING COMMUNITY AIR MONITORING PLAN (CAMP)

SITE HEALTH AND SAFETY PLAN
for
BROWNFIELD CLEANUP PROGRAM
RI ACTIVITIES

3077 UNION ROAD SITE
ORCHARD PARK, NEW YORK

September 2020 0105-017-010

Prepared for:

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SOUTHSIDE PLAZA SITE
HEALTH AND SAFETY PLAN FOR RI ACTIVITIES

ACKNOWLEDGEMENT

Plan Reviewed by (initial):

Corporate Health and Safety Director: Thomas Forbes

Project Officer: Michael Lesakowski

Project Manager: Bryan Mayback

Designated Site Safety and Health Officer: TBD

Acknowledgement:
I acknowledge that I have reviewed the information contained in this site-specific Health and Safety Plan, and understand the hazards associated with performance of the field activities described herein. I agree to comply with the requirements of this plan.

NAME (PRINT)	SIGNATURE	DATE

BENCHMARK TURNKEY

3077 UNION ROAD SITE
HEALTH AND SAFETY PLAN FOR RI ACTIVITIES

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HEALTH AND SAFETY PLAN FOR RI ACTIVITIES

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1.0 Introduction

1.1 General

In accordance with OSHA requirements contained in 29CFR 1910.120, this Health and Safety Plan (HASP) describes the specific health and safety practices and procedures to be employed by Benchmark Environmental Engineering & Science, PLLC in association with TurnKey Environmental Restoration (Benchmark-TurnKey) employees during Remedial Investigation (RI) activities at the 3077 Union Road Site (Site) located in the Town of Orchard Park, Erie County, New York. This HASP presents procedures for Benchmark-TurnKey employees who will be involved with RI field activities; it does not cover the activities of other contractors, subcontractors or individuals on the Site. These firms will be required to develop and enforce their own HASPs as discussed in Section 2.0. Benchmark-TurnKey accepts no responsibility for the health and safety of contractor, subcontractor or other personnel.

This HASP presents information on known Site health and safety hazards using available historical information, and identifies the equipment, materials and procedures that will be used to eliminate or control these hazards. Environmental monitoring will be performed during field activities to provide real-time data for on-going assessment of potential hazards.

1.2 Background

The 17.91-acre Site consists of one tax parcel identified as 3077 Union Road: SBL No. 152.12-4-6.1 The western portion of the Site is developed with two vacant structures and an associated parking lot. Building 1 is a vacant plaza with historic tenants that included a dry cleaner and automotive repair. Building 2 has a history of being used for storage and equipment repair/maintenance. The remaining area is wooded vacant land.

The Site was identified as having been vacant/agricultural land from 1894 to 1965. The site has been commercial and vacant wooded land since 1965. Historical uses of Building 1 include dry cleaning, automotive repair, and other commercial tenants. Historical uses of Building 2 include concrete/masonry contractor storage and equipment repair/maintenance. The historic use of the Site as a dry cleaner has apparently impacted the Site as evidenced by chlorinated volatile organic compounds (CVOCs) that have been

detected in the soil and groundwater exceeding 6 NYCRR Part 375 Unrestricted soil cleanup objectives (USCOs), Restricted SCOs (RSCOs), Protection of Groundwater SCOs (PGSCOs, Ref. 2), and T.O.G.S 1.1.1 Groundwater Quality Standards/Guidance Values (GWQS/GV, Ref. 3).

1.3 Known and Suspected Environmental Conditions

Phase I and Phase II investigations have been completed at the Site. Findings of the investigations are detailed below:

January 2018 – Phase I Environmental Site Assessment

TurnKey completed a Phase I Environmental Site Assessment, dated January 2018, on the subject Site. TurnKey identified the following recognized environmental conditions (RECs) as they relate to the 3077 Union Road Site:

- The dry cleaner and septic system identified in a 1967 survey, due to the anticipated use of solvents and the potential for subsurface soil and/or groundwater impacts.
- Historic automotive repair at Building 1 and equipment repair/maintenance with a floor drain at Building 2.
- The remaining hazardous/regulated materials and vehicle components (engines, etc.) remaining at the Site as such will require proper off-site disposal if not intended for future use.

Due to the history of dry cleaning with the use of a private septic system, automotive repair, and equipment repair/maintenance, TurnKey recommended a Phase II Environmental Investigation at 3077 Union Road to assess subsurface soil and groundwater conditions.

February 2018 – Phase II Environmental Investigation

TurnKey completed a Phase II Environmental Investigation, dated February 2018, on the subject Site. The investigation consisted of sixteen soil borings (SB-1 through SB-16) with five piezometers (PZ-1 through PZ-5) installed. All soil borings and piezometers were located on the developed portion of the Site near Union Road. Findings of the Phase II are detailed below:

- The highest photoionization detector (PID) reading identified during the work was 2,200 ppm at SB-7 (4-6 ft). PID readings decreased to 150 ppm at SB-7 at the deeper 6 to 7 ft interval, which is just above bedrock.
- Laboratory analytical results revealed the presence of CVOC-impacted soil and groundwater east of the former dry cleaner at Building 1. The highest CVOC concentrations in soil and groundwater were identified at SB-7/PZ-3, located approximately five feet off the east wall of building 1. Additional information relative to soil and groundwater impacts identified at the Site is provided below:
    - Soil – Tetrachloroethene (PCE) and its degradation compounds trichloroethene (TCE) and cis-1,2-dichloroethene (cis-1,2-DCE) exceeded Part 375 USCOs, RSCOs, and/or PGWSCOs in soil samples collected from four soil borings (SB-3, SB-7, SB-8, and SB-11). PCE in soil at SB-7 (4-6 ft) was identified at a concentration exceeding its respective characteristic hazardous waste threshold.
    - Groundwater – PCE and/or its degradation compounds TCE, cis-1,2-DCE, and vinyl chloride (VC) exceeded GWQS at PZ-2, PZ-3, and PZ-4. In addition, total xylenes exceeded its respective GWQS at PZ-2.
- The source of the CVOC-impacted soil and groundwater is reasonably attributable to the historic dry cleaner formerly located within the previous Gold N Ham tenant space. Xylenes in water may be attributed to the dry cleaner if a Stoddard/petroleum-based solvent was used.
- Based on the proximity of the existing building to the CVOC impacts, there is the potential for CVOC-impacted soil and groundwater beneath the existing building slab
- The elevated CVOC concentrations represent a potential vapor encroachment condition (VEC) whereby sub-slab soil vapor and/or indoor air with elevated concentrations of CVOCs may be present within the existing and future buildings if left unremediated.

January 2019 – Supplemental Phase II Environmental Investigation Report

TurnKey completed a Supplemental Phase II Environmental Investigation, dated January 2019, at the subject Site. The investigation consisted of one overburden monitoring well (MW-1) and three (3) bedrock monitoring wells (MW-1D, MW-2D, and MW-4D). Findings of the Supplemental Phase II are detailed below:

- TurnKey's initial Phase II activities completed at the Site in January 2018 identified CVOC impacts in overburden soil as high as 120 mg/kg total CVOCs (SB-7) and overburden groundwater concentrations as high as 56,020 ug/L total CVOCs (PZ-3)

east of the former dry cleaner. Overburden total CVOC concentrations were as high as 38,100 ug/L (PZ-3) during the supplemental overburden groundwater sampling activities in January 2019.

- Acetone was observed in one overburden groundwater well above its respective GWQS (PZ-5).
- Based on the results of supplemental Phase II activities, VOCs in bedrock groundwater were not detected or were at concentrations significantly below GWQS except for a VC concentration of 4.7 ug/L at MW-2D, which slightly exceeds its GWQS of 2 ug/L.
- In conclusion, CVOC-impacted soil and overburden groundwater is present on-Site, which will require remediation.

The RI will be performed in support of the BCP to determine the nature and extent of impacts from these known environmental conditions and determine if others exist on this parcel.

1.4 Parameters of Interest

Based on the previous investigations, constituents of potential concern (COPCs) in soil, groundwater, and soil gas at the Site include:

- **Volatile Organic Compounds (VOCs) –** VOCs potentially present at elevated concentrations include CVOCs (1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, methylene chloride, tetrachloroethene, trichloroethene, and vinyl chloride), acetone, and xylenes.

1.5 Overview of RI Activities

Benchmark-TurnKey personnel will be on-site to observe and perform the following field activities to be completed as part of the RI:

1. **Surface Soil Sampling:** Benchmark-TurnKey will collect soil samples for the purpose of determining the nature and extent of potential COPC impacts in surface soil/fill.
2. **Subsurface Soil Sampling:** Benchmark-TurnKey will collect soil/fill samples from test pits and soil borings to determine the nature and extent of potential COPC impacts in the subsurface soil/fill.

3. **Monitoring Well/Piezometer Installation/Development and Sampling:** Benchmark-TurnKey will observe the installation of groundwater monitoring wells and piezometers, develop the wells and piezometers, and collect groundwater samples for the purpose of determining the nature and extent of potential COPC impacts. Benchmark-TurnKey will also develop and sample previously installed monitoring wells and piezometers.

2.0 ORGANIZATIONAL STRUCTURE

This section of the HASP describes the lines of authority, responsibility and communication as they pertain to health and safety functions at the Site. The purpose of this section is to identify the personnel who impact the development and implementation of the HASP and to describe their roles and responsibilities. This section also identifies other contractors and subcontractors involved in work operations and establishes the lines of communications among them for health and safety matters. The organizational structure described in this section is consistent with the requirements of 29CFR 1910.120(b)(2). This section will be reviewed by the Project Manager and updated as necessary to reflect the current organizational structure at this Site.

2.1 Roles and Responsibilities

All Benchmark-TurnKey personnel on the Site must comply with the minimum requirements of this HASP. The specific responsibilities and authority of management, safety and health, and other personnel on this Site are detailed in the following paragraphs.

2.1.1 Corporate Health and Safety Director

The Benchmark-TurnKey Corporate Health and Safety Director is ***Mr. Thomas H. Forbes, P.E.*** The Corporate Health and Safety Director is responsible for developing and implementing the health and safety program and policies for Benchmark-TurnKey, and consulting with corporate management to ensure adequate resources are available to properly implement these programs and policies. The Corporate Health and Safety Director coordinates Benchmark-TurnKey's health and safety training and medical monitoring programs and assists project management and field staff in developing site-specific health and safety plans.

2.1.2 Project Manager

The Project Manager for this Site is ***Mr. Michael Lesakowski.*** The Project Manager has the responsibility and authority to direct all Benchmark-TurnKey work operations at the Site. The Project Manager coordinates safety and health functions with the Site Safety and Health Officer (SSHO) and bears ultimate responsibility for proper implementation of this HASP. The Project Manager may delegate authority to expedite and

facilitate any application of the program, including modifications to the overall project approach as necessary to circumvent unsafe work conditions. Specific duties of the Project Manager include:

- Preparing and coordinating the Site work plan.
- Providing Benchmark-TurnKey workers with work assignments and overseeing their performance.
- Coordinating health and safety efforts with the SSHO.
- Reviewing the emergency response coordination plan to assure its effectiveness.
- Serving as the primary liaison with Site contractors and the property owner.

2.1.3 Site Safety and Health Officer

The SSHO and alternate SSHO will be determined during RI planning. The SSHO reports to the Project Manager. The SSHO 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 SSHO are:

- Managing the safety and health functions for Benchmark-TurnKey personnel on the Site.
- Serving as the point of contact for safety and health matters.
- Ensuring that Benchmark-TurnKey field personnel working on the Site have received proper training (per 29 CFR Part 1910.120(e)), that they have obtained medical clearance to wear respiratory protection (per 29 CFR Part 1910.134), and that they are properly trained in the selection, use and maintenance of personal protective equipment, including qualitative respirator fit testing.
- Performing or overseeing Site monitoring as required by the HASP.
- Assisting in the preparation and review of the HASP.
- Maintaining site-specific safety and health records as described in this HASP.
- Coordinating with the Project Manager, Site workers, and Contractor's SSHO as necessary for safety and health efforts.

2.1.4 Site Workers

Site workers are responsible for complying with this HASP or a more stringent HASP, if appropriate (i.e., Contractor and Subcontractor's HASP); using proper PPE;

reporting unsafe acts and conditions to the SSHO; and following the safety and health instructions of the Project Manager and SSHO.

2.1.5 Other Site Personnel

Other Site personnel who will have health and safety responsibilities will include the Drilling Contractor, who will be responsible for developing, implementing and enforcing a HASP equally or more stringent than Benchmark-TurnKey's HASP. Benchmark-TurnKey assumes no responsibility for the health and safety of anyone outside its direct employ. Each Contractor's HASP shall cover all non- Benchmark-TurnKey Site personnel. Each Contractor shall assign a SSHO who will coordinate with Benchmark-TurnKey's SSHO as necessary to ensure effective lines of communication and consistency between contingency plans.

In addition to Benchmark-TurnKey and Contractor personnel, other individuals who may have responsibilities in the work zone include subcontractors and governmental agencies (i.e., the NYSDEC) performing Site inspection work. The Contractor shall be responsible for ensuring that these individuals have received OSHA-required training (29CFR 1910.120(e)), including initial, refresher and site-specific training, and shall be responsible for the safety and health of these individuals while they are on-site.

3.0 HAZARD EVALUATION

Due to the presence of certain contaminants at the Site, the possibility exists that workers will be exposed to hazardous substances during field activities. The principal points of exposure would be direct contact with and incidental ingestion of soil, and inhalation of contaminated particles or vapors. Other points of exposure may include direct contact with groundwater. In addition, the use of drilling and/or medium to large-sized construction equipment (e.g., excavator) will also present conditions for potential physical injury to workers. Further, since work will be performed outdoors, the potential exists for heat/cold stress to impact workers, especially those wearing protective equipment and clothing. Adherence to the medical evaluations, worker training relative to chemical hazards, safe work practices, proper PPE, environmental monitoring, establishment work zones and Site control, appropriate decontamination procedures and contingency planning outlined herein will reduce the potential for chemical exposures and physical injuries.

3.1 Chemical Hazards

As discussed in Section 1.3, CVOC impacts have been identified in the soil/fill material present at the Site. Table 1 lists exposure limits for airborne concentrations of the COPCs identified in Section 1.4 of this HASP. Brief descriptions of the toxicology of the prevalent COPCs and related health and safety guidance and criteria are provided below.

- **1,1-Dichloroethene (CAS #75-35-4)** has a sweet chloroform-like odor. Also known as 1,1-DCE, it is a breakdown product of the anaerobic reduction of TCE, which effects the central nervous system.
- **Cis-1,2-Dichloroethene (CAS #156-59-2)** is a highly flammable organochloride with a sharp odor. Also known as 1,2-DCE, it is a breakdown product of the anaerobic reduction of trichloroethene or TCE, which effects the central nervous system.
- **Methylene Chloride (CAS #75-09-2)** is a colorless liquid with a sweet, penetrating, ether-like odor. Noncombustible but may emit toxic chloride fumes if exposed to high temperatures. Vapors are narcotic in high concentrations. Often used as a solvent and paint remover.
- **Trans-1,2-Dichloroethene (CAS #156-60-5)** is a highly flammable organochloride with a sharp odor. Also known as 1,2-DCE, it is a breakdown product of the anaerobic reduction of trichloroethene or TCE, which effects the central nervous system.

- **Tetrachloroethene (CAS #127-18-4)** was formally widely used in dry cleaning operations as a solvent. Also known as PCE, it is harmful by ingestion inhalation and skin absorption. Exposure can cause dermatitis, dizziness, nausea, liver and kidney damage. This compound is a suspected carcinogen.
- **Trichloroethene (CAS #79-01-6)** is a chlorinated hydrocarbon with a sweet smell. Also known as TCE, it was commonly used in degreasing operations. Acute (short-term) and chronic (long-term) inhalation exposure to TCE can affect the human central nervous system (CNS), with symptoms such as dizziness, headaches, confusion, euphoria, facial numbness, and weakness.
- **Vinyl Chloride (CAS #75-01-4)** is a breakdown product of TCE and is classified by EPA as a human carcinogen. Acute (short-term) exposure to high levels of vinyl chloride in air has resulted in CNS effects, such as dizziness, drowsiness, and headaches in humans. Chronic (long-term) exposure to vinyl chloride through inhalation and oral exposure in humans has resulted in liver damage.
- **Xylenes (o, m, and p) (CAS #95-47-6, 108-38-3, and 106-42-3)** are colorless, flammable liquids present in paint thinners and fuels. Acute exposure may cause central nervous system depression, resulting in headache, dizziness, fatigue, muscular weakness, drowsiness, and coordination loss. Repeated exposures may also cause removal of lipids from the skin, producing dry, fissured dermatitis. Exposure of high concentrations of vapor may cause eye irritation and damage, as well as irritation of the mucus membranes.
- **Acetone (CAS # 67-64-1)** is a colorless, flammable liquid with a strong odor. Acetone is commonly used as a solvent for industrial purposes and consumer products. Exposure can cause irritation to the eyes, nose, throat, and lungs, dizziness, and nausea. Exposure to very high concentrations of acetone may lead to coma.

With respect to the anticipated RI activities discussed in Section 1.5, possible routes of exposure to the above-mentioned contaminants are presented in Table 2. The use of proper respiratory equipment, as outlined in Section 7.0 of this HASP, will minimize the potential for exposure to airborne contamination, if deemed necessary. Exposure to contaminants through dermal and other routes will also be minimized by using protective clothing (Section 7.0), safe work practices (Section 6.0), and proper decontamination procedures (Section 12.0).

3.2 Physical Hazards

RI field activities at the 3077 Union Road Site may present the following physical hazards:

- The potential for physical injury during heavy construction equipment use, such as backhoes, excavators and drilling equipment.
- The potential for heat/cold stress to employees during the summer/winter months (see Section 10.0).
- The potential for slip and fall injuries due to rough, uneven terrain and/or open excavations.

These hazards represent only some of the possible means of injury that may be present during RI operations and sampling activities at the Site. Since it is impossible to list all potential sources of injury, it shall be the responsibility of everyone to exercise proper care and caution during all phases of the work.

4.0 TRAINING

4.1 Site Workers

All personnel performing RI activities at the Site (such as, but not limited to, equipment operators, general laborers, and drillers) and who may be exposed to hazardous substances, health hazards, or safety hazards and their supervisors/managers responsible for the Site shall receive training in accordance with 29CFR 1910.120(e) before they are permitted to engage in operations in the exclusion zone or contaminant reduction zone. This training includes an initial 40-hour Hazardous Waste Site Worker Protection Course, an 8-hour Annual Refresher Course subsequent to the initial 40-hour training, and three days of actual field experience under the direct supervision of a trained, experienced supervisor. Additional site-specific training shall also be provided by the SSHO prior to the start of field activities. A description of topics to be covered by this training is provided below.

4.1.1 Initial and Refresher Training

Initial and refresher training is conducted by a qualified instructor as specified under OSHA 29CFR 1910.120(e)(5) and is specifically designed to meet the requirements of OSHA 29CFR 1910.120(e)(3) and 1910.120(e)(8). The training covers, as a minimum, the following topics:

- OSHA HAZWOPER regulations.
- Site safety and hazard recognition, including chemical and physical hazards.
- Medical monitoring requirements.
- Air monitoring, permissible exposure limits, and respiratory protection level classifications.
- Appropriate use of PPE including chemical compatibility and respiratory equipment selection and use.
- Work practices to minimize risk.
- Work zones and Site control.
- Safe use of engineering controls and equipment.
- Decontamination procedures.
- Emergency response and escape.

- Confined space entry procedures.
- Heat and cold stress monitoring.
- Elements of a HASP.
- Spill containment.

Initial training also incorporates workshops for PPE and respiratory equipment use (Levels A, B and C), and respirator fit testing. Records and certification received from the course instructor documenting each employee's successful completion of the training identified above are maintained on file at Benchmark-TurnKey's Buffalo, NY office. Contractors and subcontractors are required to provide similar documentation of training for all their personnel who will be involved in on-site work activities.

Any employee who has not been certified as having received health and safety training in conformance with 29CFR 1910.120(e) is prohibited from working in the exclusion and contamination reduction zones, or to engage in any on-site work activities that may involve exposure to hazardous substances or wastes.

4.1.2 Site Training

Site workers are given a copy of the HASP and provided a site-specific briefing prior to the commencement of work to ensure that employees are familiar with the HASP and the information and requirements it contains. The Site briefing shall be provided by the SSHO prior to initiating field activities and shall include:

- Names of personnel and alternates responsible for Site safety and health.
- Safety, health and other hazards present on the Site.
- The site lay-out including work zones and places of refuge.
- The emergency communications system and emergency evacuation procedures.
- Use of PPE.
- Work practices by which the employee can minimize risks from hazards.
- Safe use of engineering controls and equipment on the site.
- Medical surveillance, including recognition of symptoms and signs of over-exposure as described in Chapter 5 of this HASP.
- Decontamination procedures as detailed in Chapter 12 of this HASP.

- The emergency response plan as detailed in Chapter 15 of this HASP.
- Confined space entry procedures, if required, as detailed in Chapter 13 of this HASP.
- The spill containment program as detailed in Chapter 9 of this HASP.
- Site control as detailed in Chapter 11 of this HASP.

Supplemental health and safety briefings will also be conducted by the SSHO on an as-needed basis during the fieldwork. Supplemental briefings are provided as necessary to notify employees of any changes to this HASP as a result of information gathered during ongoing Site characterization and analysis. Conditions for which the SSHO may schedule additional briefings include, but are not limited to, a change in Site conditions (e.g., based on monitoring results); changes in the work schedule/plan; newly discovered hazards; and safety incidents occurring during Site work.

4.2 Supervisor Training

On-site health and safety personnel who are directly responsible for or who supervise the safety and health of workers engaged in hazardous waste operations (i.e., SSHO) shall receive, in addition to the appropriate level of worker training described in Section 4.1, above, eight additional hours of specialized supervisory training, in compliance with 29CFR 1910.120(e)(4).

4.3 Emergency Response Training

Emergency response training is addressed in the Emergency Response Plan (see Attachment A).

4.4 Site Visitors

Each Contractor's SSHO will provide a site-specific briefing to all Site visitors and other non- Benchmark-TurnKey personnel who enter the Site beyond the Site entry point. The site-specific briefing will provide information about Site hazards, the Site layout including work zones and places of refuge, the emergency communications system and emergency evacuation procedures, and other pertinent safety and health requirements as appropriate.

Site visitors will not be permitted to enter the exclusion zone or contaminant reduction zones unless they have received the level of training required for Site workers as described in Section 4.1.

5.0 MEDICAL MONITORING

Medical monitoring examinations are provided to Benchmark-TurnKey employees as stipulated under 29CFR Part 1910.120(f). These exams include initial employment, annual and employment termination physicals for all Benchmark-TurnKey employees involved in hazardous waste site field operations. Post-exposure examinations are also provided for employees who may have been injured, received a health impairment, or developed signs or symptoms of over-exposure to hazardous substances or were accidentally exposed to substances at concentrations above the permissible exposure limits without necessary personal protective equipment. Such exams are performed as soon as possible following development of symptoms or the known exposure event.

Medical evaluations are performed by Health Works, an occupational health care provider under contract with Benchmark. Health Works is in Seneca Square Plaza, 1900 Ridge Road, West Seneca, New York 14224. The facility can be reached at (716) 823-5050 to schedule routine appointments or post-exposure examinations.

Medical evaluations are conducted according to the Benchmark Medical Monitoring Program and include an evaluation of the workers' ability to use respiratory protective equipment. The examinations include:

- Occupational/medical history review.
- Physical exam, including vital sign measurement.
- Spirometry testing.
- Eyesight testing.
- Audio testing (minimum baseline and exit, annual for employees routinely exposed to greater than 85db).
- EKG (for employees >40 years age or as medical conditions dictate).
- Chest X-ray (baseline and exit, and every 5 years).
- Blood biochemistry (including blood count, white cell differential count, serum multi-plastic screening).
- Medical certification of physical requirements (i.e., sight, musculoskeletal, cardiovascular) for safe job performance and to wear respiratory protection equipment.

The purpose of the medical evaluation is to determine an employee's fitness for duty on hazardous waste sites; and to establish baseline medical data. In conformance with

OSHA regulations, Benchmark will maintain and preserve medical records for a period of 30 years following termination of employment. Employees are provided a copy of the physician's post-exam report and have access to their medical records and analyses.

6.0 SAFE WORK PRACTICES

All Benchmark-TurnKey employees shall conform to the following safe work practices during all on-site work activities conducted within the exclusion and contamination reduction zones:

- Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand-to-mouth contact is strictly prohibited.
- The hands and face must be thoroughly washed upon leaving the work area and prior to engaging in any activity indicated above.
- Respiratory protective equipment and clothing must be worn by all personnel entering the Site as required by the HASP or as modified by the SSHO. Excessive facial hair (i.e., beards, long mustaches or sideburns) that interferes with the satisfactory respirator-to-face seal is prohibited.
- Contact with surfaces/materials either suspected or known to be contaminated will be avoided to minimize the potential for transfer to personnel, cross contamination and need for decontamination.
- Medicine and alcohol can synergize the effects of exposure to toxic chemicals. Due to possible contraindications, use of prescribed drugs should be reviewed with the Benchmark occupational physician. Alcoholic beverage and illegal drug intake are strictly forbidden during the workday.
- All personnel shall be familiar with standard operating safety procedures and additional instructions contained in this HASP.
- On-site personnel shall use the "buddy" system. No one may work alone (i.e., out of earshot or visual contact with other workers) in the exclusion zone.
- Personnel and equipment in the contaminated area shall be minimized, consistent with effective Site operations.
- All employees have the obligation to immediately report and if possible, correct unsafe work conditions.
- Use of contact lenses on-site will not be permitted. Spectacle kits for insertion into full-face respirators will be provided for Benchmark-TurnKey employees, as requested and required.

The recommended specific safety practices for working around the contractor's equipment (e.g., backhoes, bulldozers, excavators, drill rigs etc.) are as follows:

- Although the Contractor and subcontractors are responsible for their equipment and safe operation of the Site, Benchmark-TurnKey personnel are also

responsible for their own safety.

- Subsurface work will not be initiated without first clearing underground utility services.
- Heavy equipment should not be operated within 20 feet of overhead wires. This distance may be increased if windy conditions are anticipated or if lines carry high voltage. The Site should also be sufficiently clear to ensure the project staff can move around the heavy machinery safely.
- Care should be taken to avoid overhead wires when moving heavy-equipment from location to location.
- Hard hats, safety boots and safety glasses should be worn in the vicinity of heavy equipment. Hearing protection is also recommended.
- The work Site should be kept neat. This will prevent personnel from tripping and will allow for fast emergency exit from the Site.
- Proper lighting must be provided when working at night.
- Construction activities should be discontinued during an electrical storm or severe weather conditions.
- The presence of combustible gases should be checked before igniting any open flame.
- Personnel shall stand upwind of any construction operation when not immediately involved in sampling/logging/observing activities.
- Personnel will not approach the edge of an unsecured trench/excavation closer than 2 feet.

7.0 PERSONAL PROTECTIVE EQUIPMENT

7.1 Equipment Selection

PPE will be donned when work activities may result in exposure to physical or chemical hazards beyond acceptable limits, and when such exposure can be mitigated through appropriate PPE. The selection of PPE will be based on an evaluation of the performance characteristics of the PPE relative to the requirements and limitations of the Site, the task-specific conditions and duration, and the hazards and potential hazards identified at the Site.

Equipment designed to protect the body against contact with known or suspect chemical hazards are grouped into four categories according to the degree of protection afforded. These categories designated A through D consistent with United States Environmental Protection Agency (USEPA) Level of Protection designation, are:

- **Level A:** Should be selected when the highest level of respiratory, skin and eye protection is needed.
- **Level B:** Should be selected when the highest level of respiratory protection is needed, but a lesser level of skin protection is required. Level B protection is the minimum level recommended on initial Site entries until the hazards have been further defined by on-site studies. Level B (or Level A) is also necessary for oxygen-deficient atmospheres.
- **Level C:** Should be selected when the types of airborne substances are known, the concentrations have been measured and the criteria for using air-purifying respirators are met. In atmospheres where no airborne contaminants are present, Level C provides dermal protection only.
- **Level D:** Should not be worn on any Site with elevated respiratory or skin hazards. This is generally a work uniform providing minimal protection.

OSHA requires the use of certain PPE under conditions where an immediate danger to life and health (IDLH) may be present. Specifically, OSHA 2 CFR 1910.120(g)(3)(iii) requires use of a positive pressure self-contained breathing apparatus, or positive pressure air-line respirator equipped with an escape air supply when chemical exposure levels present a substantial possibility of immediate serious injury, illness or death, or impair the ability to escape. Similarly, OSHA 2 CFR 1910.120(g)(3)(iv) requires donning totally-encapsulating chemical protective suits (with a protection level equivalent to Level A protection) in

conditions where skin absorption of a hazardous substance may result in a substantial possibility of immediate serious illness, injury or death, or impair the ability to escape.

In situations where the types of chemicals, concentrations, and possibilities of contact are unknown, the appropriate level of protection must be selected based on professional experience and judgment until the hazards can be further characterized. The individual components of clothing and equipment must be assembled into a full protective ensemble to protect the worker from site-specific hazards, while at the same time minimizing hazards and drawbacks of the personal protective gear itself. Ensemble components are detailed below for levels A/B, C, and D protection.

7.2 Protection Ensembles

7.2.1 Level A/B Protection Ensemble

Level A/B ensembles include similar respiratory protection, however Level A provides a higher degree of dermal protection than Level B. Use of Level A over Level B is determined by: comparing the concentrations of identified substances in the air with skin toxicity data, and assessing the effect of the substance (by its measured air concentrations or splash potential) on the small area of the head and neck unprotected by Level B clothing. The recommended PPE for Level A/B is:

- Pressure-demand, full-face piece self-contained breathing apparatus (MSHA/-NIOSH approved) or pressure-demand supplied-air respirator with escape self-contained breathing apparatus (SCBA).
- Chemical-resistant clothing (Level A): totally-encapsulating chemical resistant suit.
- Chemical-resistant clothing (Level B): hooded 1-2 piece chemical splash suit.
- Inner and outer chemical resistant gloves.
- Chemical-resistant safety boots/shoes.
- Hardhat.

7.2.2 Level C Protection Ensemble

Level C protection is distinguished from Level B by the equipment used to protect the respiratory system, assuming the same type of chemical-resistant clothing is used. The main selection criterion for Level C is that conditions permit wearing an air-purifying device.

The device (when required) must be an air-purifying respirator (MSHA/NIOSH approved) equipped with filter cartridges. Cartridges must be able to remove the substances encountered. Respiratory protection will be used only with proper fitting, training and the approval of a qualified individual. In addition, an air-purifying respirator can be used only if: oxygen content of the atmosphere is at least 19.5% in volume; substances are identified and concentrations measured; substances have adequate warning properties; the individual passes a qualitative fit-test for the mask; and an appropriate cartridge/canister is used, and its service limit concentration is not exceeded. Recommended PPE for Level C conditions includes:

- Full-face piece, air-purifying respirator equipped with MSHA and NIOSH approved organic vapor/acid gas/dust/mist combination cartridges or as designated by the SSHO.
- Chemical-resistant clothing (hooded, one or two-piece chemical splash suit or disposable chemical-resistant one-piece suit).
- Inner and outer chemical-resistant gloves.
- Chemical-resistant safety boots/shoes.
- Hardhat.

An air-monitoring program is part of all response operations when atmospheric contamination is known or suspected. It is particularly important that the air be monitored thoroughly when personnel are wearing air-purifying respirators. Continual surveillance using direct-reading instruments is needed to detect any changes in air quality necessitating a higher level of respiratory protection.

7.2.3 Level D Protection Ensemble

As indicated above, Level D protection is primarily a work uniform. It can be worn in areas where only boots can be contaminated, where there are no inhalable toxic substances and where the atmospheric contains at least 19.5% oxygen. Recommended PPE for Level D includes:

- Coveralls.
- Safety boots/shoes.
- Safety glasses or chemical splash goggles.

- Hardhat.
- Optional gloves; escape mask; face shield.

7.2.4 Recommended Level of Protection for Site Tasks

Based on current information regarding both the contaminants suspected to be present at the Site and the various tasks that are included in the remedial activities, the minimum required levels of protection for these tasks are identified in Table 3.

8.0 EXPOSURE MONITORING

8.1 General

Based on the results of historic sample analyses and the nature of the proposed work activities at the Site, the possibility exist that organic vapors and/or particulates may be released to the air during intrusive construction activities. Ambient breathing zone concentrations may, at times, exceed the permissible exposure limits (PELs) established by OSHA for the individual compounds (see Table 1), in which case respiratory protection will be required. Respiratory and dermal protection may be modified (upgraded or downgraded) by the SSHO based on real-time field monitoring data.

8.1.1 On-Site Work Zone Monitoring

Benchmark-TurnKey personnel will conduct routine, real-time air monitoring during all intrusive investigative phases such as installation of soil borings and monitoring wells. The work area will be monitored at regular intervals using a PID, combustible gas meter and a particulate meter. Observed values will be recorded and maintained as part of the permanent field record.

Additional air monitoring measurements may be made by Benchmark-TurnKey personnel to verify field conditions during subcontractor oversight activities. Monitoring instruments will be protected from surface contamination during use. Additional monitoring instruments may be added if the situations or conditions change. Monitoring instruments will be calibrated in accordance with manufacturer's instructions before use.

8.1.2 Off-Site Community Air Monitoring

In addition to on-site monitoring within the work zone(s), monitoring at the down-wind portion of the Site perimeter will be conducted. This will provide a real-time method for determination of vapor and/or particulate releases to the surrounding community as a result of ground intrusive investigation work.

The generic CAMP in Attachment C defines ground intrusive activities to include soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells. Non-intrusive activities include the collection of soil and sediment samples or the collection of groundwater samples from existing wells. Continuous

monitoring is required for ground intrusive activities and periodic monitoring is required for non-intrusive activities. Periodic monitoring consists of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring while bailing a well, and taking a reading prior to leaving a sampling location. This may be upgraded to continuous if the sampling location is near individuals not involved in the Site activity (i.e., on a curb of a busy street). The action levels below will be used during periodic monitoring.

8.1.3 Interior Community Air Monitoring

Whenever possible, interior work activities will occur when the buildings are not occupied. However, air monitoring will be conducted when the building is occupied and unoccupied. Monitoring equipment will include a continuous recording particulate monitor with data logging capability and a PID for organic vapors; one unit will be placed within 50 feet laterally of the work area (to be determined each day) and the field technician will have one PID meter with him/her at all times.

If monitoring indicates action limit exceedances (5 ppm organic vapor, 150 ug/m^3 of airborne particulate) the Site contractor will be informed and corrective actions will be required (e.g., work stoppage). Furthermore, during and subsequent to work activities each day, any visible dust will be removed using hand towels and/or a portable mechanical vacuum unit.

8.2 Monitoring Action Levels

8.2.1 On-Site Work Zone Action Levels

The PID, or other appropriate instrument(s), will be used by Benchmark-TurnKey personnel to monitor organic vapor concentrations as specified in this HASP. Combustible gas will be monitored with the "combustible gas" option on the combustible gas meter or other appropriate instrument(s). In addition, fugitive dust/particulate concentrations will be monitored during major soil intrusion (e.g., well/boring installation) using a real-time particulate monitor as specified in this HASP. In the absence of such monitoring, appropriate respiratory protection for particulates shall be donned. Sustained readings

obtained in the breathing zone may be interpreted (regarding other Site conditions) as follows for Benchmark-TurnKey personnel:

- Total atmospheric concentrations of unidentified vapors or gases ranging from 0 to 1 ppm above background on the PID) - Continue operations under Level D (see Attachment A).
- Total atmospheric concentrations of unidentified vapors or gases yielding sustained readings from >1 ppm to 5 ppm above background on the PID (vapors not suspected of containing high levels of chemicals toxic to the skin) - Continue operations under Level C (see Attachment A).
- Total atmospheric concentrations of unidentified vapors or gases yielding sustained readings of >5 ppm to 50 ppm above background on the PID - Continue operations under Level B (see Attachment 1), re-evaluate and alter (if possible) construction methods to achieve lower vapor concentrations.
- Total atmospheric concentrations of unidentified vapors or gases above 50 ppm on the PID - Discontinue operations and exit the work zone immediately.

The particulate monitor will be used to monitor respirable dust concentrations during all intrusive activities and handling of Site soil/fill. Action levels based on the instrument readings shall be as follows:

- Less than 50 mg/m^3 - Continue field operations.
- 50-150 mg/m^3 - Don dust/particulate mask or equivalent
- Greater than 150 mg/m^3 - Don dust/particulate mask or equivalent. Initiate engineering controls to reduce respirable dust concentration (e.g., wetting of excavated soils or tools at discretion of SSHO).

Readings from the field equipment will be recorded and documented on the appropriate Project Field Forms. All instruments will be calibrated daily before use and the procedure will be documented on the appropriate Project Field Forms.

8.2.2 Community Air Monitoring Action Levels

In addition to the action levels prescribed in Section 8.2.1 for Benchmark-TurnKey personnel on-site, the following criteria shall also be adhered to for the protection of downwind receptors consistent with NYSDOH requirements (Attachment C):

- **ORGANIC VAPOR PERIMETER MONITORING:**

- If the sustained ambient air concentration of organic vapors at the downwind perimeter of the exclusion zone exceeds 5 ppm above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the sustained organic vapor decreases below 5 ppm over background, work activities can resume with continued monitoring.
- If the sustained ambient air concentration of organic vapors at the downwind perimeter of the exclusion zone are greater than 5 ppm over background but less than 25 ppm for the 15-minute average, activities can resume provided that: the organic vapor level 200 feet downwind of the working site or half the distance to the nearest off-site residential or commercial structure, whichever is less, but in no case less than 20 feet, is below 5 ppm over background; and more frequent intervals of monitoring, as directed by the Site Health and Safety Officer, are conducted.
- If the sustained organic vapor level is above 25 ppm at the perimeter of the exclusion zone for the 15-minute average, the SSHO must be notified and work activities shut down. The SSHO will determine when re-entry of the exclusion zone is possible and will implement downwind air monitoring to ensure vapor emissions do not impact the nearest off-site residential or commercial structure at levels exceeding those specified in the ***Organic Vapor Contingency Monitoring Plan*** below. All readings will be recorded and will be available for NYSDEC and NYS Department of Health (NYSDOH) personnel to review.

- **ORGANIC VAPOR CONTINGENCY MONITORING PLAN:**

- If the sustained organic vapor level is greater than 5 ppm over background 200 feet downwind from the work area or half the distance to the nearest off-site residential or commercial property, whichever is less, all work activities must be halted.
- If, following the cessation of the work activities or as the result of an emergency, sustained organic levels persist above 5 ppm above background 200 feet downwind or half the distance to the nearest off-site residential or commercial property from the work area, then the air quality must be monitored within 20 feet of the perimeter of the nearest off-site residential or commercial structure (20-foot zone).
- If efforts to abate the emission source are unsuccessful and if sustained organic vapor levels approach or exceed 5 ppm above background within the 20-foot zone for more than 30 minutes, or are sustained at levels greater than 10 ppm above background for longer than one minute, then the ***Major Vapor Emission Response Plan*** (see below) will automatically be placed into effect.

- **MAJOR VAPOR EMISSION RESPONSE PLAN:**

Upon activation, the following activities will be undertaken:

1. All Emergency Response Contacts as listed in this HASP and the Emergency Response Plan (Attachment A) will be advised.
2. The local police authorities will immediately be contacted by the SSHO and advised of the situation.
3. Frequent air monitoring will be conducted at 30-minute intervals within the 20-foot zone. If two sustained successive readings below action levels are measured, air monitoring may be halted or modified by the SSHO.

The following personnel are to be notified in the listed sequence if a Major Vapor Emission Plan is activated:

Responsible Person	Contact	Phone Number
SSHO	Police	911
SSHO	State Emergency Response Hotline	(800) 457-7362

Additional emergency numbers are listed in the Emergency Response Plan included as Attachment A.

- **EXPLOSIVE VAPORS:**

- Sustained atmospheric concentrations of greater than 10% LEL in the work area - Initiate combustible gas monitoring at the downwind portion of the Site perimeter.
- Sustained atmospheric concentrations of greater than 10% LEL at the downwind Site perimeter – Halt work and contact local Fire Department.

- **AIRBORNE PARTICULATE COMMUNITY AIR MONITORING**

- Respirable (PM-10) particulate monitoring will be performed on a continuous basis at the upwind and downwind perimeter of the exclusion zone. The monitoring will be performed using real-time monitoring equipment capable of measuring PM-10 and integrating over a period of 15-minutes for comparison to the airborne particulate action levels. The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration will be visually assessed during all work activities. All readings will be recorded and will be available for NYSDEC and NYSDOH review. Readings will be interpreted as follows:

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (ug/m^3) greater than the background (upwind perimeter) reading 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 provided that the downwind PM-10 particulate levels do not exceed 150 ug/m^3 above the upwind level and that visible dust is not migrating from the work area.
- If, after implementation of dust suppression techniques downwind PM-10 levels are greater than 150 ug/m^3 above the upwind level, work activities must be stopped, and dust suppression controls re-evaluated. Work can resume provided that supplemental dust suppression measures and/or other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 ug/m^3 of the upwind level and in preventing visible dust migration.

Pertinent emergency response information including the telephone number of the Fire Department is included in the Emergency Response Plan (see Attachment A).

9.0 SPILL RELEASE/RESPONSE

This section of the HASP describes the potential for, and procedures related to, spills or releases of known or suspected petroleum and/or hazardous substances on the Site. The purpose of this section of the HASP is to plan appropriate response, control, counter-measures and reporting, consistent with OSHA requirements in 29CFR 1910.120(b)(4)(ii)(J) and (j)(1)(viii). The spill containment program addresses the following elements:

- Potential hazardous material spills and available controls.
- Initial notification and evaluation.
- Spill response.
- Post-spill evaluation.

9.1 Potential Spills and Available Controls

An evaluation was conducted to determine the potential for hazardous material and oil/petroleum spills at this Site. For the purpose of this evaluation, hazardous materials posing a significant spill potential are:

- CERCLA Hazardous Substances identified in 40CFR Part 302, where such materials pose the potential for release in excess of their corresponding Reportable Quantity (RQ).
- Extremely Hazardous Substances identified in 40CFR Part 355, Appendix A, where such materials pose the potential for release in excess of their corresponding RQ.
- Hazardous Chemicals as defined under Section 311(e) of the Emergency Planning and Community Right-To-Know Act of 1986, where such chemicals are present or will be stored in excess of 10,000 lbs.
- Toxic Chemicals as defined in 40CFR Part 372, where such chemicals are present or will be stored in excess of 10,000 lbs.
- Chemicals regulated under 6NYCRR Part 597, where such materials pose the potential for release in excess of their corresponding RQ.

Oil/petroleum products are considered to pose a significant spill potential whenever the following situations occur:

- The potential for a "harmful quantity" of oil (including petroleum and non-petroleum-based fuels and lubricants) to reach navigable waters of the U.S. exists

(40CFR Part 112.4). Harmful quantities are considered by USEPA to be volumes that could form visible sheen on the water or violate applicable water quality standards.

- The potential exists for any amount of petroleum to reach any waters of NY State, including groundwater. Petroleum, as defined by NY State in 6NYCRR Part 612, is a petroleum-based heat source, energy source, or engine lubricant/ maintenance fluid.
- The potential for any release to soil or water of petroleum from a bulk storage facility regulated under 6NYCRR Part 612. A regulated petroleum storage facility is defined by NY State as a site having stationary tank(s) and intra-facility piping, fixtures and related equipment with an aggregate storage volume of 1,100 gallons or greater.

The evaluation indicates that, based on Site history and decommissioning records, a hazardous material spill and/or a petroleum product spill is not likely to occur during RI efforts.

9.2 Initial Spill Notification and Evaluation

Any worker who discovers a hazardous substance or oil/petroleum spill will immediately notify the Project Manager and SSHO. The worker will, to the best of his/her ability, report the material involved, the location of the spill, the estimated quantity of material spilled, the direction/flow of the spill material, related fire/explosion incidents, if any, and any associated injuries. The Emergency Response Plan (see Attachment A) will implemented immediately if a release occurs.

Following the initial report of a spill, the Project Manager will evaluate whether the release exceeds RQ levels. If an RQ level is exceeded, the Project Manager will notify the Site owner and NYSDEC at 1-800-457-7362 within 2 hours of spill discovery. The Project Manager will also determine what additional agencies (e.g., USEPA, NYSDOH) are to be contacted regarding the release, and will follow-up with written reports as required by the applicable regulations.

9.3 Spill Response

For all spill situations, the following general response guidelines will apply:

- Only those personnel involved in overseeing or performing containment

operations will be allowed within the spill area. If necessary, the area will be roped, ribboned, or otherwise blocked off to prevent unauthorized access.

- Appropriate PPE, as specified by the SSHO, will be donned before entering the spill area.
- Ignition points will be extinguished/removed if fire or explosion hazards exist.
- Surrounding reactive materials will be removed.
- Drains or drainage in the spill area will be blocked to prevent inflow of spilled materials or applied materials.

For minor spills, the Contractor will maintain a spill control and containment kit in the Field Office or other readily accessible storage location. The kit will consist of, at a minimum, a 50-lb bag of "speedy dry" granular absorbent material, absorbent pads, shovels, empty 5-gallon pails and an empty open-top 55-gallon drum. Spilled materials will be absorbed then shoveled into a 55-gallon drum for proper disposal (NYSDEC approval will be secured for on-site treatment of the impacted soils/absorbent materials, if applicable). Impacted soils will be hand-excavated to the point that no visible signs of contamination remain and drummed with the absorbent.

In the event of a major release or a release that threatens surface water, a spill response contractor will be called to the Site. The response contractor may use heavy equipment (e.g., excavator, backhoe, etc.) to berm the soils surrounding the spill Site or create diversion trenching to mitigate overland migration or release to navigable waters. Where feasible, pumps will be used to transfer free liquid to storage containers. Spill control/cleanup contractors in the Western New York area that may be contacted for assistance include:

- The Environmental Service Group of NY, Inc.: (800) 3480316
- Environmental Products & Services of Vermont, Inc.: (800) 577-4557
- Allied Environmental Services, Inc.: (800) 992-5781

9.4 Post-Spill Evaluation

If a reportable quantity of hazardous material or oil/petroleum is spilled as determined by the Project Manager, a written report will be prepared as indicated in Section 9.2. The report will identify the root cause of the spill, type and amount of material released,

date/time of release, response actions, agencies notified and/or involved in cleanup, and procedures to be implemented to avoid repeat incidents. In addition, all re-useable spill cleanup and containment materials will be decontaminated, and spill kit supplies/disposable items will be replenished.

10.0 HEAT/COLD STRESS MONITORING

Since some of the work activities at the Site will be scheduled for both the summer and winter months, measures will be taken to minimize heat/cold stress to Benchmark-TurnKey employees. The SSHO and/or his or her designee will be responsible for monitoring Benchmark-TurnKey field personnel for symptoms of heat/cold stress.

10.1 Heat Stress Monitoring

PPE may place an employee at risk of developing heat stress, a common and potentially serious illnesses often encountered at construction, landfill, waste disposal, industrial or other unsheltered sites. The potential for heat stress is dependent on several factors, including environmental conditions, clothing, workload, physical conditioning and age. PPE may severely reduce the body's normal ability to maintain temperature equilibrium (via evaporation and convection) and require increased energy expenditure due to its bulk and weight.

Proper training and preventive measures will mitigate the potential for serious illness. Heat stress prevention is particularly important because once a person suffers from heat stroke or heat exhaustion, that person may be predisposed to additional heat related illness. To avoid heat stress, the following steps should be taken:

- Adjust work schedules.
- Modify work/rest schedules according to monitoring requirements.
- Mandate work slowdowns as needed.
- Perform work during cooler hours of the day if possible or at night if adequate lighting can be provided.
- Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods.
- Maintain worker's body fluids at normal levels. This is necessary to ensure that the cardiovascular system functions adequately. Daily fluid intake must approximately equal the amount of water lost in sweat (i.e., eight fluid ounces must be ingested for approximately every 1 lb of weight lost). The normal thirst mechanism is not sensitive enough to ensure that enough water will be consumed to replace lost perspiration. When heavy sweating occurs, workers should be encouraged to drink more.
- Train workers to recognize the symptoms of heat related illness.

Heat-Related Illness - Symptoms:

- Heat rash may result from continuous exposure to heat or humid air.
- Heat cramps are caused by heavy sweating with inadequate electrolyte replacement. Signs and symptoms include muscle spasms; pain in the hands, feet and abdomen.
- Heat exhaustion occurs from increased stress on various body organs including inadequate blood circulation due to cardiovascular insufficiency or dehydration. Signs and symptoms include pale, cool, moist skin; heavy sweating; dizziness; nausea; fainting.
- Heat stroke is the most serious form of heat stress. Temperature regulation fails and the body temperature rises to critical levels. Immediate action must be taken to cool the body before serious injury and death occur. Competent medical help must be obtained. Signs and symptoms are red, hot, usually dry skin; lack of or reduced perspiration; nausea; dizziness and confusion; strong, rapid pulse; coma.

The monitoring of personnel wearing protective clothing should commence when the ambient temperature is 70°F or above. For monitoring the body's recuperative ability to excess heat, one or more of the following techniques should be used as a screening mechanism.

- Heart rate may be measured by the radial pulse for 30 seconds as early as possible in the resting period. The rate at the beginning of the rest period should not exceed 100 beats per minute. If the rate is higher, the next work period should be shortened by 10 minutes (or 33%), while the length of the rest periods stay the same, If the pulse rate is 100 beats per minute at the beginning of the nest rest period, the following work cycle should be further shortened by 33%.
- Body temperature may be measured orally with a clinical thermometer as early as possible in the resting period. Oral temperature at the beginning of the rest period should not exceed 99.6°F. If it does, the next work period should be shortened by 10 minutes (or 33%), while the length of the rest period remains the same. However, if the oral temperature exceeds 99.6°F at the beginning of the next period, the work cycle may be further shortened by 33%. Oral temperature should be measured at the end of the rest period to make sure that it has dropped below 99.6°F. No Benchmark-TurnKey employee will be permitted to continue wearing semi-permeable or impermeable garments when his/her oral temperature exceeds 100.6°F.

10.2 Cold Stress Monitoring

Exposure to cold conditions may result in frostbite or hypothermia, each of which progresses in stages as shown below.

- **Frostbite** occurs when body tissue (usually on the extremities) begins to freeze. The three states of frostbite are:
  1) **Frost nip** - This is the first stage of the freezing process. It is characterized by a whitened area of skin, along with a slight burning or painful sensation. Treatment consists of removing the victim from the cold conditions, removal of boots and gloves, soaking the injured part in warm water (102 to 108°F) and drinking a warm beverage. Do not rub skin to generate friction/heat.
  2) **Superficial Frostbite** - This is the second stage of the freezing process. It is characterized by a whitish gray area of tissue, which will be firm to the touch but will yield little pain. The treatment is identical for Frost nip.
  3) **Deep Frostbite** - In this final stage of the freezing process the affected tissue will be cold, numb and hard and will yield little to no pain. Treatment is identical to that for Frost nip.

- **Hypothermia** is a serious cold stress condition occurring when the body loses heat at a rate faster than it is produced. If untreated, hypothermia may be fatal. The stages of hypothermia may not be clearly defined or visible at first, but generally include:
  1) Shivering
  2) Apathy (i.e., a change to an indifferent or uncaring mood)
  3) Unconsciousness
  4) Bodily freezing

  Employees exhibiting signs of hypothermia should be treated by medical professionals. Steps that can be taken while awaiting help include:
  1) Remove the victim from the cold environment and remove wet or frozen clothing. (Do this carefully as frostbite may have started.)
  2) Perform active re-warming with hot liquids for drinking (Do not give the victim any liquid containing alcohol or caffeine) and a warm water bath (102 to 108°F).
  3) Perform passive re-warming with a blanket or jacket wrapped around the victim.

In any potential cold stress situation, it is the responsibility of the Site Health and Safety Officer to encourage the following:

- Education of workers to recognize the symptoms of frostbite and hypothermia.
- Workers should dress warmly, with more layers of thin clothing as opposed to one thick layer.
- Personnel should remain active and keep moving.
- Personnel should be allowed to take shelter in a heated area, as necessary.
- Personnel should drink warm liquids (no caffeine or alcohol if hypothermia has set in).
- For monitoring the body's recuperation from excess cold, oral temperature recordings should occur:
    - At the SSHO's discretion when suspicion is based on changes in a worker's performance or mental status.
    - At a worker's request.
    - As a screening measure, two times per shift, under unusually hazardous conditions (e.g., wind chill less than 20°F or wind chill less than 30°F with precipitation).
    - As a screening measure, whenever anyone worker on-site develops hypothermia.

Any person developing moderate hypothermia (a core body temperature of 92°F) will not be allowed to return to work for 48 hours without the recommendation of a qualified medical doctor.

11.0 WORK ZONES AND SITE CONTROL

Work zones around the areas designated for field activities will be established daily and communicated to all employees and other Site users by the SSHO. It shall be each Contractor's SSHO's responsibility to ensure that all Site workers are aware of the work zone boundaries and to enforce proper procedures in each area. The zones will include:

- Exclusion Zone ("Hot Zone") - The zone where contaminated materials may be exposed, excavated or handled and all areas where contaminated equipment or personnel may travel. Flagging tape will delineate the zone. All personnel entering the Exclusion Zone must wear the prescribed level of PPE identified in Section 7.
- Contamination Reduction Zone - The zone where decontamination of personnel and equipment takes place. Any potentially contaminated clothing, equipment and samples must remain in the Contamination Reduction Zone until decontaminated.
- Support Zone - The zone considered non-contaminated or "clean." Support equipment will be in this zone, and personnel may wear normal work clothes within this zone.

In the absence of other task-specific work zone boundaries established by the SSHO, the following boundaries will apply to all investigation and construction activities involving disruption or handling of Site soils or groundwater:

- Exclusion Zone: 50-foot radius from the outer limit of the sampling/construction activity.
- Contaminant Reduction Zone: 100-foot radius from the outer limit of the sampling/construction activity.
- Support Zone: Areas outside the Contaminant Reduction Zone.

Access of non-essential personnel to the Exclusion and Contamination Reduction Zones will be strictly controlled by the SSHO. Only personnel who are essential to the completion of the task will be allowed access to these areas and only if they are wearing the prescribed level of PPE. Entrance of all personnel must be approved by the SSHO.

The SSHO will maintain a Health and Safety Logbook containing the names of Benchmark-TurnKey workers and their level of PPE. The zone boundaries may be changed by the SSHO as environmental conditions warrant, and to respond to the necessary changes in work locations on-site.

12.0 DECONTAMINATION

12.1 Decontamination for Benchmark-TurnKey Employees

The degree of decontamination required is a function of the task and the environment within which it occurs. The following decontamination procedure will remain flexible, thereby allowing the decontamination crew to respond appropriately to the changing environmental conditions that may arise at the Site. All Benchmark-TurnKey personnel on-site shall follow the procedure below, or the Contractor's procedure (if applicable), whichever is more stringent.

Station 1 - Equipment Drop: Deposit visibly contaminated (if any) re-useable equipment used in the contamination reduction and exclusion zones (tools, containers, monitoring instruments, radios, clipboards, etc.) on plastic sheeting.

Station 2 - Boots and Gloves Wash and Rinse: Scrub outer boots and outer gloves. Deposit tape and gloves in waste disposal container.

Station 3 - Tape, Outer Boot and Glove Removal: Remove tape, outer boots and gloves. Deposit tape and gloves in waste disposal container.

Station 4 - Canister or Mask Change: If worker leaves Exclusion Zone to change canister (or mask), this is the last step in the decontamination procedure. Worker's canister is exchanged, new outer gloves and boot cover donned, and worker returns to duty.

Station 5 - Outer Garment/Face Piece Removal: Protective suit removed and deposited in separate container provided by Contractor. Face piece or goggles are removed if used. Avoid touching face with fingers. Face piece and/or goggles deposited on plastic sheet. Hard hat removed and placed on plastic sheet.

Station 6 - Inner Glove Removal: Inner gloves are the last personal protective equipment to be removed. Avoid touching the outside of the gloves with bare fingers. Dispose of these gloves in waste disposal container.

Following PPE removal, personnel shall wash hands, face and forearms with absorbent wipes. If field activities proceed for duration of 6 consecutive months or longer, shower facilities will be provided for worker use in accordance with OSHA 29CFR 1910.120(n).

12.2 Decontamination for Medical Emergencies

In the event of a minor, non-life-threatening injury, personnel should follow the decontamination procedures as defined, and then administer first-aid.

In the event of a major injury or other serious medical concern (e.g., heat stroke), immediate first-aid is to be administered and the victim transported to the hospital in lieu of further decontamination efforts unless exposure to a Site contaminant would be considered "Immediately Dangerous to Life or Health."

12.3 Decontamination of Field Equipment

The Contractor in accordance with his approved HASP in the Contamination Reduction Zone will conduct decontamination of heavy equipment. As a minimum, this will include manually removing heavy soil contamination, followed by steam cleaning on an impermeable pad.

Benchmark-TurnKey personnel will conduct decontamination of all tools used for sample collection purposes. It is expected that all tools will be constructed of nonporous, nonabsorbent materials (i.e., metal), which will aid in the decontamination effort. Any tool or part of a tool made of porous, absorbent material (i.e., wood) will be placed into suitable containers and prepared for disposal.

Decontamination of bailers, split-spoons, spatula knives, and other tools used for environmental sampling and examination shall be as follows:

- Disassemble the equipment
- Water wash to remove all visible foreign matter.
- Wash with detergent.
- Rinse all parts with distilled-deionized water.
- Allow to air dry.
- Wrap all parts in aluminum foil or polyethylene.

13.0 CONFINED SPACE ENTRY

OSHA 29CFR 1910.146 identifies a confined space as a space that is large enough and so configured that an employee can physically enter and do assigned work; has limited or restricted means for entry and exit; and is not intended for continuous employee occupancy. Confined spaces include, but are not limited to, trenches, storage tanks, process vessels, pits, sewers, tunnels, underground utility vaults, pipelines, sumps, wells, and excavations.

Confined space entry by Benchmark-TurnKey employees is not anticipated to be necessary to complete the RI activities identified in Section 2.0. If the scope of work changes or confined space entry appears necessary, the Project Manager will be consulted to determine if feasible engineering alternatives to confined space entry can be implemented. If confined space entry by Benchmark-TurnKey employees cannot be avoided through reasonable engineering measures, task-specific confined space entry procedures will be developed, and a confined-space entry permit will be issued through Benchmark-TurnKey's Corporate Health and Safety Director. Benchmark-TurnKey employees shall not enter a confined space without these procedures and permits in place.

14.0 FIRE PREVENTION AND PROTECTION

14.1 General Approach

Recommended practices and standards of the National Fire Protection Association (NFPA) and other applicable regulations will be followed in the development and application of Project Fire Protection Programs. When required by regulatory authorities, the project management will prepare and submit a Fire Protection Plan for the approval of the contracting officers, authorized representative or other designated official. Essential considerations for the Fire Protection Plan will include:

- Proper Site preparation and safe storage of combustible and flammable materials.
- Availability of coordination with private and public fire authorities.
- Adequate job-site fire protection and inspections for fire prevention.
- Adequate indoctrination and training of employees.

14.2 Equipment and Requirements

Fire extinguishers will be provided by each Contractor and are required on all heavy equipment and in each field trailer. Fire extinguishers will be inspected, serviced, and maintained in accordance with the manufacturer's instructions. As a minimum, all extinguishers shall be checked monthly and weighed semi-annually, and recharged if necessary. Recharge or replacement shall be mandatory immediately after each use.

14.3 Flammable and Combustible Substances

All storage, handling or use of flammable and combustible substances will be under the supervision of qualified persons. All tanks, containers and pumping equipment, whether portable or stationary, used for the storage and handling of flammable and combustible liquids, will meet the recommendations of the NFPA.

14.4 Hot Work

If the scope of work necessitates welding or blowtorch operation, the hot work permit presented in Attachment B will be completed by the SSHO and reviewed/issued by the Project Manager.

15.0 EMERGENCY INFORMATION

In accordance with OSHA 29CFR Part 1910, an Emergency Response Plan is included with this HASP as Attachment A. Figure 1 in Attachment A presents the hospital route map.

16.0 REFERENCES

1. New York State Department of Environmental Conservation. *DER-10; Technical Guidance for Site Investigation and Remediation.* May 2010.
2. New York State Department of Environmental Conservation. *6 NYCRR Part 375 Environmental Remediation Programs*. December 2006.
3. New York State Department of Environmental Conservation Division of Water Technical and Operational Guidance (TOGS). *1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations*. June 1998.

TABLES

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TURNKEY ENVIRONMENTAL RESTORATION, LLC

TABLE 1
TOXICITY DATA FOR CONSTITUENTS OF POTENTIAL CONCERN

3077 UNION ROAD SITE
ORCHARD PARK, NEW YORK

Parameter	Synonyms	CAS No.	Code	Concentration Limits		
				PEL	TLV	IDLH
Volatile Organic Compounds (VOCs): ppm						
Acetone	--	75-09-2	*none*	750	500	2500
1,1-Dichloroethene	1,1-DCE	75-35-4	*Ca*	none	5	ND
cis-1,2-dichloroethene	Cis-DCE	156-59-2	*none*	200	200	1000
trans-1,2-dichloroethene	Trans-DCE	156-60-5	*none*	200	200	1000
Methylene chloride	Dichloromethane, MC	75-09-2	*Ca*	500	50	2300
Tetrachloroethe	Perc, PCE	127-18-4	*Ca*	100	25	150
Trichloroethene	TCE	79-01-6	*Ca*	100	50	1000
Vinyl chloride	VC	75-01-4	*Ca*	1	1	ND
Total Xylenes	--	95-47-6 108-38-3 106-42-3	*none*	100	100	900

Acronyms:

Ca = NIOSH considers constituent to be a potential occupational carcinogen.

IDLH = Immediately Dangerous to Life or Health.

ND indicates that an IDLH has not as yet been determined.

TLV = Threshold Limit Value, established by American Conference of Industrial Hygienists (ACGIH), equals the maximum exposure concentration allowable for 8 hours/day @ 40 hours/week.

TLVs are the amounts of chemicals in the air that almost all healthy adult workers are predicted to be able to tolerate without adverse effects:

TLV-TWA (TLV-Time-Weighted Average) which is averaged over the normal eight-hour day/forty-hour work week. (Most TLVs.)

TLV-STEL or Short Term Exposure Limits are 15 minute exposures that should not be exceeded for even an instant. It is not a stand alone value but is accompanied by the TLV-TWA.

TLV-C or Ceiling limits are the concentration that should not be exceeded during any part of the working exposure.

Unless the initials "STEL" or "C" appear in the Code column, the TLV value should be considered to be the eight-hour TLV-TWA.

PEL = Permissible Exposure Limit, established by OSHA, equals the maximium exposure conconcentration allowable for 8 hours/day, 40 hours/week.

TABLE 2
POTENTIAL ROUTES OF EXPOSURE TO THE CONSTITUENTS OF POTENTIAL CONCERN

3077 UNION ROAD SITE
ORCHARD PARK, NEW YORK

Activity [1]	Direct Contact with Soil/Fill	Inhalation of Vapors or Dust	Direct Contact with Groundwater
Remedial Investigation Tasks			
1. Surface/Subsurface Soil Sampling	X	X	
2. Monitoring Well Installation/Development and Sampling	X	X	X

Notes:

1. Activity as described in Section 1.5 of the Health and Safety Plan.

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TURNKEY ENVIRONMENTAL RESTORATION, LLC

TABLE 3
REQUIRED LEVELS OF PROTECTION FOR RI TASKS

3077 UNION ROAD SITE
ORCHARD PARK, NEW YORK

Activity	Respiratory Protection [1]	Clothing	Gloves [2]	Boots [2, 3]	Other Required PPE/Modifications [2, 4]
Remedial Investigation Tasks					
1. Surface/Subsurface Soil Sampling	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L/N	outer: L inner: STSS	HH SGSS
2. Monitoring Well Installation/Development and Sampling	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L/N	outer: L inner: STSS	SGSS

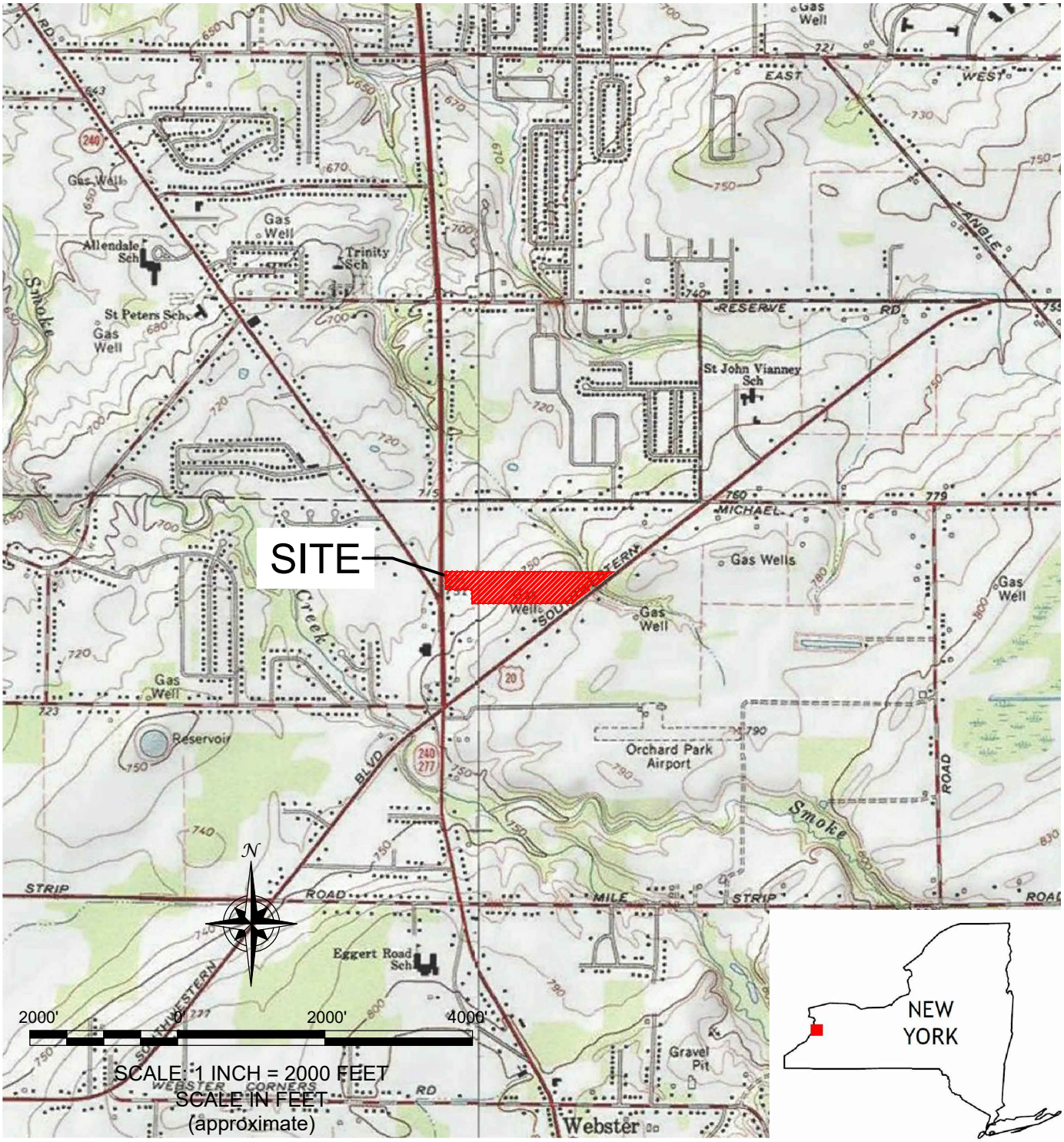
Notes:

1. Respiratory equipment shall conform to guidelines presented in Section 7.0 of this HASP. The Level C requirement is an air-purifying respirator equiped with organic compound/acid
2. HH=hardhat; L=Latex; L/N=latex inner glove, nitrile outer glove; N=Nitrile; S=Saranex; SG=safety glasses; SGSS=safety glasses with sideshields; STSS=steel toe safety shoes.
3. Latex outer boot (or approved overboot) required whenever contact with contaminated materials may occur. SSHO may downgrade to STSS (steel-toed safety shoes) if contact will be
4. Dust masks shall be donned as directed by the SSHO (site safety and health officer) or site safety technician whenever potentially contaminated airborne particulates (i.e., dust) are present

FIGURES

F:\CAD\TurnKey\Benderson\3077 Union Road and Associated Parcels\RIWP\HASP\Figure 1 - Site Location and Vicinity Map.dwg, 2/10/2020 3:15:26 PM

FIGURE 1



BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC
TURNKEY ENVIRONMENTAL RESTORATION, LLC
2558 HAMBURG TURNPIKE, SUITE 300, BUFFALO, NY 14218, (716) 856-0599

PROJECT NO.: T0105-017-010

DATE: FEBRUARY 2020

DRAFTED BY: CCB

SITE LOCATION AND VICINITY MAP

HEALTH AND SAFETY PLAN

3077 UNION ROAD SITE

ORCHARD PARK, NEW YORK

PREPARED FOR

570 DAB 4, LLC

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F:\CAD\TurnKey\Benderson\3077 Union Road and Associated Parcels\RIWP\HASP\Figure 2 - Site Plan (Aerial).dwg, 2/10/2020 3:16:38 PM



BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

IN ASSOCIATION WITH

TURNKEY ENVIRONMENTAL RESTORATION, LLC

2558 HAMBURG TURNPIKE, SUITE 300, BUFFALO, NY 14218 (716) 856-0599

PROJECT NO.: 0105-017-010

DATE: FEBRUARY 2020

DRAFTED BY: CMS/RFL

SITE PLAN (AERIAL)

HEALTH AND SAFETY PLAN

3077 UNION ROAD SITE
ORCHARD PARK, NEW YORK

PREPARED FOR
570 DAB 4, LLC

FIGURE 2

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ATTACHMENT A

EMERGENCY RESPONSE PLAN

EMERGENCY RESPONSE PLAN
for
BROWNFIELD CLEANUP PROGRAM
RI ACTIVITIES

3077 UNION ROAD SITE
ORCHARD PARK, NEW YORK

September 2020 0105-017-010

Prepared for:

570 DAB 4, LLC
570 Delaware Avenue
Buffalo, NY 14202

Prepared by:

BENCHMARK
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3077 UNION ROAD SITE
EMERGENCY RESPONSE PLAN FOR RI ACTIVITIES

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Figure 1 Hospital Route Map

1.0 GENERAL

This report presents the site-specific Emergency Response Plan (ERP) referenced in the Site Health and Safety Plan (HASP) prepared for Remedial Investigation (RI) activities at the 3077 Union Road Site, Orchard Park, New York. This attachment to the HASP describes potential emergencies that may occur at the Site; procedures for responding to those emergencies; roles and responsibilities during emergency response; and training all workers must receive in order to follow emergency procedures. This ERP also describes the provisions this Site has made to coordinate its emergency response planning with other contractors on-site and with off-site emergency response organizations.

This ERP is consistent with the requirements of 29CFR 1910.120(l) and provides the following site-specific information:

- Pre-emergency planning.
- Personnel roles, lines of authority, and communication.
- Emergency recognition and prevention.
- Safe distances and places of refuge.
- Evacuation routes and procedures.
- Decontamination procedures.
- Emergency medical treatment and first aid.
- Emergency alerting and response procedures.
- Critique of response and follow-up.
- Emergency personal protective equipment (PPE) and equipment.

2.0 PRE-EMERGENCY PLANNING

This Site has been evaluated for potential emergency occurrences, based on site hazards, the required work tasks, the site topography, and prevailing weather conditions. The results of that evaluation indicate the potential for the following Site emergencies to occur at the locations indicated.

Type of Emergency:

1. Medical, due to physical injury

Source of Emergency:

1. Slip/trip/fall

Location of Source:

1. Non-specific

3.0 ON-SITE EMERGENCY RESPONSE EQUIPMENT

Emergency procedures may require specialized equipment to facilitate worker rescue, contamination control and reduction, or post-emergency clean up. Emergency response equipment available on the Site is listed below. The equipment inventory and storage locations are based on the potential emergencies described above. This equipment inventory is designed to meet on-site emergency response needs and any specialized equipment needs that off-site responders might require because of the hazards at this Site but not ordinarily stocked.

Any additional PPE required and stocked for emergency response is also listed in below. During an emergency, the Emergency Response Coordinator (ERC) is responsible for specifying the level of PPE required for emergency response. At a minimum, PPE used by emergency responders will comply with Section 7.0, Personal Protective Equipment, of this HASP. Emergency response equipment is inspected at regular intervals and maintained in good working order. The equipment inventory is replenished as necessary to maintain response capabilities.

Emergency Equipment	Quantity	Location
First Aid Kit	1	Site Vehicle
Chemical Fire Extinguisher	2 (minimum)	All heavy equipment and Site Vehicle

Emergency PPE	Quantity	Location
Full-face respirator	1 for each worker	Site Vehicle
Chemical-resistant suits	4 (minimum)	Site Vehicle

4.0 EMERGENCY PLANNING MAPS

An area-specific map of the Site will be developed daily during performance of field activities. The map will be marked to identify critical on-site emergency planning information, including emergency evacuation routes, a place of refuge, an assembly point, and the locations of key site emergency equipment. Site zone boundaries will be shown to alert responders to known areas of contamination. There are no major topographical features, however the direction of prevailing winds/weather conditions that could affect emergency response planning are also marked on the map. The map will be posted at site-designated place of refuge and inside the Benchmark-TurnKey personnel field vehicle.

5.0 EMERGENCY CONTACTS

The following identifies the emergency contacts for this ERP.

Emergency Telephone Numbers:

Project Manager: *Michael Lesakowski*
Work: (716) 856-0599
Mobile: (716) 818-3954

Corporate Health and Safety Director: *Thomas H. Forbes*
Work: (716) 856-0599
Mobile: (716) 864-1730

Site Safety and Health Officer (SSHO): *TBD*
Work: (716) 856-0599
Mobile: (716) _____

Alternate SSHO: *TBD*
Work: (716) 856-0599
Mobile: (716) _____

MERCY HOSPITAL OF BUFFALO (ER):	(716) 826-7000
FIRE:	911
AMBULANCE:	911
POLICE:	911
STATE EMERGENCY RESPONSE HOTLINE:	(800) 457-7362
NATIONAL RESPONSE HOTLINE:	(800) 424-8802
NYSDOH:	(716) 847-4385
NYSDEC:	(716) 851-7220
NYSDEC 24-HOUR SPILL HOTLINE:	(800) 457-7252

The Site location is:

3077 Union Road
Orchard Park, New York 14127
Site Phone Number: Benchmark-TurnKey staff cell phones to be used.

6.0 EMERGENCY ALERTING & EVACUATION

Internal emergency communication systems are used to alert workers to danger, convey safety information, and maintain site control. Any effective system can be employed. Two-way radio headsets or field telephones are often used when work teams are far from the command post. Hand signals and air-horn blasts are also commonly used. Every system must have a backup. It shall be the responsibility of each contractor's SSHO to ensure all personnel entering the site understand an adequate method of internal communication. Unless all personnel are otherwise informed, the following signals shall be used:

1) Emergency signals by portable air horn, siren, or whistle: two short blasts, personal injury; continuous blast, emergency requiring site excavation.

2) Visual signals: hand gripping throat, out of air/cannot breathe; hands on top of head, need assistance; thumbs up, affirmative/everything is OK; thumbs down, no/negative; grip partner's wrist or waist, leave area immediately.

If evacuation notice is given, site workers leave the worksite with their respective buddies, if possible, by way of the nearest exit. Emergency decontamination procedures detailed in Section 12.0 of the HASP are followed to the extent practical without compromising the safety and health of site personnel. The evacuation 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 rehearsals and inputs from emergency response organizations. Wind direction indicators are located so that workers can determine a safe up wind or cross wind evacuation route and assembly area if not informed by the emergency response coordinator at the time the evacuation alarm sounds. Since work conditions and work zones within the site may be changing on daily basis, it shall be the responsibility of the construction SSHO to review evacuation routes and procedures as necessary and to inform all Benchmark-TurnKey workers of any changes.

Personnel exiting the site will gather at a designated assembly point. To determine that everyone has successfully exited the site, personnel will be accounted for at the assembly site. If any worker cannot be accounted for, notification is given to the SSHO so that appropriate action can be initiated. Contractors and subcontractors on this site have coordinated their emergency response plans to ensure that these plans are compatible, and that source(s) of potential emergencies are recognized, alarm systems are clearly understood, and evacuation routes are accessible to all personnel relying upon them.

7.0 EXTREME WEATHER CONDITIONS

In the event of adverse weather conditions, the SSHO in conjunction with the Contractor's SSHO will determine if engineering operations can continue without sacrificing the health and safety of site personnel. Items to be considered prior to determining if work should continue include but are not limited to:

- Potential for heat/cold stress.
- Weather-related construction hazards (e.g., flooding or wet conditions producing undermining of structures or sheeting, high wind threats, etc).
- Limited visibility.
- Potential for electrical storms.
- Limited site access/egress (e.g., due to heavy snow)

8.0 EMERGENCY MEDICAL TREATMENT & FIRST AID

Personnel Exposure:

The following general guidelines will be employed in instances where health impacts threaten to occur acute exposure is realized:

- Skin Contact: Use copious amounts of soap and water. Wash/rinse affected area for at least 15 minutes. Decontaminate and provide medical attention. Eyewash stations will be provided on site. If necessary, transport to the UPMC Chautauqua WCA Hospital.
- Inhalation: Move to fresh air and, if necessary, transport to Hospital.
- Ingestion: Decontaminate and transport to Hospital.

Personal Injury:

Minor first-aid will be applied on-site as deemed necessary. In the event of a life-threatening injury, the individual should be transported to Hospital via ambulance. The SSHO will supply available chemical specific information to appropriate medical personnel as requested.

First aid kits will conform to Red Cross and other applicable good health standards and shall consist of a weatherproof container with individually sealed packages for each type of item. First aid kits will be fully equipped before being sent out on each job and will be checked weekly by the SSHO to ensure that the expended items are replaced.

Directions to UPMC Chautauqua WCA ER (see Figure 1):

The following directions describe the best route from the Site to Mercy Hospital of Buffalo ER:

- Proceed northwest on Union Road for 0.7 miles.
- Turn left onto Reserve Road.
- Turn right onto Orchard Park Road.
- Continue straight only Potters Road.
- Continue straight onto Abbot Road.
- Turn left onto Lorraine Avenue.
- Turn left into the Emergency Room drop off.

9.0 EMERGENCY RESPONSE CRITIQUE & RECORD KEEPING

Following an emergency, the SSHO and Project Manager shall review the effectiveness of this Plan in addressing notification, control and evacuation requirements. Updates and modifications to this Plan shall be made accordingly. It shall be the responsibility of each contractor to establish and assure adequate records of the following:

- Occupational injuries and illnesses.
- Accident investigations.
- Reports to insurance carrier or State compensation agencies.
- Reports required by the client.
- Records and reports required by local, state, federal and/or international agencies.
- Property or equipment damage.
- Third party injury or damage claims.
- Environmental testing logs.
- Explosive and hazardous substances inventories and records.
- Records of inspections and citations.
- Safety training.

10.0 EMERGENCY RESPONSE TRAINING

All persons who enter the worksite, including visitors, shall receive a site-specific briefing about anticipated emergency situations and the emergency procedures by the SSHO. Where this Site relies on off-site organizations for emergency response, the training of personnel in those off-site organizations has been evaluated and is deemed adequate for response to this Site.

FIGURE

F:\CAD\TurnKey\Benderson\3077 Union Road and Associated Parcels\RIWP\HASP\ERP\Figure 1 - Hospital Route Map.dwg, 2/18/2020 3:47:37 PM

FIGURE 1

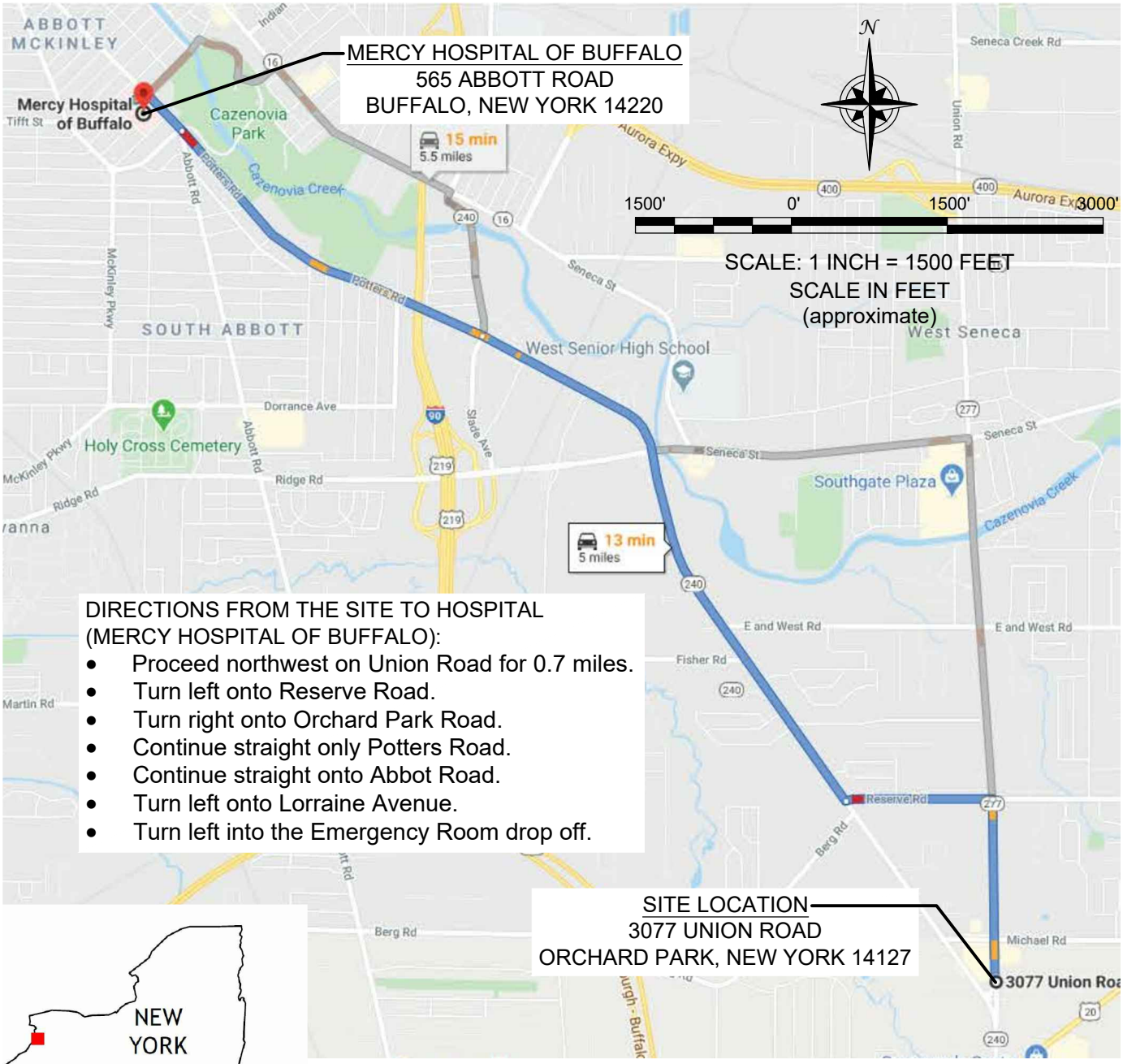


IMAGE FROM GOOGLE MAPS

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC
TURNKEY ENVIRONMENTAL RESTORATION, LLC
2558 HAMBURG TURNPIKE, SUITE 300, BUFFALO, NY 14218, (716) 856-0599

PROJECT NO.: T0105-017-010

DATE: FEBRUARY 2020

DRAFTED BY: CNK

HOSPITAL ROUTE MAP

EMERGENCY RESPONSE PLAN

3077 UNION ROAD SITE

ORCHARD PARK, NEW YORK

PREPARED FOR

570 DAB 4, LLC

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ATTACHMENT B

HOT WORK PERMIT FORM

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

HOT WORK PERMIT

PART 1 - INFORMATION

Issue Date:	
Date Work to be Performed: Start:	Finish (permit terminated):
Performed By:	
Work Area:	
Object to be Worked On:	

PART 2 - APPROVAL

(for 1, 2 or 3: mark Yes, No or NA)*

Will working be on or in:	Finish (permit terminated):	
1. Metal partition, wall, ceiling covered by combustible material?	yes	no
2. Pipes, in contact with combustible material?	yes	no
3. Explosive area?	yes	no

* = If any of these conditions exist (marked "yes"), a permit will not be issued without being reviewed and approved by Thomas H. Forbes (Corporate Health and Safety Director). Required Signature below.

PART 3 - REQUIRED CONDITIONS**

(Check all conditions that must be met)

	PROTECTIVE ACTION		PROTECTIVE EQUIPMENT
	Specific Risk Assessment Required		Goggles/visor/welding screen
	Fire or spark barrier		Apron/fireproof clothing
	Cover hot surfaces		Welding gloves/gauntlets/other:
	Move movable fire hazards, specifically		Wellintons/Knee pads
	Erect screen on barrier		Ear protection: Ear muffs/Ear plugs
	Restrict Access		B.A.: SCBA/Long Breather
	Wet the ground		Respirator: Type:
	Ensure adequate ventilation		Cartridge:
	Provide adequate supports		Local Exhaust Ventilation
	Cover exposed drain/floor or wall cracks		Extinguisher/Fire blanket
	Fire watch (must remain on duty during duration of permit)		Personal flammable gas monitor
	Issue additional permit(s):		

Other precautions:

** Permit will not be issued until these conditions are met.

SIGNATURES

Orginating Employee:	Date:
Project Manager:	Date:
Part 2 Approval:	Date:

ATTACHMENT C

NYSDOH GENERIC COMMUNITY AIR MONITORING PLAN

Appendix C1
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.

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Appendix C2
Fugitive Dust and Particulate Monitoring

A program for suppressing fugitive dust and particulate matter monitoring at hazardous waste sites is a responsibility on the remedial party performing the work. These procedures must be incorporated into appropriate intrusive work plans. The following fugitive dust suppression and particulate monitoring program should be employed at sites during construction and other intrusive activities which warrant its use:

1. Reasonable fugitive dust suppression techniques must be employed during all site activities which may generate fugitive dust.

2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Remedial activities may also include the excavation, grading, or placement of clean fill. These control measures should not be considered necessary for these activities.

3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM10) with the following minimum performance standards:

(a) Objects to be measured: Dust, mists or aerosols;
(b) Measurement Ranges: 0.001 to 400 mg/m3 (1 to 400,000 :ug/m3);
(c) Precision (2-sigma) at constant temperature: +/- 10 :g/m3 for one second averaging; and +/- 1.5 g/m3 for sixty second averaging;
(d) Accuracy: +/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 :m, g= 2.5, as aerosolized);
(e) Resolution: 0.1% of reading or 1g/m3, whichever is larger;
(f) Particle Size Range of Maximum Response: 0.1-10;
(g) Total Number of Data Points in Memory: 10,000;
(h) Logged Data: Each data point with average concentration, time/date and data point number
(i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;
(j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;
(k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;
(l) Operating Temperature: -10 to 50^{o} C (14 to 122^{o} F);
(m) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes.

4. In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the remedial party to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.

5. The action level will be established at 150 ug/m3 (15 minutes average). While conservative,

this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m3, the upwind background level must be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m3 above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see paragraph 7). Should the action level of 150 ug/m3 continue to be exceeded work must stop and DER must be notified as provided in the site design or remedial work plan. The notification shall include a description of the control measures implemented to prevent further exceedances.

6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM10 at or above the action level. Since this situation has the potential to allow for the migration of contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed. Activities that have a high dusting potential--such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.

7. The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:

(a) Applying water on haul roads;
(b) Wetting equipment and excavation faces;
(c) Spraying water on buckets during excavation and dumping;
(d) Hauling materials in properly tarped or watertight containers;
(e) Restricting vehicle speeds to 10 mph;
(f) Covering excavated areas and material after excavation activity ceases; and
(g) Reducing the excavation size and/or number of excavations.

Experience has shown that the chance of exceeding the 150ug/m3 action level is remote when the above-mentioned techniques are used. When techniques involving water application are used, care must be taken not to use excess water, which can result in unacceptably wet conditions. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

8. The evaluation of weather conditions is necessary for proper fugitive dust control. When extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended. There may be situations that require fugitive dust suppression and particulate monitoring requirements with action levels more stringent than those provided above. Under some circumstances, the contaminant concentration and/or toxicity may require additional monitoring to protect site personnel and the public. Additional integrated sampling and chemical analysis of the dust may also be in order. This must be evaluated when a health and safety plan is developed and when appropriate suppression and monitoring requirements are established for protection of health and the environment.

APPENDIX F

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